

# Indian Journal of Veterinary Medicine

Editor : Dr. G. Vijayakumar  
Assoc. Editor : Dr. S. Kavitha  
Asstt. Editor : Dr. P. Thirunavukkarasu

## *EDITORIAL BOARD*

Dr. Akhilesh Kumar : Izatnagar  
Dr. Nitika Sharma : Makhdoom, Mathura  
Dr. R. K. Jadhav : Udgir  
Dr. Vivek Joshi : Izatnagar



## **INDIAN SOCIETY FOR VETERINARY MEDICINE**

### *Editorial Office*

Department of Veterinary Clinical Medicine  
Madras Veterinary College  
Chennai- 600 007  
Tamil Nadu, India.

# INDIAN SOCIETY FOR VETERINARY MEDICINE

(Established 1981)

S.K. Mishra - Founder President

## Officer Bearers

R. Ramprabhu	-	President
Gunjan Das	-	Vice-President
K. Vijayakumar	-	Vice-President
Rajiv V. Gaikwad	-	General Secretary
C.S. Sharma	-	Joint General Secretary
C.N. Galdhar	-	Treasurer

## Secretaries

Amit Raj Gupta	-	Central Region
Ajay Katoch	-	Northern Region
K. Sessa Saikrishna	-	Southern Region
Bipin Kumar	-	Eastern Region
Nisha Patel	-	Western Region
J.B. Rajesh	-	Northern Eastern Region
Jyoti B. Dutta	-	Woman Representative

Membership of the Society is open to the Veterinary graduates who are actively engaged in the field of Veterinary Medicine.

## IJVM Annual Subscription

India	-	Rs. 750/-
Overseas	-	US Dollar 80.00 (Surface Mail) US Dollar 100.00 (Air Mail)

For subscription, please write to The Editor, IJVM, Department of Veterinary Clinical Medicine, Madras Veterinary College, Tamil Nadu Veterinary and Animal Sciences University, Chennai - 600007. Tamil Nadu

## ISVM Membership Fees

Life Membership	-	Rs. 2000/-
-----------------	---	------------

For membership, *Dr. Rajiv V. Gaikwad, General Secretary, ISVM, Department of Veterinary Clinical Medicine, Ethics and Jurisprudence, Mumbai Veterinary College (MAFSU), Parel-Mumbai 400012 (Email: gsisvm@gmail.com, drrajivgaikwadgsisvm@gmail.com) may be contacted.*

---

*The Indian Journal of Veterinary Medicine and its officials assume no responsibility for statements, opinions and claims made by the authors*

## Management of Pleural Effusion in Six Cats

K. Satish Kumar\*, Abboori Sangeetha, K. Mohanambal, K. Ujwala and T. Ramya Sai

Department of Veterinary Medicine, College of Veterinary Science, Rajendranagar, PVNRTVU, Hyderabad, Telangana-500030

### Abstract

Six domestic cats that were presented to VCC, CVSc, Rajendranagar, from January to December 2023 with a history and signs of respiratory distress, cough, insomnia, and weakness were considered for the study. Clinical examination revealed abdominal breathing, dyspnea, and dehydration. On auscultation low intensity respiratory and heart sounds were heard. Chest X-ray indicated a ground-glass appearance in the cranial lung lobe area, and ultrasound revealed anechoic areas in the thorax. Effusion was suspected, leading to ultrasound-guided thoracocentesis which relieved respiratory distress. CT scan was performed in some cases. Comprehensive diagnostics confirmed chylothorax in four cases and pleural effusion in two. The chylothorax cats were managed with rutin for 4 weeks whereas the cats with pleural effusion were managed with the antibiotic amoxicillin-clavulanate for 7 days. The cats were also treated with furosemide for 1 week. Following treatment 5 cats showed recovery from day 6 with improvement in dyspnea and cough, but one cat that was also positive for FIP collapsed after two weeks.

**Keywords:** Cat, pleural effusion, chylothorax, management

### Introduction

Pleural effusion, characterized by an excessive accumulation of fluid within the pleural cavity, can result from multiple causes, such as increased hydrostatic pressure, decreased oncotic pressure, changes in capillary permeability, or lymphatic blockage (Murphy and Pappasoulis, 2011). In cats, pleural effusion commonly occurs due to conditions such as congestive heart failure, feline infectious peritonitis, pyothorax, neoplastic diseases, traumatic injury, and idiopathic chylothorax. Accurate diagnosis is achieved through cytological evaluation, radiography, echocardiography, and computed tomography for tailored prognosis and treatment. This paper describes management of pleural effusion in six cats.

### Materials and Methods

Six cats of various breed, gender and age evaluated at the Veterinary Clinical Complex of the College of Veterinary Science, Rajendranagar with a history of respiratory distress were considered for the present study. Each underwent comprehensive physical and clinical examinations, which were followed by diagnostic imaging. Radiography was taken in right lateral and ventrodorsal views. Ultrasound was used to detect pericardial effusions and perform USG-guided

thoracocentesis to relieve fluid. The CT Scan was done to find out the etiology of the effusion. A complete blood picture and serum biochemistry analysis values were calculated. Further, a lateral flow test was also carried out to rule out FIP and FeLV. Thoracocentesis was conducted as per standard method (Gould, 2004). Effusion was collected using a sterile syringe and evaluated for physical, chemical and microscopic parameters. The effusion was also subjected for the Rivalta test (Fischer *et al.*, 2012). All cats were treated with furosemide. Cats with chylothorax (4) cats were managed with Rutin whereas cats with pleural effusion (2) were managed with the antibiotic amoxicillin-clavulanate.

### Results and Discussion

Almost all the cats showed respiratory distress, dyspnoea, generalized weakness, inappetence, and weight loss. Two were also showing signs of pale to cyanotic buccal mucosa and reluctance to lie on its lateral side. These findings align with the report by Murphy and Pappasoulis (2011) who identified exercise intolerance, lethargy, weight loss, tachypnea, dyspnea, orthopnea, coughing, pyrexia, and cyanosis. Physical examination revealed increased respiratory effort, abdominal breathing, weight loss, and poor body condition. On auscultation low intensity and muffled heart sounds were observed. Haematobiochemical findings, (Table 1) didn't reveal any significant findings as opined by Davies and Forrester (1996). Lymphopenia

\* Corresponding author: drsatish.ksk@gmail.com

(<1500/~1) was seen in 59 percent of cats. Lymphopenia was most commonly associated with chylothorax and

was present in 27 percent of cats with chylous effusion according to Davies and Forrester (1996).

Table 1. Haematobiochemistry in cats with pleural effusion		Table 2. Pleural fluid analysis	
Parameter	Mean values (n=6)	Parameter	Mean values (n=6)
Erythrocytes (10 <sup>6</sup> /μl)	9.8 (5.4–14.9)	Total Cholesterol (mg/dl)	141.00
Haematocrit (%)	40 (26–49 %)	Triglycerides (mg/dl)	160.00
Leukocytes (10 <sup>3</sup> / μl)	13.1 (7.9–21.0)	Cholesterol-Triglycerides ratio	0.88
ALT (U/L)	30.0 (16.0–68.0)	Albumin (gm/dl)	1.20
AP (U/L)	23.5 (5.0–49.0)	Globulin (gm/dl)	1.30
Bilirubin (mg/dl)	25.7 (18.81- 68.4)	Albumin-Globulin ratio	0.92
Triglycerides (mg/dl)	59.5 (26.46 - 276.066)	Total Protein (gm/dl)	2.50
Cholesterol (mg/dl)	150		
Total protein (g/dl)	7.4 (680 - 900)		
Urea (mg/dl)	55.8 (35.105 - 82.705)		
Albumin (g/dl)	34.9 (21.1–48.1)		
Creatinine (mg/dl)	2.81		
Glucose (mmol/l)	9.7 (6.1–11.2)		

A cat that was found to be positive for Rivalta test and Rapid immunochromatographic lateral flow test for FIP. Fluid collected by thoracocentesis revealed Straw/yellow/ milky white/blood-tinged colored fluid (Fig 1) with volume ranging from 50 ml to 300ml. Results of pleural fluid analysis are given in Table 2. True chyle is characterized by triglyceride

levels greater than serum and cholesterol levels are the same or less than serum. According to this in 4 cases, the fluid was confirmed as chyle. Cytology revealed small mature lymphocytes admixed with occasional Granulomas, seen against plenty of RBC's background (Murphy and Papasouliotis, 2011).



**Fig. 1. Thoracocentesis in a chylothorax cat**



**Blood tinged sero sanguinous fluid**



**Chyle collected from cats**

Radiography revealed loss of lung detail, increased opacity in both the cranial and caudal lobes of the lungs, and fluid obscuring the heart silhouette (Fig 2). The accumulation of excess fluid resulted in the dorsal displacement of both the heart. This is in accordance with (Murphy and Papasouliotis, 2011).

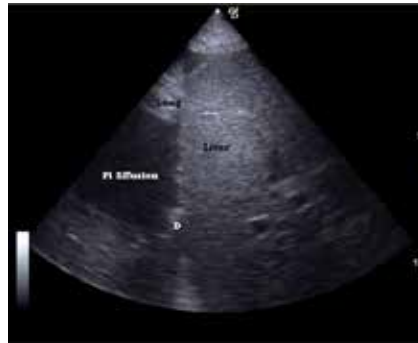
The right parasternal Ultrasound examination revealed an isoechoic structure representing the liver, with the poorly visible diaphragm located above it and notably, an anechoic space was identified cranial to the diaphragm, suggestive of effusion (Fig 3). Free

fluid appears as anechoic regions (displaying as black on ultrasound) and tends to accumulate in dependent areas, forming triangular shapes surrounded by adjacent organs (Boysen and Lisciandro 2013). CT scan revealed the presence of moderate bilateral pleural effusion

accompanied by collapse-consolidation changes in both cranial lung lobes (right greater than left). Further observations revealed lateral and anterior basal segment consolidation in right lower lobe and lingula of left lung (Fig 4).



**Fig. 2. Lateral thorax X-ray of cat diagnosed with chylothorax showing radio-opaque appearance of cranial thorax suggestive of effusion.**



**Fig. 3. USG image of chylothorax in cat showing anechoic space in the thoracic area**



**Fig. 4. CT scan image of chylothorax in cat showing collapse and consolidation changes in right lung lobe**

Chylothorax, a condition where chyle accumulates in the pleural space, originates in the intestinal lymphatic system. When chyle production outpaces clearance, increased lymphatic pressure can lead to chylothorax (Davies and Forrester 1996). The treatment of the cat's effusions started with weekly thoracocentesis, where draining a significant amount of pleural fluid helped alleviate the animal's breathing difficulties. Immediate thoracocentesis is recommended to address the sudden increase in oxygen demand as

mentioned by Gould (2004). Oxygen supplementation was given to all the cats. Rutin was given orally at a dose of 50 mg/kg every 8 hours to reduce chyle and fluid leakage. Known for its effectiveness in treating lymphedema in humans, rutin is a bioflavonoid with potential benefits for chylothorax in cats. Rutin achieve full resolution of their effusion within two months of starting treatment (Gould, 2004). Clinical improvement was observed in all the cats except one which was also positive for FIP.

**References**

- Boysen, S. R. and Lisciandro, G. R. 2013. The use of ultrasound for dogs and cats in the emergency room. *Vet. Clin. North Am. Small Anim. Pract.*, **43(4)**, 773-797.
- Davies, C. and Forrester, S. D. 1996. Pleural effusion in cats: 82 cases (1987 to 1995). *J. Small Anim. Pract.*, **37(5)**, 217-224.
- Fischer, Y., Sauter-Louis, C. and Hartmann, K. 2012. Diagnostic accuracy of the Rivalta test for feline infectious peritonitis. *Vet. Clinical Pathol.*, **41(4)**, 558-567.
- Gould, L. 2004. The medical management of idiopathic chylothorax in a domestic long-haired cat. *Canadian Vet. J.*, **45(1)**, 51.
- Hung, L., Hopper, B. J. and Lenard, Z. 2022. Retrospective analysis of radiographic signs in feline pleural effusions to predict disease aetiology. *BMC Veterinary Res.*, **18(1)**, 118.
- Murphy, K. and Papasouliotis, K. (2011). Pleural effusions in dogs and cats: 1. Diagnostic investigation. *In Pract.*, **33(9)**, 462-469.

## Therapeutic efficacy of isometamidium hydrochloride and diminazene diaceturate in treatment of trypanosomiasis in horses

R.K. Bhardwaj\*<sup>1</sup>, Sudhir Kumar<sup>2</sup> and Himani Sharma<sup>3</sup>

<sup>1</sup>Professor, Division of Veterinary Medicine,  
F.V. Sc & A.H-R.S.Pura, SKUAST-Jammu, 181102

<sup>2</sup>Professor, Division of Veterinary Gynecology and Obstetrics  
F.V. Sc & A.H- R. S. Pura, SKUAST-Jammu, 181102.

<sup>3</sup>Post Graduate scholar, Division of Veterinary Medicine

### Abstract

Twelve equines found positive for *Trypanosoma evansi* in Giemsa-stained thin blood smears (GSTBS) were divided in two groups (n=6) each. Group-I was treated with isometamidium hydrochloride (@ 0.5mg/kg b.wt I/M once) and Group-II was treated with diminazene diaceturate (@ 5mg/kg b.wt I/M). Giemsa-stained thin blood smears examination could detect *T. evansi* in 2 horses treated with diminazene diaceturate on 3<sup>rd</sup> day of treatment while all six horses treated with isometamidium hydrochloride were found negative. Horses positive for *T. evansi* on 3<sup>rd</sup> day were found negative after another dose of diminazene diaceturate. Increase in the value of Hb and TEC was observed on 7<sup>th</sup> day post treatment in isometamidium hydrochloride than diminazene diaceturate treated group. Aspartate amino transferase, ALP and GGT also showed significant decrease in isometamidium hydrochloride treated equines as compared to diminazene diaceturate on 3<sup>rd</sup> and 7<sup>th</sup> day post treatment. It was found that isometamidium hydrochloride was effective in treatment of horses with trypanosomiasis when compared to diminazene diaceturate

**Keywords:** Equine, Trypanosomiasis, GSTB, Isometamidium hydrochloride, Diminazene diaceturate

### Introduction

Trypanosomiasis is a worldwide prevalent and is of great economic importance (Rathore *et al.*, 2016). Most of the direct losses in the animals are due to mortality and cost of treatment. The indirect losses are due to morbidity, reduced milk yield, draught power, reduce birth rates leading to abortion and poor weight gain (Kumar *et al.*, 2021). According to Buscher *et al* (2019) drugs used for treatment of equine trypanosomiasis consisted of diminazene diaceturate, combination of quinapyramine choride/quinapyramine sulphate, melarsomine hydrochloride (suramin), isometamidium hydrochloride having both curative and prophylactic effect. This paper describes a treatment trial with diminazene diaceturate and isometamidium hydrochloride in horses with trypanosomiasis.

### Materials and Methods

Horses presented to Veterinary Clinics complex, R.S.Pura were screened by Giemsa stained thin blood smear (GSTBS) examination for presence of trypanosomes in blood smears. Twelve horses with

*Trypanosomiasis* were divided in two groups with six in each. Group-I was treated with isometamidium hydrochloride (@ 0.5mg/kg b.wt I/M ) and Group-II with diminazene diaceturate (@ 5mg/kg b.wt I/M). Haemoglobin (Hb), packed cell volume (PCV), total erythrocyte count (TEC) and total leukocyte count (TLC) and differential leukocyte count were determined as per standard method. Blood glucose, total plasma protein (TPP), albumin (ALB), plasma urea nitrogen (PUN), creatinine (CRT), total bilirubin (TBIL), direct bilirubin (DBIL), ALT, AST, ALP, Plasma fibrinogen and GGT were estimated as per standard methods. Therapeutic efficacy was evaluated on basis of alleviation in clinical signs, GSTBS examination for presence or absence of *Trypanosoma* and estimation of hematobiochemical parameters on 0<sup>th</sup>, 3<sup>rd</sup> and 7<sup>th</sup> days of treatment.

### Results and Discussion

The present study could detect *T. evansi* in the blood smears of two horses in diminazene diaceturate treated group on 3<sup>rd</sup> day post treatment while all six horses of isometamidium hydrochloride treated group were found negative for *T. evansi*. Horses positive for *T. evansi* on 3<sup>rd</sup> day were given another dose of diminazene

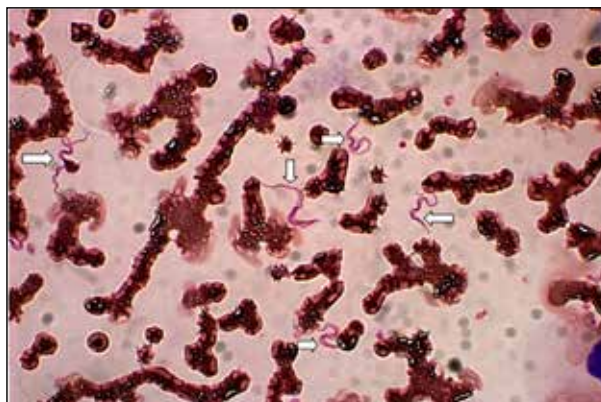
\*Corresponding author: rajinder211@skuastj.org

diacetate and post treatment examination of animal's blood smears were found negative for *T. evansi* in both groups. Mean values of haematological and biochemical parameters of *Trypanosoma* affected horses treated with isometamidium hydrochloride and diminazene diacetate are presented in Tables 1 and 2. Significant increase in the value of Hb and total erythrocyte count was observed on 7<sup>th</sup> day post treatment in isometamidium hydrochloride treated horses as compared to diminazene diacetate. ALB, GLB, A:G, TBIL, DBIL, IBIL and fibrinogen showed non-significant difference between

the two treated groups. AST, ALP and GGT showed significant decrease in isometamidium hydrochloride treated equines as compared to diminazene diacetate on 3<sup>rd</sup> and 7<sup>th</sup> day post treatment. Singh *et al.* (2012) also found significant increase in TEC in *T. evansi* affected horses treated with antrycide prosalt and isometamidium hydrochloride. On the basis of post-treatment clinical evaluation and PCR it was concluded that isometamidium has superior effect (Raftery *et al.*, 2019). In the present study, it was found that isometamidium hydrochloride was effective when compared to diminazene acetate in the treatment of trypanosomiasis in horses

**Table 1: Haematology of *Trypanosoma* affected horses treated with isometamidium hydrochloride and diminazene diacetate (Mean  $\pm$  S.E).**

Day	Drug	Hb (gdl <sup>-1</sup> )	PCV (%)	TEC (10 <sup>6</sup> $\mu$ l <sup>-1</sup> )	PLT (lac $\mu$ l <sup>-1</sup> )	MCV (fl)	MCH (pg)	MCHC (%)
0 <sup>th</sup> day	Isometamidium hydrochloride (n=6)	7.48 $\pm$ 0.63	23.55 $\pm$ 2.31	3.19 $\pm$ 0.25	146.50 $\pm$ 18.27	73.04 $\pm$ 2.63*	23.38 $\pm$ 0.25	32.17 $\pm$ 0.91
	Diminazene diacetate (n=6)	6.49 $\pm$ 0.34	20.83 $\pm$ 1.01	3.25 $\pm$ 0.11	135.67 $\pm$ 15.30	64.01 $\pm$ 1.76	19.95 $\pm$ 0.73	31.21 $\pm$ 1.10
3 <sup>rd</sup> day	Isometamidium hydrochloride (n=6)	7.98 $\pm$ 0.60	24.83 $\pm$ 2.04	4.29* $\pm$ 0.31	159.50 $\pm$ 11.96	57.64 $\pm$ 1.44	18.60 $\pm$ 0.62	32.27* $\pm$ 0.69
	Diminazene diacetate (n=6)	6.66 $\pm$ 0.31	21.83 $\pm$ 1.01	3.53 $\pm$ 0.13	161.83 $\pm$ 12.30	61.99 $\pm$ 2.69	18.92 $\pm$ 0.88	30.53 $\pm$ 0.58
7 <sup>th</sup> day	Isometamidium hydrochloride (n=6)	8.50* $\pm$ 0.52	26.33 $\pm$ 1.69	4.75* $\pm$ 0.33	179.00 $\pm$ 11.32	55.65 $\pm$ 1.44	17.99 $\pm$ 0.30	32.39 $\pm$ 0.71
	Diminazene diacetate (n=6)	7.08 $\pm$ 0.30	22.50 $\pm$ 1.15	4.07 $\pm$ 0.21	185.0 $\pm$ 0.21	55.34 $\pm$ 1.28	17.48 $\pm$ 0.57	31.60 $\pm$ 0.76



**Fig.1 Giemsa stained thin blood smear of horse showing *Trypanosoma evansi*. (Arrows)**



**Table 2: Biochemical profiles of *Trypanosoma* affected horses treated with isometamidium hydrochloride and diminazene diacetate (Mean ± S.E)**

Day	Drug	TPP (gdl <sup>-1</sup> )	ALB (gdl <sup>-1</sup> )	GLB (gdl <sup>-1</sup> )	A:G	BUN (mgdl <sup>-1</sup> )	CRT (mgdl <sup>-1</sup> )	TBIL (mg/dl)	DBIL (mg/dl)	IBIL (mg/dl)	ALT (IU/L)	AST (IU/L)	ALP (IU/L)	GGT (IU/L)	FIB (mg/dl)	GLU (mg/dl)
0 <sup>th</sup> day	Isometamidium hydrochloride (n=6)	8.92 ±0.29	3.17 ±0.13	5.75 ±0.37	0.57 ±0.05	23.87* ±1.94	1.37 ±0.11	3.55 ±0.34	1.60 ±0.22	1.95 ±0.16	28.93 ±3.30	191.42 ±7.90	144.37* ±11.95	17.72 ±0.90	635.67 ± 30.64	69.03 ±2.97
	Diminazene diacetate (n=6)	8.27 ±0.18	3.17 ±0.13	5.10 ±0.22	0.63 ±0.05	26.73 ±2.32	1.58 ±0.09	4.71 ±0.27	1.60 ±0.22	3.11 ±0.36	31.9 ±3.40	203.78 ±15.50	185.22 ±17.65	20.13 ±0.82	563.17 ±44.37	61.88 ±2.52
3 <sup>rd</sup> day	Isometamidium hydrochloride (n=6)	8.15 ±0.21	3.21 ±0.10	4.94 ±0.20	0.66 ±0.04	19.67 ±1.50	1.10* ±0.05	2.78 ±0.13	1.06 ±0.02	1.72 ±0.11	30.97 ±5.05	165.3* ±12.77	135.30* ±12.55	15.99* ±0.91	492.83 ±12.63	87.65** ±3.25
	Diminazene diacetate (n=6)	8.09 ±0.11	3.17 ±0.13	4.9 ±0.12	0.65 ±0.04	22.45 ±3.13	1.47 ±0.06	3.39 ±0.17	1.24 ±0.09	2.16 ±0.16	30.75 ±3.24	200.53 ±12.43	189.38 ±19.03	19.73 ±0.68	559.83 ±43.64	67.08 ±1.25
7 <sup>th</sup> day	Isometamidium hydrochloride (n=6)	7.56* ±0.14	3.24 ±0.11	4.32 ±0.11	0.75 ±0.04	17.67 ±0.84	1.09 ±0.07	1.79 ±0.13	0.58* ±0.05	1.21 ±0.14	24.00 ±2.70	145.1* ±6.68	119.83* ±7.87	11.02* ±1.94	352.00 ±14.68*	88.65 ±2.43
	Diminazene diacetate (n=6)	8.15 ±0.16	3.32 ±0.13	4.83 ±0.16	0.69 ±0.04	21.12 ±2.93	1.36 ±0.08	1.82 ±0.10	0.87 ±0.06	0.94 ±0.06	27.83 ±2.04	196.03 ±9.27	182.72 ±16.07	18.32 ±0.82	497.33 ±45.44	69.58 ±1.49

## References

- Buscher, P., Gonzatti, M.I., Hebert, L., Inoue, N., Pascucci, I. 2019. Equine trypanosomosis: enigmas and diagnostic challenges. *Parasites and Vectors*, **12**:1-8.
- Kumar, N., Verma, M.K., Rahman, J.U., Singh, A.K. and Patidar, S. 2021. An overview of the various methods for diagnosis, treatment, and controlling of trypanosomiasis in domestic, pet, and wild animals. *Biological Forum – An International J.*, **13(3a)**:389-399.
- Raftery, A.G., Jallow, S., Rodgers, J. and Sutton, D.G.M. 2019. Safety and efficacy of three trypanocides in confirmed field cases of trypanosomiasis in working equines in The Gambia: a prospective, randomised, non-inferiority trial. *PLoS Negl. Trop. Dis.*, **13(3)**: e0007175.
- Rathore, N.S., Manuja, A., Manuja, B.K. and Choudhary, S. 2016. Chemotherapeutic approaches against *Trypanosoma evansi*: Retrospective analysis, current status and future outlook. *Curr. Top. Med. Chem.*, **16**: 2316–2327.
- Singh, R., Gupta, S. K. and Upadhyay, S. 2012. Chemotherapy and evaluation of drug efficacy in equines infected with *T. evansi* with Antrycide prosalt and Isometamidium hydrochloride. *Vet. Pract.*, **13(2)**: 139-142.

## Modified infra orbital approach for maxillary nerve block in dogs for rhinoscopic procedures

G. Vijayakumar<sup>1</sup>\*, Annie Mariam John, Mohamed Shafiuza<sup>2</sup> and S. Kavitha

Department of Veterinary Clinical Medicine

Madras Veterinary College, Chennai- 600 007

Tamil Nadu Veterinary and Animal Sciences University, Chennai- 600 051

<sup>1</sup>Professor and Head, Department of Clinics

<sup>2</sup>Professor and Head, Department of Veterinary Surgery and Radiology

### Abstract

A trial had been conducted to assess the efficacy of modified infra orbital approach for maxillary block over infra orbital block for rhinoscopic procedures in dogs with nasal cavity disease. The dogs were subjected to clinical, haemato-biochemical and radiographic examination. Six dogs with nasal cavity disease were subjected to rhinoscopy. These dogs were fasted for 12 hours before anaesthetic induction. An indwelling intravenous catheter was placed. A cuffed endotracheal tube was placed and the cuff was inflated. The animals were administered with glycopyrrolate (@ 0.01-0.02 mg/kg SC / IM). Premedication with butorphanol (@ 0.2 – 0.4 mg/kg IM) and xylazine (@ 0.2 – 1.1 mg/kg IM) and induction of anaesthesia by propofol (@ 1-2 mg/kg IV) were done. Maintenance of anaesthesia was carried out with ketamine (@ 5 mg/kg IV) and diazepam (@ 0.25 mg/kg IV) combination. Monitoring of electrocardiogram, blood pressure and oxygen saturation were done as per standard techniques. Monitoring of electrocardiogram, blood pressure and oxygen saturation were done as per standard techniques. Local infiltration with 2% lignocaine was done using infra- orbital approach on one side while modified infra- orbital method for maxillary block was used on other side of the dog. Rhinoscopy was carried out using anterior and posterior approach. The efficacy of technique was assessed based on response of the dog for irrigation used during rhinoscopy, biopsy and swab procedures. The results of the study indicated that modified infra orbital approach for maxillary nerve block suppressed the sneeze and other reflexes when compared infra orbital nerve block during rhinoscopy in dogs.

**Keywords:** dog- rhinoscopy- infra-orbital and maxillary nerve block.

### Introduction

Nasal diseases of chronic nature are a common clinical complaint in canine practice. Several pathological conditions affecting the nasal cavities have been described in dogs. Common causes of chronic nasal disease in dogs are neoplasia, fungal rhinitis and idiopathic lymphoplasmacytic rhinitis. Other less common causes include nasal foreign body, rhinitis secondary to dental disease, parasitic rhinitis and primary ciliary dyskinesia (Meler *et al.*, 2008). Clinical signs are often insufficient for reliable differentiation between nasal lesions in dogs; therefore, definitive diagnosis requires ancillary imaging studies. Rhinoscopy is the modality of choice for direct and minimally invasive visualization of the nasal cavity and endoscopic guided biopsy collection in dogs is the gold standard for nasal disease diagnosis (Knotek *et al.*, 2000). Sudden periods of arousal during rhinoscopy and nasal biopsy are often observed clinically and

have potential to cause injury to patients and damage to endoscopy equipment. To decrease the likelihood of movement, rhinoscopy patients are often maintained at a deep plane of anaesthesia, which causes dose-dependent cardiorespiratory depression that can lead to hypotension and apnoea (Weil, 2009). A comparison of percutaneous maxillary nerve blocks and infraorbital nerve blocks in dogs undergoing rhinoscopy revealed that the maxillary nerve block is superior to the infraorbital block for preventing adverse reactions during rhinoscopy of the caudal portion of the nasopharynx (Cremer *et al.*, 2013). Fizzano *et al.* (2017) modified infraorbital approach maxillary nerve blocks decreased procedural nociception in health dogs. A study was undertaken to assess the effect of modified infraorbital block in dogs with nasal cavity diseases.

### Materials and Methods

Dogs brought to Madras Veterinary College Teaching Hospital with history and signs suggestive of

\*Corresponding author: drvijaymvc@gmail.com

nasal cavity diseases like nasal discharge, stridor, foul-smelling breath, epistaxis, sneezing, respiratory distress or facial deformities were screened. These dogs were subjected to detailed clinical, haemato-biochemical and radiographic examinations. Six dogs diagnosed with nasal diseases based on these examinations were included for the study.

Patients were fasted for 12 hours before anaesthetic induction. An indwelling intravenous catheter was placed. A cuffed endotracheal tube was placed and the cuff was inflated. Anaesthetic protocol as described by Seymour and Gleed (1999) was followed. The animals were administered with glycopyrrolate (@ 0.01-0.02 mg/kg SC / IM). The animals were administered with glycopyrrolate (@ 0.01-0.02 mg/kg SC / IM). Premedication with butorphanol (@ 0.2 – 0.4 mg/kg IM) and xylazine (@ 0.2 – 1.1 mg/kg IM) and induction of anaesthesia by propofol (@ 1-2 mg/kg IV) were done. Maintenance of anaesthesia was carried out with ketamine (@ 5 mg/kg IV) and diazepam (@ 0.25 mg/kg IV) combination. Monitoring of electrocardiogram, blood pressure and oxygen saturation were done as per standard techniques.

The examination of nasopharynx and choanae using caudal (posterior) rhinoscopy was done before performing rostral (anterior) rhinoscopy procedure. Rhinoscopy was performed as described by Tams (). Caudal rhinoscopy was performed by retroflexing a flexible endoscope over the free edge of the soft palate, so as to look forward the choanae. A flexible bronchoscope (3.5 mm diameter) or gastroscope (7.9 mm) with 180 degree of flexion was used for anterior rhinoscopy. A small diameter flexible endoscope (bronchoscope, Olympus type BF – 1T150, Japan) with

two-way deflection or 2.7mm 30-degree arthroscope with cystoscopy sheath (Karl Storz, Germany) was used for anterior rhinoscopy. Irrigation for anterior rhinoscopy was provided from bags of 0.9 per cent saline fitted with standard delivery sets connecting to one of the stopcocks of the cannula or working channel of the flexible endoscope.

A small indentation dorsal to the third premolar tooth palpated through the oral mucosa was used to locate the infra orbital canal. Infra orbital nerve block (left side of 1<sup>st</sup>, 2<sup>nd</sup> & 3<sup>rd</sup> animal and right side of 4<sup>th</sup>, 5<sup>th</sup> & 6<sup>th</sup> animal) and modified approach for maxillary nerve block (right side of 4<sup>th</sup>, 5<sup>th</sup>, & 6<sup>th</sup> animal and left side of 1<sup>st</sup>, 2<sup>nd</sup> & 3<sup>rd</sup> animal respectively) were done in six animals. For the infraorbital nerve block, 22G needle was percutaneously inserted (Fig. 1) approximately 0.5 cm into the infraorbital canal (Viscasillas *et al.*, 2013). Modified infraorbital approach for maxillary nerve block was done as described by Fizzano *et al.* (2017). For the modified infra orbital approach for maxillary block, over-the-needle catheter (20G; 5cm) was introduced in the infraorbital canal parallel to the maxilla and then directed caudally (Fig.2). Initially the catheter was passed upto 5 mm. After withdrawal of the needle a little bit within the catheter, catheter along with needle was advanced till the hub of the catheter touched the gingiva. Lignocaine (2%, 0.5 ml) was used in both the methods. After 15 minutes, samples for biopsy / cytology were taken from any mass or abnormal tissue of nasopharynx or choanae. Biopsy samples were obtained under direct visualization using endoscope. The purposeful movements including paddling, sneezing, head shaking, chewing, or licking during the irrigation and sampling for biopsy and cytology were recorded.



**Fig. 1: Infra orbital nerve block**



**Fig. 2: Modified infra orbital approach for maxillary nerve block**



**Fig. 3: Anterior Rhinoscopy with rigid endoscope**



**Fig. 4 : Posterior Rhinoscopy with flexible endoscope**



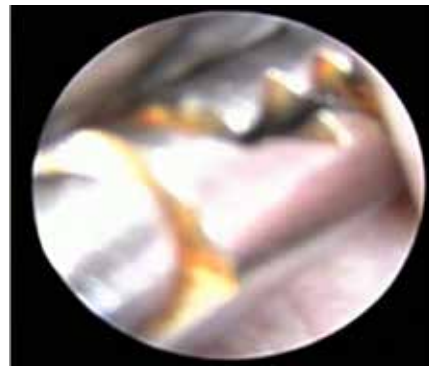
**Fig. 5: Lateral radiograph of skull- Osteolysis of nasal bone dorsally with extra-nasal soft tissue swelling**



**Fig. 6: Increased soft-tissue density in the nasal cavity, particularly on right and obliteration of vomer bone**



**Fig. 7 :Biopsy: Posterior rhinoscopy**



**Fig. 8 :Biopsy: Anterior rhinoscopy**

## Results and Discussion

Movements like sneezing (100%), head shaking (83.33%), chewing (83.33%), licking (83.33%) and paddling (66.67%) were noticed during the rhinoscopic procedure of irrigation, taking samples for biopsy/ cytology on the side where infra orbital nerve block was employed. Noone (2001) reported that common adverse reactions during rhinoscopy included sneezing, gagging, and head movement and interfered with the

rhinoscopy procedure, caused nasal and oral injury, or possibly damaged the instrument. These necessitated to increase the plane of anaesthesia for making a thorough endoscopic examination in dogs without adverse reactions. There were no such movements exhibited by the animal in which modified approach for maxillary nerve block was done and helped in irrigation and collection of samples for biopsy / cytology without sudden period of arousal. Cremer *et al.* (2013) opined

that compared to the infraorbital nerve block, the maxillary nerve block was somewhat more difficult to perform due to its anatomical location. Fizzano *et al.* (1997) in their on modified infraorbital approach for a maxillary nerve block for rhinoscopy with nasal biopsy of healthy dogs study reported that modified infraorbital approach resulted in evidence of decreased nociception, as determined on the basis of blood pressures and plasma cortisol concentrations associated with rhinoscopy and nasal biopsy and opined that this maxillary nerve block technique could help reduce cardiorespiratory effects of inhalation anaesthetics during nasal procedures. The disadvantage of advancing a hypodermic needle through the infraorbital canal may result in puncture of blood vessels, with the associated risks of intravascular injection or haematoma formation within the canal. Viscasillas *et al.* (2013) and Fizzano *et al.* (2017) on the basis of the results of the cadaver experiment, reported that a maxillary nerve block via a modified infraorbital approach would be expected to block sensory transmission to all nerves within the pterygopalatine region that provide sensory innervation to structures of the nose and face. Maxillary nerve block along with general anaesthesia Cremer *et al.* (2013) opined that compared to the infraorbital nerve block, the maxillary nerve block was somewhat more difficult to perform due to its anatomical location although maxillary nerve block decreased the adverse effects during rhinoscopy. Hence it is concluded that maxillary nerve block through modified infra orbital approach was better than infra orbital nerve block for endoscopic procedures involving sampling for biopsy/ cytology.

### Conclusion

Modified infra orbital approach for maxillary nerve block was better than infra orbital nerve block for endoscopic procedures involving sampling for biopsy/ cytology.

### Acknowledgements

The authors are highly thankful to the University authorities for providing necessary facilities to carry out the work.

### References

- Cremer, J., Sum, S.O., Braun, C., Figueiredo, J. and Rodriguez-Guarin, C. 2013. Assessment of maxillary and infraorbital nerve blockade for rhinoscopy in sevoflurane anesthetized dogs. *Vet. Anaesth. Analg.*, **40**:432–439.
- Fizzano, K. M., Claude, A.M., Kuo, L. H., Eells, J. B., Hinz, S. B., Thames, B. E., Ross, M. K., Linford, R. L., Wills, R. W., Olivier, A. K. and Archer, T. M. 2017. Evaluation of a modified infraorbital approach for a maxillary nerve block for rhinoscopy with nasal biopsy of dogs. *Am. J. Vet. Res.*, **78**:1025-1035.
- Knotek, Z., Fichtel, T., Husník, R. and Benák, J. 2000. Endoscopic diagnostics of chronic diseases of the nasal cavity in dogs. *Acta Vet. Brno*, **69**(4): 319-326.
- Meler, E., Dunn, M. and Lecuyer, M. 2008. A retrospective study of canine persistent nasal disease: 80 cases (1998–2003). *Can. Vet. J.*, **49**(1): 71-76.
- Noone, K,E, 2001. Rhinoscopy, pharyngoscopy, and laryngoscopy. *Vet. Clin. North Am. Small. Anim. Pract.*, **31**: 671–689.
- Tams, T. R. and Rawlings, C. A. 2011. Small animal endoscopy. 3<sup>rd</sup> edn., Elsevier Health Sciences. St. Louis, Missouri, pp. 137-147.
- Viscasillas, J., Seymour, C.J. and Brodbelt, D.C. 2013. A cadaver study comparing two approaches for performing maxillary nerve block in dogs. *Vet. Anaesth. Analg.*, **40**:212–219.
- Weil, A.B. 2009. Anaesthesia for endoscopy in small animals. *Vet. Clin. North Am. Small Anim. Pract.*, **39**:839–848.

## Blood transfusion in two anaemic dogs with babesiosis

Bhavanam Sudhakara Reddy\*<sup>1</sup>, Sirigireddy Sivajothi<sup>2</sup> and Gollapalli Nagarjuna<sup>1</sup>

<sup>1</sup>Department of Veterinary Medicine; <sup>2</sup>Department of Veterinary Parasitology, College of Veterinary Science, Proddatur-516360, Sri Venkateswara Veterinary University, Andhra Pradesh, India.

### Abstract

Severe anaemia and babesiosis was confirmed in two dogs; diagnosis was made by through haematological analysis and the detection of *Babesia canis* in stained peripheral blood smears. The affected dogs displayed symptoms such as fever, weakness, icteric mucous membranes, dehydration, elevated body temperature, increased respiratory rate, bounding pulse and presence of ticks. Due to severe anaemia with low packed cell volume (below 10 %) and low haemoglobin levels (below 3 gm%), blood transfusion was performed. After ensuring blood compatibility, each dog received 350 ml of whole blood. Clinical improvement was observed following blood transfusion..

**Keywords:** Blood transfusion, Dogs, *Babesia*, Anaemia

In veterinary medicine, blood transfusions are considered a critical component of life-saving for animals with anaemia, particularly in cases of acute haemorrhage and haemolysis. Blood transfusions are recommended when the packed cell volume falls below 15% and haemoglobin concentration drops under 5 gm%, as they help restore both oxygen-carrying capacity and oncotic pressure (Cunha *et al.*, 2011). This article describes successful blood transfusion in two dogs with babesiosis.

Two Labrador dogs weighing around 30 kg were presented with symptoms of fever, weakness, and loss of appetite. Clinical examination revealed the dogs were dull, pale to icteric conjunctival mucous membranes, rise in rectal temperature, increased respiratory rate, enlarged popliteal lymph nodes, and bounding pulse with a capillary refill time of 6 seconds. Haematological analysis showed severe anemia with low haemoglobin levels, low packed cell volume, low total erythrocyte counts. Serum biochemistry revealed elevated blood urea nitrogen levels, creatinine and total bilirubin (Table-1). Giemsa-stained blood smears were examined under the oil immersion objective (x100) which confirms the *Babesia canis* organisms within red blood cells (Fig.1). Based on the history of tick exposure, laboratory results, and microscopic examination, the cases were diagnosed as severe anaemia associated with canine babesiosis.

For blood transfusion, an adult healthy dog above 30 kg body weight was selected as donor and haematological indices, blood smear examination for haemoprotzoan was also carried out. Major cross

matching was done as per the standard procedure. Total of 350 ml of whole blood was transfused in four hours with close monitoring of the vital signs of the patient for any transfusion reactions. Marked clinical improvement was noticed on the next day with increased food intake and activity. Further dogs were administered doxycycline (@ 5 mg/kg body weight IV for three days followed by oral administration for 28 days), clindamycin (10 mg/kg body weight IV for three days followed by oral administration BID), vitamin B complex (3ml IM OD for 5 days followed by oral multi vitamin syrup), pantoprazole (@ 1mg/kg PO OD for 7 days), prednisolone (@ 1mg/kg PO OD for five days) along with liver tonic containing silymarin for three weeks. Following blood transfusion, clinical improvement was noticed (Table-1).

In this study, the observed clinical signs of fever, anorexia, lethargy, haemoglobinuria, jaundice, and anaemia were consistent with previous findings (Reddy *et al.*, 2014). Whole blood transfusion provided essential coagulation factors, plasma proteins, white blood cells, and platelets, which helped increase the dogs packed cell volume, thereby enhancing their oxygen-carrying capacity and aiding in their recovery from the underlying disease (Abrams-Ogg, 2000). Anju and Vijayakumar (2021) carried out blood transfusion in dogs with clinical babesiosis along with specific therapy to babesia. Blood transfusion provides the reserve of healthy erythrocytes to make up for those destroyed by the reticuloendothelial system and phagocytes. Successful blood transfusion in two dogs with severe babesiosis is placed on record

\*Corresponding author: bhavanamvet@gmail.com



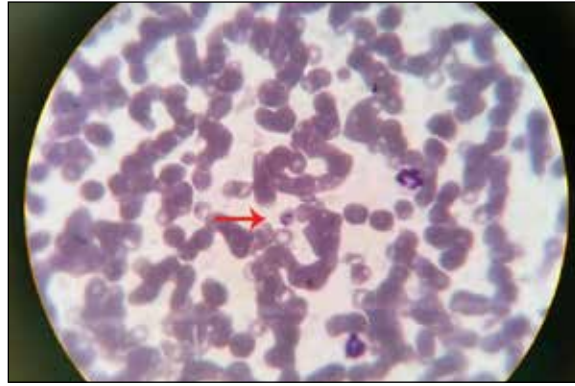


Fig.1. Stained blood smear – Presence of *Babesia canis* organisms (100x)

Table-1: Table showing the haematological changes

	Case-1		Case-2	
	1 <sup>st</sup> Day	3 <sup>rd</sup> Day	1 <sup>st</sup> Day	3 <sup>rd</sup> Day
Haemoglobin (g/dL)	2.2	5.8	1.8	5.2
Packed Cell Volume (%)	10	18	9	16
Red blood cell count (x10 <sup>6</sup> /μl)	1.22	2.88	1.8	2.76
Total leucocyte count (cells/cumm)	18.31	17.65	20.65	16.08
Blood urea nitrogen (mg/dL)	102	68	88	67
Creatinine (mg/dL)	1.23	1.47	1.36	1.48
Total Bilirubin (mg/dL)	2.81	2.23	2.56	2.01

### Acknowledgement

The authors are thankful to the authorities of Sri Venkateswara Veterinary University, Tirupati for providing the facilities to carry out the work.

### References

- Abrams-Ogg, A. 2000. Practical blood transfusion. In: Day MJ, Mackin A, Littlewood JD, editors. In: BSAVA Manual of canine and feline haematology and transfusion medicine. British Small Animal Association, England, 263-307.
- Anju, S. and Vijayakumar, K. (2021). Successful management of *Babesia gibsoni* infection in a dog with Buparvaquone clindamycin combination along with blood transfusion-a case study. *Journal of Indian Veterinary Association Kerala*. **19(2)**:144-149.
- Cunha, L.F.G., Ferreira A.C.S., and Ferreira R.M.R.F. (2011). Whole blood transfusion in small animals: indications and effects. *Annals of the Brazilian Academy of Sciences*. **83(2)**:611-617.
- Reddy, B.S., Sivajothi, S., Reddy, LSSV. and Raju, K.G.S. (2014). Clinical and laboratory findings of *Babesia* infection in dogs. *Journal of Parasitic Diseases*. **40(2)**:268- 272.
- Reddy, B.S., Sivajothi, S. and Swetha, K. (2022). Intravenous clindamycin as a monotherapy in treatment of *Babesia gibsoni* in dogs. *Chem Sci Rev Lett.*, **11 (44)**: 475-477.

## Diagnosis and management of Dermatophilosis in two cows and four buffaloes

Chaitanya Yalavarthi<sup>1\*</sup>, Deepti Balam<sup>2</sup>, K.Suresh<sup>3</sup> and Sai Soumya Konjeti<sup>4</sup>

<sup>1</sup>Assistant Professor, Department of Veterinary Clinical Complex, NTR College of Veterinary Science, Gannavaram, Sri Venkateswara Veterinary University (SVVU), Tirupati-517502 (AP), India.

<sup>2</sup>Assistant Professor, Department of Veterinary Microbiology, NTR College of Veterinary Science, Gannavaram, SVVU (AP), India.

<sup>3</sup>Professor and Head, Department of Veterinary Clinical Complex, NTR College of Veterinary Science, Gannavaram, SVVU (AP), India.

<sup>4</sup>Pg Scholar, NTR college of Veterinary Science, Gannavaram

### Abstract

Two cows and four buffaloes were presented with the history of dermatitis of various degrees. Clinical examination revealed thick scabs all over the body with matting of hair. Skin scabs and scrapings were subjected to detailed cultural examination. Microscopical examination of Gram's stained smears of scab material from the lesions revealed characteristic gram positive septate branching filaments with typical tram track appearance suggestive of *Dermatophilus congolensis*. Animals responded to oxytetracycline and tylosin combination and supportive therapy.

**Keywords:** Dairy cattle, *Dermatophilus congolensis*, Management.

Dermatophilosis is highly contagious zoonotic skin disease of livestock caused by Gram positive bacteria *Dermatophilus congolensis*, with significant economic losses, especially in tropical regions. The disease affects a wide range of hosts including domestic animals like cattle, buffalo, sheep, goats, and horses as well as wild and aquatic animals. Transmission occurs by direct contact with infected animals, asymptomatic carriers or fomites (Adedeji and Adene, 2017). The disease typically presents in acute or chronic forms and often begins with exudative dermatitis, where fluid leaks from inflamed skin and hardens into scabs, leading to matted hair and crusty scabs (Abdullahi, 2001; Loria *et al.*, 2005). The study aims to evaluate the efficacy of treatment combination of oxytetracycline and tylosin along with topical povidone-iodide.

Two cows and four buffaloes were presented with clinical signs of thick scabs all over the body. Lesions included vesicles, pustules, matting of hair, thick crusts and scabs (Fig 1). There was reduction in milk yield, anorexia and depression in the affected animals. All other vital signs were normal. Sterile skin scabs and swabs from lesions were collected for laboratory examination. The aseptically collected scabs were crushed and softened in sterile distilled water and

smears were prepared on a clean oil-free microscopic slide. The air-dried and heat-fixed smear was then stained with Gram's stain and observed under oil immersion objective of the microscope. The samples were also directly inoculated onto 10% sheep blood agar and Sabourauds dextrose agar. Later, the samples were processed for isolation of *D. congolensis* by modified Haalstra's method (OIE, 2008). The infected scab material was homogenized in sterile Petri dishes with Brain heart infusion (BHI) broth. The suspension was transferred to screw cap vials and incubated for 3 hours at room temperature and then exposed to 5% CO<sub>2</sub> tension for 30 minutes. The motile zoospores at the top layer of the processed sample were transferred on to 10% sheep blood agar using a sterile inoculation loop and incubated at 37 °C under 5% CO<sub>2</sub> tension in a CO<sub>2</sub> incubator for 72 hours. The results were recorded after 72 hours of incubation. Further, few drops of the processed sample from the top most layers were examined by simple Methylene blue stain without heat fixation for the presence of motile zoospores. Biochemical reactions *viz.* Catalase test, IMViC tests, Oxidase test, and sugar fermentation tests were performed following standard procedure described by Babul *et al.* (2010).

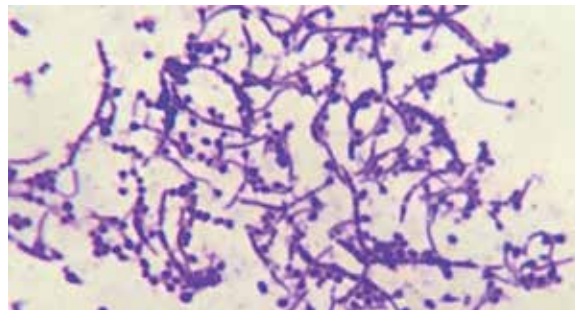
---

\*Corresponding author: chaitanya.yalavarthi@gmail.com.





**Fig 1: Papules and scabs all over body**



**Fig 2: Gram's stain- Filaments showing typical 'tram-track' appearance fragmenting into cocci.**

In the present study, dermatophilosis was observed in two cows and four buffaloes. All animals had vesicles, pustules, matting of hair, thick crusts and scabs all over body. Similar observations were made by Tresamol and Saseendranath (2015). *Dermatophilus spp.* primarily infects epidermis layer only with occasional extension into the dermis. Scabs characteristically comprises alternating layers of parakeratotic keratinocytes invaded with branching bacterial filaments and infiltrates of neutrophils in serous exudate. The observation of distinctive ladder pattern of *Dermatophilus congolensis* in stained smears remains a low-cost yet effective diagnostic method. The hot and humid climate, persistently moist conditions, presence of biting flies, ticks and immunosuppression due to stress associated with pregnancy and lactation were implicated as key predisposing factors for the increased incidence of dermatophilosis among dairy cattle (Tresamol and Saseendranath, 2015). Stained smears revealed spherical or ovoid spore like structures. Gram stained smears of swabs inoculated directly on 10% sheep blood agar revealed presence of non hemolytic *Staphylococcus spp.* Well defined actively motile characteristic zoospores were observed in the scab material processed by Haalstra's method. Upon further inoculation on 10% blood agar, gram-positive coccoid

structures with branching, septate, and filamentous appearance characteristic of *Dermatophilus congolensis* were identified (Fig.2). In certain cases, the bacterial filaments divided into two to six rows of cocci, creating the classic tram-track appearance. On biochemical examination, the isolates were found positive for catalase, oxidase and citrate utilization tests. It ferments glucose and produced acid without gas (OIE, 2008). The scab samples were tested negative for parasites and fungi.

In the present study, all the animals were treated with a single intramuscular dose of long-acting oxytetracycline (20 mg/kg body weight), along with tylosin (15 mg/kg for five days) and antihistamines. Topical povidone-iodine was applied directly to the lesions to promote disinfection and aid in the healing process. Signs of healing began within five days, with complete recovery observed within few days in all cases. Similar treatment protocol was practiced by Aydogdu et al. (2021) with uneventful recovery in goats.

As dermatophilosis is a zoonotic disease, it was advised to handle the affected animals with gloves and thorough handwashing with antibacterial soap. History of high humidity and temperature in this region delays wound healing which might be the major predisposing

factor in the present study. Therefore, regular control of ectoparasites, early diagnosis, isolation and treatment of infected animals as well as culling of chronically infected animals that do not respond to treatment are recommended as measures for the prevention and control of the disease in dairy cattle.

## References

- Abdullahi. U.S. 2001. Chemotherapeutic and chemo prophylactic control of bovine dermatophilosis. *PhD Thesis*, Ahmadu Bello University, Zaria, Nigeria. pp. 66-68.
- Adedeji.O.A. and Adene. I. 2017. Streptothricosis (Dermatophilosis) infection in cattle. *IOSR J. of Agri. Vet. Sci.*, **10(8)**:41-43.
- Aydogdu. U., Baydar. E, Usta. M., Dokuzeylul. B., Karaman. M. and Ilhan. Z. 2021. Treatment of dermatophilosis with oxytetracycline and tylosin combination in Saanen goat kids. *Ankara Univ Vet Fak Derg*, **68**: 1-5.
- Babul .D.N., Shamim. A., Siddiqur Rahman and Fazlul Huque. A.K.M. 2010. Prevalence and Therapeutic Management of Bovine Dermatophilosis. *Bangladesh Res. Publications J.*, **4(3)**:198-207.
- Loria. G.R., Babera Ela, Monteverde. V, Piraino. C. and Caracappa. S. 2005. Dermatophilosis in goats in Silicy. *Vet. Rec.*, **156**: 179-222.
- OIE (Office of International des Epizootics). 2008. Dermatophilosis: A Manual of Diagnostic tests for Terrestrial Animals. 5<sup>th</sup> ed. Office of International des Epizootics, Paris.
- Tresamol. P.V. and Saseendranath. M.R. 2015. Diagnosis of dermatophilosis in dairy cattle in Kerala, India. *Indian J. Anim. Res.*, **49(5)**: 709-712.

## Successful Management of Haemoglobinuria caused by Babesiosis in a Crossbred cow

K. Karthika\*, S. Yogeshpriya, A. Lakshmikantan, P. Ajay and N. Premalatha

Department of Veterinary Medicine, Veterinary College and Research Institute, Orathanadu, Thanjavur – 614 625. Tamil Nadu Veterinary and Animal Sciences University, Tamil Nadu

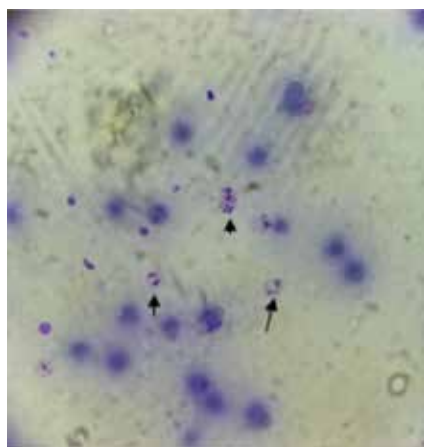
### Abstract

A five year old pregnant cross-bred HF cow was reported with the history of anorexia, coffee coloured urine, absence of rumination for a period of three days. Congested conjunctival mucous membrane, enlarged lymph nodes, elevated heart rate and pulse rate were noticed. On auscultation, heart sound was heard over extended area. Blood smear examination showed piroplasms in RBC. Haematological and serum biochemical analysis revealed anemia, hyperbilirubinemia and moderate elevation of BUN, AST and hypoproteinaemia. Diagnosis was made based on characteristic clinical signs, blood smear and haemato-biochemical alterations. Treatment with diminazene aceturate (@3.5mg/kg b.wt deep I.M) was given. Other treatment included oxytetracycline (@ 10 mg /kg b.wt I.V) along with supportives per os for 5 days. Animal recovered uneventfully.

**Keywords:** Haemoglobinuria, anemia, Piroplasms

Haemoglobinuria may be apparent as reddish urine when marked intravascular haemolysis has occurred and subsequently exceeded the renal threshold for haemoglobin. Water intoxication in calves, onion and rye grass toxicity, bacillary haemoglobinuria caused by *Clostridium haemolyticum*, leptospirosis in calves, babesiosis, and postparturient haemoglobinuria may cause obvious haemoglobinuria. Several plant toxins and

heavy metal exposures can also lead to hemoglobinuria. Bovine babesiosis caused by intraerythrocytic haemoprotezoa. Bovine babesiosis is generally caused by *Babesia bovis*, *B. bigemina* and *B. divergens*. Clinically, disease has been characterized by anaemia, fever, haemoglobinuria, and death in many cases [Sharma *et al.*, 2013]. This article describes successful treatment of haemoglobinuria in a cattle with babesiosis.



**Babesia piroplasm noticed in RBC**



**Coffee coloured urine**

A five year old pregnant cross-bred HF cow was presented to Veterinary Clinical Complex, Veterinary College and Research Institute, Orathanadu with the history of anorexia, coffee coloured urine, absence of rumination for a period of three days. On physical

examination congestion of conjunctival mucous membrane, pallor vulval mucous membrane, palpable lymph nodes, elevation of heart rate and pulse rate were noticed. On auscultation, heart sound was heard over extended area. Dung examination was found negative for endoparasites and blood smear examination showed piroplasms in RBC. Anaemia hypoproteinaemia,

\*Corresponding author : karthiga1988.6@gmail.com

hyperbilirubinemia and moderate elevation of BUN, and AST were noticed. Diagnosis was made based on characteristic clinical signs, blood smear and haemato-biochemical alterations.

Animal was treated with Diminazene aceturate (@3.5mg/kg b.wt deep I.M). Other supportive treatment included dextrose normal saline (@10ml/kg body wt, IV), oxytetracycline (@ 10 mg /kg b.wt I.V) along with liver and haematinics supportives orally for five days. Animal had uneventful recovery following therapy. Diminazene aceturate is the most used anti-trypanosomal agent [Peregrine, 1994] used in the treatment of bovine babesiosis. Diminazene aceturate is effective against *B. bigemina*, [De Vos, 1979] but less effective against *B. bovis* and *B. divergens* [Kuttler, 1981]. Babesiosis is a common cause of haemoglobinuria in cattle, particularly in regions with high tick burdens. The disease's rapid progression and the potential for severe anaemia necessitate early and aggressive intervention. In this

case, prompt diagnosis through blood smear microscopy allowed for immediate treatment, significantly improving the cow's prognosis.

### References

- De Vos, A. J., Epidemiology and control of bovine babesiosis in South Africa (1979). *Journal of the South African Veterinary Association.*; **50**: 357–362.
- Kuttler, K.L., In *Babesiosis*. Ristic, M.; Keire, J.P.(1981) Eds.; Academic Press: New York.; pp.25-63.
- Peregrine, A.S., Chemotherapy and delivery systems: Haemoparasites. (1994). *Vet Parasitol.*; **54**(1-3): 223-248.
- Sharma, A., Singla. L.D., Tuli. A., Kaur. P., Batth, B.K., Javed. M. and Juyal. P.D. (2013). Molecular prevalence of *Babesia bigemina* and *Trypanosoma evansi* in dairy animals from Punjab, India, by duplex PCR: A step forward to the detection and management of concurrent latent infections. *BioMed. Res. Int.* Available from: <http://www.dx.doi.org/10.1155/2013/893862>.

## Diagnosis and management of cystic calculi in a pug

Alok Kumar Chaudhary<sup>1</sup> Anuradha Nema,<sup>2</sup> Shubhangi Choudhary<sup>3</sup>, Nisha Chaudhary<sup>4</sup> and Mukesh Shrivastva<sup>4</sup>

Department of Veterinary Medicine, DUVASU, Mathura

<sup>1</sup>Assistant Professor and Corresponding author:

<sup>2</sup>Post graduate scholar of Department of Veterinary Surgery and Radiology

<sup>3,5,6</sup>Post graduate scholar of Department of Veterinary Medicine DUVASU, Mathura

<sup>4</sup>Associate Professor, Department of Veterinary Medicine, DUVASU, Mathura

### Abstract

Five-year-old male pug dog with a month-long history of dribbling of urine, anorexia, dehydration, and abdominal pain was comprehensively examined. Radiography and abdominal ultrasonography, identified condition as urinary bladder calculi. Urine analysis suggested urolith type and bacterial infection involvement. A large struvite calculus was removed from the bladder through cystotomy. The dog was placed on a modified diet and the dog had uneventful recovery with no recurrence in 3 months period.

**Keywords:** Cystotomy, Radiography, Struvite, Ultrasonography

Canine Urolithiasis is a commonly encountered condition in canine practice. Among all types of uroliths, struvite (magnesium ammonium phosphate) urolith is one of the most frequently reported canine urolith followed by calcium oxalate (Kopecny *et al.*, 2021). The present presents successful management of struvite cystic calculi in a pug.

A five-year-old intact male pug experiencing urinary incontinence, haematuria, abnormal urination, and restlessness was presented at Kothari Veterinary Hospital, DUVASU, Mathura. Clinical, haematobiochemical, radiographic, ultrasonographic examinations and urinalysis were carried out. Clinical examination revealed elevated heart rate (140 beats per minute), an increased rectal temperature (105°F), and severe dehydration. Increased haematocrit and leukocytosis with neutrophilia was appreciated. Radiography confirmed the presence of radiopaque

structures in the urinary bladder (Fig. 1). Ultrasonography revealed a large hyperechoic urolith with an acoustic shadow (Fig.2). Urinalysis revealed numerous coffin-shaped struvite uroliths (Fig.4), leukocytes, blood, proteinuria, with a positive urine culture for *Staphylococcus spp.* infection (Fig. 5).

Pre-operative tramadol (@ 2 mg/kg slow IV) and ceftriaxone (@ 25mg/kg IV) were administered. Dog was premedicated with atropine sulphate (@ 0.04mg/kg I/M) and sedated with xylazine hydrochloride (@ 1mg/kg intramuscularly). Anaesthesia was induced using Ketamine (@ 5mg/kg intravenously) with diazepam (@ 0.25 mg/kg ) and maintained with isoflurane (at 1.5-2.5%). The surgical site was aseptically prepared, cystotomy was done as per standard procedure and a large calculus was removed. Dog was administered with ceftriazone and pantapazole for 7 days.

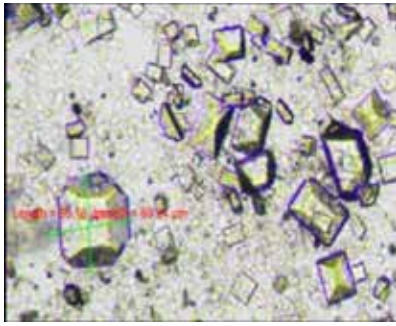


**Fig 1: Radiograph: calculi**



**Fig. 2: Ultrasonogram: hyperechoic calculi**

\*Corresponding author : drvetalok@gmail.com



Struvite crystals- (40x)

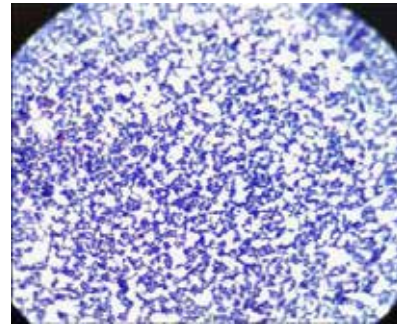
Fig. 5: Gram+ve cocci *Staphylococcus spp.*

Fig. 6: Urinary calculi retrieved from urinary bladder

Table 1: Haemato-biochemistry of the dog with cystic calculi

Sl.No	Parameters	Before treatment	After treatment
1.	Hb (gm%)	10.7	12
2.	RBC x 10 <sup>6</sup> /cm <sup>3</sup>	3.68	4.12
3.	WBC cells/cm <sup>3</sup>	15800	8300
4.	Polymorphs %	85	79
5.	Lymphocytes %	13	18
6.	Eosinophils %	01	01
7.	Monocytes %	01	01
8.	Basophils %	-	01
9.	Total Protein (g/dl)	5.8	6.5
10.	Albumin (g/dl)	3.8	4.2
11.	Ca/P ratio	2: 1.3	2:1
12.	BUN (mg)	90	22
13.	S. Creatinine(mg)	0.8	0.9
14.	ALT (U/L)	28	30
15.	AST(U/ L)	25	32

#### Urine analysis

a	Leucocytes cells/ $\mu$ l	175	110	i	Colour	Red	Clear
b	Protein g/dl	3.0	1.0	ii	RBC		Positive -ve
c	pH	7.6	5.5	iii	Gram staining		Positive -ve
d	Specific Gravity	1.015	1.09	iv	<i>Staphy. spp.</i>		Positive -ve

Canine urolithiasis can be formed by multiple physiological and pathological processes (Osborne *et al.*, 1999). Most of the canine uroliths are composed of triple phosphate such as magnesium ammonium phosphate hexahydrate and rarely with calcium carbonate. Bacterial infection itself increases the

organic debris which serve as nidus for crystallization (Osborne *et al.*, 1999). In the present case, urinalysis revealed morphological characteristics of struvite calculi. Struvite are formed due to gram positive urease producing bacteria *Staphylococcus spp.* that causes recurrent cystitis. Increased total leukocyte count and

increased urinary bladder wall thickness in sonography are also suggestive of chronic cystitis. Post-surgery a balanced diet and high-water intake is important for prevention of calculi. Additionally, to modify urine pH, powder ammonium chloride @ 200 mg orally once a day for 3 days was introduced. A urinary tract protectant, Syrup- Neeri KFT, was prescribed @ 5 ml BID for 10 days. To provide antioxidant support, Tab Celin 500 mg OD along with Tab Vit. A 50000 IU OD was given for 10 days along with dietary modification.

## References

- Kopecny L., Palm C., Segev G.(2021). Urolithiasis in dogs: Evaluation of trends in urolith composition and risk factors. *Journal of Veterinary Internal Medicine.*, 35(3): 1406-1415.
- Osborne, C.A., Lulich, J..P., Polzin D.J. and Allen TA.1999. Medical dissolution and prevention of canine struvite urolithiasis: Twenty years of experience. *Vet. Clinics North Am. - Small Anim. Pract.*, 29(1): 73-111.



## Pericardial lymphoma secondary to cutaneous Lymphoma in a Labrador Retriever

K. S. Saikrishna\*, Nasreen. A, Aishwarya Mohan, K. Rajesh and V. Vaikunta Rao  
Department of Veterinary Clinical Complex, College of Veterinary Science, Tirupati

### Abstract

Lymphoma is a commonly reported neoplasia of the dogs with multicentric form being the more often recorded. The present case report describes the findings in a labrador retriever with cutaneous lymphoma leading to metastasis in pericardium and further causing cardiac tamponade. An 8-year-old labrador retriever was presented with chronic cutaneous lesions and recent development of dyspnoea at rest and unable to sleep. Detailed clinical evaluation revealed muffled cardiac sounds and peripheral lymphadenopathy. Echocardiography revealed diastolic function with significant pericardial effusion impairing diastolic filling. Cytological evaluation of pericardial effusion as well skin impression revealed lymphoblasts with mitotic figures favouring a diagnosis of lymphoma. Owing to poor prognosis and refusal of owner for chemotherapy, treatment was conservatively initiated on Amoxicillin-clavulanic acid, frusemide, Benzapril Hydrochloride and pantoprazole for 5 days.

**Keywords:** Canine Cutaneous Lymphoma, Pericardial lymphoma, Pericardial tamponade

Lymphoma is one of the commonly reported neoplastic disease of dogs with an estimated incidence of upto 20 cases per 100,000 dogs (Merlo *et al.* 2008). Canine lymphoma share many clinical and therapeutic similarities with human non Hodgkin's lymphoma including a rising incidence rate, a parallel in clinical presentation and response to treatments (Zandvliet, 2016). Multicentric lymphoma is the most common form of the disease in dogs constituting about 75% of the cases presenting wide spread involvement of lymphnodes (Ponce *et al.*, 2010; Vezzali *et al.*, 2010).

Canine cutaneous lymphoma (CCL), on the other hand is a rarer form of lymphoma contributing about 1% of the skin tumors (Goldschmidt and Shofer, 1992). This form of lymphoma typically originates in the skin and may metastasize to the lymph nodes, lungs, or bone (Watton *et al.*, 2021), but pericardial involvement secondary to CCL is exceedingly rare and not previously well-documented. This report details a rare case of pericardial lymphoma secondary to cutaneous lymphoma in an 8-year-old Labrador Retriever,.



**Fig. 1:** Dog in lateral recumbency



**Fig. 2:** Ocular lesion with chemosis



**Fig. 3:** Cutaneous lesions

\*Corresponding author : vetdoc33@gmail.com

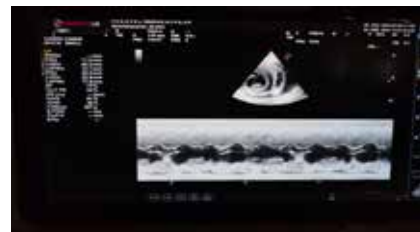


Eight year old male Labrador retriever weighing 46 kg was presented to Veterinary Clinical Complex, College of Veterinary Science, Tirupati in lateral recumbency. The dog exhibited the signs of respiratory distress with dyspnea at rest, erythema, hyperpigmentation and swelling in the left eye along with oozing cutaneous lesions with ulceration, lichenification and alopecia. The pet had a history of being treated for dermatological issues with various medications, including clindamycin, ivermectin, and a Bravecto tablet. However, the animal's condition worsened, prompting further evaluation. Upon clinical examination the dog appeared obtunded and recumbent with a rectal temperature of 101.5°F, congested conjunctival mucus membrane and enlargement of peripheral lymph nodes. Auscultation revealed muffled heart sounds with tachycardia and dyspnoea. Whole blood samples were collected for a complete hematological evaluation, and diagnostic cytology was performed via cutaneous impression smears as well as a fine-needle aspiration cytology (FNAC) of the popliteal lymph node. Thoracic radiography and echocardiography were also performed.

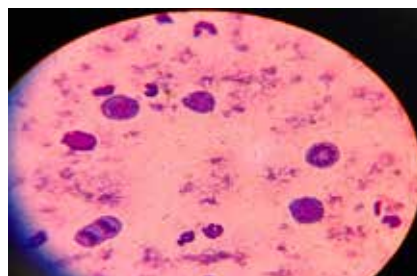
Haematology revealed anemia (Hb 8.8 g% ; RBC of 3.1 million/ $\mu$ l), severe leukocytosis (31,200/ $\mu$ l), with neutrophilia (84%). Lateral thoracic radiograph revealed globoid appearance of heart with a vertebral heart score of 12. There was increased intercostal space occupancy, absence of sternal contact of the heart, and an elevated carina toward the thoracic spine, suggesting an enlarged pericardium or mass effect. Lateral abdominal radiograph revealed cranially displaced spleen with round edges and free fluid in the cranioventral abdomen suggesting ascites. Presence of pericardial effusion with cardiac tamponade and severe left ventricular hypertrophy were noticed (fig. 4 & 5) in echocardiography. The ejection fraction (EF), fractional shortening (FS) and the left atrium/ aortic ratio (LA/Ao) were 75 %, 43% and 1.26 respectively. Ratio of mitral valve E wave and A wave (E/A) was 2.04 indicative of diastolic dysfunction. Abdominal ultrasound revealed normal spleen and liver parenchyma with distended intrahepatic veins and presence of mild ascitic fluid.



**Fig. 4: Right Parasternal long axis view showing thickened left ventricle wall and pericardial effusion**



**Fig. 5: M mode measurement of left ventricle - right parasternal short axis view. Pericardial effusion is visible**



**Fig. 6: Pericardial effusion with polymorphism and mitotic figures**

Pericardiocentesis was done and pericardial effusion cytology revealed high cellularity with discrete cell population showing polymorphism and mitotic figures (fig.6). Cutaneous impression smear cytology revealed lymphoblasts with mitotic figures. Both results were suggestive of lymphoproliferative

disease favouring lymphoma. Treatment starts with Amoxicillin-clavulanic acid 375mg (1  $\frac{3}{4}$ - 0 - 1  $\frac{3}{4}$  ), frusemide 80mg (2-0-2), Benzapril Hydrochloride 10 mg (1-0-0) and pantoprazole 40mg (1- 0 - 0) for 5 days. The pet parent opted not to pursue chemotherapy, considering the advanced and deteriorated condition

of the pet. The focus remained on supportive care and palliation to manage the pet's symptoms and maintain comfort during the final stages of the disease.

Canine cutaneous lymphoma is a rare form of lymphoma with poor prognosis and survival times ranging from few months to years. Pericardial effusion is commonly recorded finding in cardiac tumors like haemangiosarcoma, chemodactoma and mesothelioma but is rare in dogs with cardiac lymphoma (1.2%) (MacGregor *et al.*, 2005). In cases involving cardiac lymphoma, median survival time (MST) is drastically reduced, with an average MST of just 157 days, especially when complicated by pericardial effusion and cardiac tamponade (Treggiari *et al.*, 2017). Chemotherapy remains the mainstay in the treatment of canine lymphoma, including both cutaneous and cardiac forms. Lomustine (CCNU) has been studied for its efficacy in treating canine cutaneous epitheliotropic lymphomas and cardiac lymphoma, yielding variable remission rates. The present case highlights the rarity of pericardial lymphoma secondary to cutaneous lymphoma in dogs and diagnostic challenges at field level in recognizing this in earlier stage.

## References

- Goldschmidt MH and Shofer FS . (1992) In. Skin Tumors of the Dog and Cat ., Oxford, Pergamon Press:pp. 252 – 264.
- MacGregor, J.M., Faria, M.L., Moore, A.S., Tobias, A.H., Brown, D.J. and de Morais, H.S. (2005). Cardiac lymphoma and pericardial effusion in dogs: 12 cases (1994–2004). *J. Am. Vet. Med. Assoc.*, **227(9)**:1449-1453.
- Merlo D.F., Rossi L., Pellegrino C., Ceppi M., Cardellino U., Capurro C., Ratto A., Sambucco P.L., Sestito V., Tanara G. (2008) Cancer Incidence in Pet Dogs: Findings of the Animal Tumor Registry of Genoa, Italy. *J. Vet. Intern. Med.*, **22**:976–984.
- Ponce F, Marchal T, Magnol JP, Turinelli V, Ledieu D, Bonnefont C, Pastor M, Delignette ML, Fournel-Fleury C. (2010). Amorphological study of 608 cases of canine malignant lymphoma in France with a focus on comparative similarities between canine and human lymphoma morphology. *Vet. Pathol.*, **47**:414-433
- Treggiari, E., Pedro, B., Dukes McEwan, J., Gelzer, A.R. and Blackwood, L. (2017). A descriptive review of cardiac tumours in dogs and cats. *Vet. Comp. Oncol.* **15(2)**:273-288.
- Vezzali E, Parodi AL, Marcato PS, Bettini G. (2010). Histopathologic classification of 171 cases of canine and feline nonhodgkin lymphoma according to the WHO. *Vet. Comp. Oncol.*, **8**:38-49.
- Watton, T.C., Purzycka, K. and Fitzgerald, E., (2021). Computed tomographic findings and clinical features in dogs with canine cutaneous lymphoma: 10 cases (2007–2018). *J. Am. Vet. Med. Assoc.*, **259(12)**:1433-1440.
- Zandvliet, M. (2016). Canine lymphoma: a review. *Vet. Quarterly*, **36(2)**:76-104.

## Detection of *Trypanosoma* in the cerebrospinal fluid of a dog exhibiting neurological manifestations

Sirigireddy Sivajothi, Bhavanam Sudhakara Reddy and Gollapalli Nagarjuna

Department of Veterinary Parasitology

Department of Veterinary Medicine

College of Veterinary Science, Proddatur-516360

Sri Venkateswara Veterinary University, Andhra Pradesh, India.

### Abstract

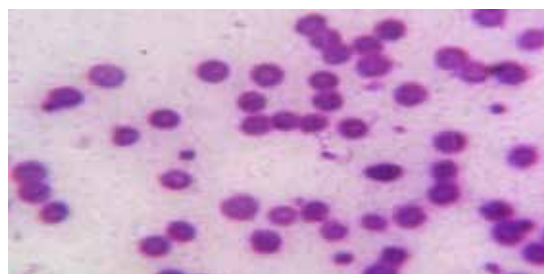
A four-year-old Spitz was brought to the clinic with a history of dullness and chronic emaciation. Pale mucous membranes, corneal opacity, hypothermia, irregular heart rate, bounding pulse and poor response to external stimuli were observed. Laboratory tests revealed anaemia, decreased serum albumin, and glucose levels. *Trypanosoma evansi* organisms were detected in blood smears and cerebrospinal fluid. The cerebrospinal fluid analysis showed an increased cell count, and reduced glucose levels. The dog was treated with diminazene aceturate but unfortunately died on the fifth day of therapy.

**Keywords:** *Trypanosoma*, dog, cerebrospinal fluid, nervous signs

Trypanosomosis caused by the flagellate protozoan *Trypanosoma evansi*, is a disease transmitted to dogs through biting flies, vampire bats, oral ingestion of infected animal meat, and blood transfusions (Sivajothi *et al.*, 2015). Infected dogs can exhibit a wide range of clinical signs including anemia, lethargy, fever, difficulty swallowing, keratitis, uveitis, blepharoconjunctivitis, corneal opacity, and neurological manifestations such as ataxia, circling, head pressing, head tilt, hyperexcitability, nystagmus, and proprioceptive deficits (Defontis *et al.*, 2012). This paper records the detection of *Trypanosoma sp.* organism in the cerebrospinal fluid of the infected dog.

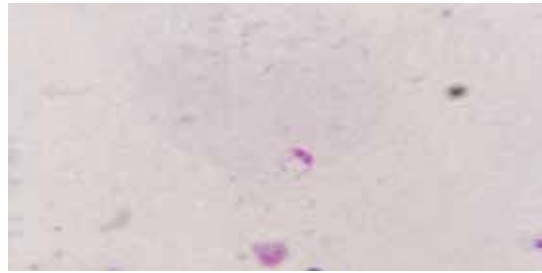
A four-year-old male Indian Spitz was brought to the clinic with history of dullness, progressive emaciation and corneal opacity for a period of ten days. Clinical examination revealed decreased rectal temperature, irregular heart rate, bounding pulse,

pale mucous membranes, corneal opacity, bilateral lacrimation, swelling of the hind limbs, ataxia and disorientation. Blood and cerebrospinal fluid were collected for analysis. Haematological findings showed anaemia (haemoglobin : 9.08 g/dL, total erythrocyte :  $4.66 \times 10^6/\mu\text{L}$ , packed cell volume : 29.2 %), higher total leucocyte count (18,350/ $\mu\text{L}$  with neutrophils: 75%, eosinophils : 6%, : 16% and monocytes : 3%). Serum showed hypoalbuminemia (glucose :68.5 mg/dL, total protein: 6.02 mg/dL, albumin: 1.66 mg/dL, blood urea nitrogen: 89 mg/dL and creatinine: .43 mg/dL). Microscopic examination of a Giemsa-stained blood smear showed the presence of *Trypanosoma sp.*organisms between the red blood cells (Fig.1). Cerebrospinal fluid examination revealed viscous, light turbid coloured fluid with glucose of 49 mg/dL and total cell count of 38/cumm. Microscopic examination of the stained smear of cerebrospinal fluid showed the presence of *Trypanosoma sp.* trypomastigotes (Fig.2).



**Fig.1: Microscopic examination of stained blood smears - Presence of *Trypanosoma evansi* organisms (1000X)**

\*Corresponding author : bhavanamvet@gmail.com



**Fig.2: Microscopic examination of stained CSF smears - Presence of *Trypanosoma evansi* organisms (1000X)**

The dog was treated with three doses of intramuscular diminazene aceturate (@ 3.5 mg/kg body weight, administered at 24-hour intervals), along with dextrose normal saline (@ 20 ml/kg body weight IV), amoxicillin and cloxacillin (@ 10 mg/kg body weight twice daily IV), and Imferon (@50 mg). Additionally, the dog received daily iron supplementation with Dexorange syrup (@ 10 grams per day). Despite the treatment, the dog died on the fifth day of presentation. The haematological and biochemical findings in this study, including anemia and hypoglycemia, are consistent with previous reports (Reddy *et al.*, 2016). Diminazene aceturate is commonly used to treat trypanosomiasis in animals. However, a single dose is not effective for horses, mules, or dogs, as the drug does not cross the blood-brain barrier and may be insufficient to control *T. evansi* infection. Recently, *T. evansi* strains resistant to diminazene aceturate have been isolated from buffalo (Sivajothi and Reddy, 2016). Underscoring the importance of using multiple doses of diminazene aceturate, in the present study, it was given three doses (Howe *et al.*, 2011). Despite advancements in treatment, eliminating *T. evansi* from the central nervous system remains a challenge, as most trypanocidal drugs cannot effectively cross the blood-brain barrier.

In the present study, Cerebrospinal fluid analysis revealed the presence of *Trypanosoma sp.* organisms with low glucose levels with high cell count in a dog with neurological signs.

#### **Acknowledgement**

The authors are thankful to the authorities of Sri Venkateswara Veterinary University, Tirupati for providing the facilities to carry out the work.

#### **References**

- Baldissera, M.D., Souza, C.F. and Boligon, A.A. 2017. Solving the challenge of the blood–brain barrier to treat infections caused by *Trypanosoma evansi*: evaluation of nerolidol-loaded nanospheres in mice. *Parasitology*.**144(11)**:1543-1550.
- Defontis, M., Richartz, J., Engelmann, N., Bauer, C., Schwierk, V.M., Büscher, P and Moritz A. 2012. Canine *Trypanosoma evansi* infection introduced into Germany. *Vet. Clin. Pathol.*, **41(3)**:369-74.
- Howe, S., Da Silva, A.S., Athayde, C.L., Costa, M.M. and Corrêa M.M.B. 2011. A New Therapeutic Protocol for Dogs Infected with *Trypanosoma evansi*. *Acta Scientiae Veterinariae*. **39(3)**: 988.
- Lampe, R., Foss, K.D., Vitale, S., Hague, D.W and Barger, A.M. 2020. Comparison of cerebellomedullary and lumbar cerebrospinal fluid analysis in dogs with neurological disease. *J. Vet Intern. Med.*, **34**:838–843.
- Reddy, B.S., Kumari, K.N., Sivajothi, S. and Rayulu, V.C. 2016. Haemato-biochemical and thyroxin status in *Trypanosoma evansi* infected dogs. *J. Parasit.Dis.*, **40**: 491-495.
- Sivajothi, S., Rayulu, V.C. and Reddy, B.S. 2015. Rapid serodiagnosis of *Trypanosoma evansi* in dogs by colloidal dye immunobinding assay. *Comp .Clin. Pathol.*, **24 (6)**: 1497-1500.
- Sivajothi, S. and Reddy, B.S. 2016. Polypeptide profiles of diminazene aceturate resistant *Trypanosoma evansi* organisms isolated from a buffalo. *J. Vet. Sci. Med.*, **4(1)**: 1.
- Sivajothi, S. and Reddy, B.S. 2018. *Trypanosoma evansi* infection in a cat -a rare case. *Comp .Clin. Pathol.*, **27**: 115-116.

## Ultrasonographic diagnosis of bilateral renal carcinoma in a dog

K. Swetha, K. Jeyaraja, N. Pazhanivel, S. Kavitha, R. Ramprabhu

Department of Veterinary Clinical Medicine  
Madras Veterinary College, Chennai- 600 007

### Abstract

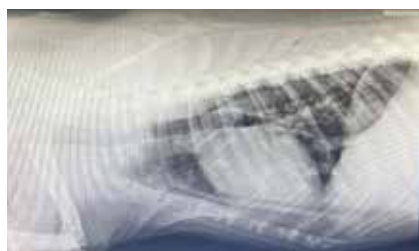
Ten-year-old male Labrador dog was presented with the history of anorexia, weight loss, haematuria for a period of five days. Abdominal ultrasonography revealed solitary mixed echogenicity mass at caudal pole of both kidneys. Urinalysis revealed proteinuria, and leucocytosis. It was confirmed as renal carcinoma through fine needle aspiration cytology.

**Keywords:** Carcinoma, renal, haematuria

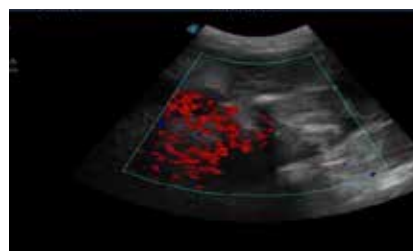
Tumors in dogs can stem from various parts of the kidney, including the renal epithelium, renal mesenchyme, or from embryonal tissue with mixed origins. Primary renal tumors accounts for an estimated 0.3 to 1.5% of all neoplasm in dogs [Meuten, 2002]. Renal carcinoma stands out as the primary malignant tumor affecting the kidney in dogs often spreading to the lungs and lymph nodes, and reported metastatic rates in renal neoplasia cases was approximately 60–70% in dogs [Klein *et al.*, 1988]. Despite their significance, very limited documentation exists regarding renal carcinoma in dogs. The present article reports the diagnosis of bilateral renal carcinoma in a dog.

An ten year old male uncastrated Labrador dog weighing around 29 kg was brought to Madras Veterinary College Teaching Hospital for anorexia, weight loss, and haematuria for a period of five days. Clinical examination revealed dullness and pale mucous membranes. Rectal temperature (101.9F), heart rate (98/min) and respiratory rate (32/min) were within normal limits. Abdominal palpation revealed evidence of pain. Haematological examination revealed haemoglobin of

9.6 g/dL, packed cell volume 22.2%, total erythrocyte count  $4.04 \times 10^6 / \mu\text{L}$ , total leucocyte count  $33.60 \times 10^3 / \mu\text{L}$ , with 80% neutrophils, 15% lymphocytes, 1% eosinophils and 4% monocytes. Serum biochemistry revealed total protein of 5.70g/dL, albumin 2.1g/dL, alanine transaminase 45 IU/L, bilirubin 0.52 mg/dL, BUN 38.18mg/dL, and creatinine 4.55mg/dL. A plain lateral thoracic radiograph displayed multiple circumscribed nodules in the lungs (Fig.1). Abdominal ultrasonography revealed a solitary mass in the renal cortex of left kidney (11.7 cm in length, and 7.8cm in height), and in right kidney (measured around 9.3cm in length, 6.3 cm in height; Fig:2- 4). Urinalysis revealed red tinged urine with specific gravity of 1.020, and a pH of 8.5, with proteinuria and presence of numerous leucocytes and abnormal cells. Fine needle aspiration cytology revealed neoplastic cells arranged in clusters as well as single cell, the cells were pleomorphic cells and contained pleomorphic nuclei, predominately round to spherical shaped nuclei. Cytoplasm of the cells is granular and vacuolated. One or two area revealed tubular to acinar pattern of cells. (Fig:5,6).

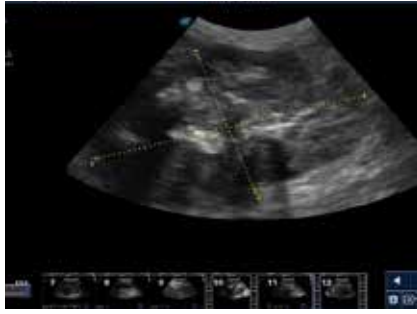


**Figure 1: Multiple circumscribed nodules in the lung**

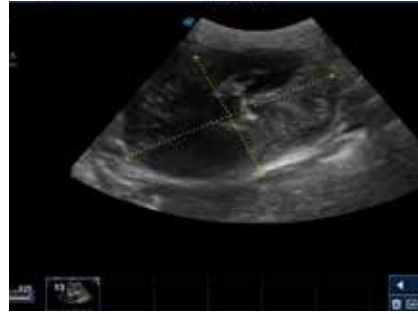


**Figure 2: High vascularity of the renal cortex mass**

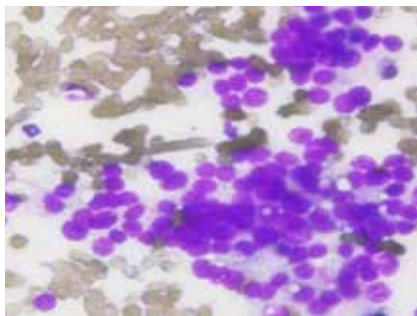




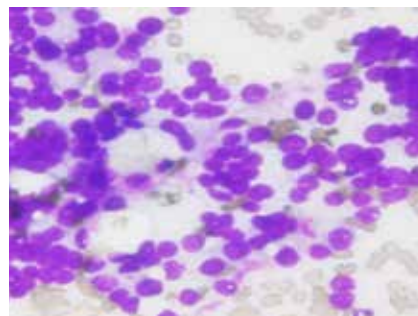
**Figure 3: A solitary mass in the renal cortex of left kidney**



**Figure 4: A solitary mass in the renal cortex of right kidney measured around 9.3cm in length, 6.3 cm in height.**



**Figure 5: Neoplastic cells are arranged in clusters as well as single cell. Neoplastic cells were pleomorphic cells and contained pleomorphic nuclei, predominately round to spherical shaped nuclei.**



**Figure 6: Cytoplasm of the cells is granular and vacuolated. One or two area revealed tubular to acinar pattern of cells.**

The most prevalent primary kidney tumours in animals comprises renal tubular cell carcinoma and nephroblastoma, with non-epithelial tumors like leiomyosarcoma being exceedingly rare but documented in dogs (Sato *et al.*, 2003, and Bennet, 2004). In the present study bilateral renal carcinoma was diagnosed, with predominant presenting complaint of anorexia, weight loss and haematuria for five days, and having circumscribed nodules in the lungs, indicative of potential metastasis. While unilateral neoplasms are typical, bilateral involvement is more common in cases of renal lymphomas and renal tubular cell carcinomas (Knapp, 2001). Klein *et al.* (1988) stated that haematuria was noticed in 32% cases of renal carcinoma. Bryan *et al.* (2006) stated that renal cell carcinoma with widespread metastasis is associated with short survival times, while cases without evidence can have extended survival of up to four years following nephrectomy. As the present case confirmed as bilateral renal carcinoma, surgical excision is not possible, the condition and treatment protocol explained to owner

## References

- Bryan, J.N., Henry, C.J. 2006. Primary renal neoplasia of dogs. *J. Vet. Intern. Med.*, **20**:1155–1160.
- Bennett, F. 2004. Unilateral renal cell carcinoma in a Labrador retriever. *Can. Vet. J.*, **45**: 860-862.
- Klein, M.K., Cockerell G.L., Withrow S.J. 1988. Canine primary renal neoplasms: a retrospective review of 54 cases. *J. Anim. Hosp. Assoc.*, **24**: 443-452.
- Knapp, D.W. 2001. Tumors of the urinary system. In: Withrow SJ, MacEwen EG (ed) *Small animal clinical oncology*. Saunders, Philadelphia, pp 490-499.
- Meuten D.J. 2002. Tumours of the urinary system. In: Meuten DJ, ed. *Tumors in Domestic Animals*. 4th ed. Ames: Iowa State Press pp. 509–546.
- Sato, T, Aoki, K, Shibuya H, Machida T, Watari T. 2003. Leiomyosarcoma of the kidney in a dog. *J. Vet. Med. Assoc.*, **50**: 366-369.

## Salbutamol toxicity in a Golden Retriever dog- A case report

K.S. Saikrishna<sup>1</sup>, K. Jeyaraja<sup>2</sup>, Yamini thakur<sup>3</sup>, V. Arun<sup>4</sup>

<sup>1</sup> Assistant Professor and Head, Dept. of Veterinary Medicine, College of Veterinary Science, Proddatur

<sup>2</sup> Professor, Dept. of Veterinary Clinical Medicine, Madras Veterinary College, Chennai

<sup>3</sup> SKS Veterinary Hospital, Chennai

<sup>4</sup> SKS Veterinary Hospital, Chennai

### Abstract

Salbutamol is a beta2 adrenergic agonist commonly used in human and veterinary practice. Toxicity due to salbutamol is uncommon and if happened its therapeutic management is important to prevent lethal consequences. Three year old Golden retriever was presented to the hospital with accidental consumption of salbutamol tablets. On clinical examination dog was dull, tachycardic and having tachypnoea. Serum biochemical examination revealed severe hypokalemia and sinus tachycardia on electrocardiography. Fluid therapy was initiated along with intravenous potassium and oral beta blocker propranolol. Significant clinical recovery was noticed by 24 hours of therapy.

**Keywords:** Salbutamol, Toxicity, Golden retriever

Salbutamol, a selective beta-2 adrenergic receptor agonist is a bronchodilator commonly used for treating asthma, bronchitis, COPD and related respiratory problems. Toxicity due to salbutamol is rarely reported in veterinary practice. The present article reports the clinical signs, laboratory findings and treatment of salbutamol toxicity in a golden retriever.

### Case history and observations

Three year old Golden retriever was presented to the hospital with the history of consuming few salbutamol

tablets (approx.15 no's). Upon clinical examination, the dog was found to be dull with tachycardia (228 bpm) and tachypnoea (36/min) (Fig.1). Other clinical parameters were found to be within the normal range. Haematology revealed no significant changes, while serum biochemistry revealed potassium (2.1 mmol/L), sodium (134mmol/L) and chloride (93 mmol/L) levels. Sinus tachycardia was noticed on electrocardiographic examination.



**Fig.1** Dog affected with salbutamol toxicity being monitored using vital signs monitor



**Fig.2** Heart rate 117 bpm recorded after 12 hrs of therapy

### Treatment and Discussion

Therapy was initiated with Ringers lactate (@ 10ml/kg IV, slow) and propranolol (@ 0.2 mg/kg orally BID). Continuous rate infusion of potassium was

administered at a dose rate of 0.5 mEq/kg/hour diluted in normal saline. Continuous monitoring was done to check cardiac electrical activity using vital signs monitor. At the time of initiation of therapy the heart rate was 228 and

gradual decline of heart rate was noticed which reached to 117 bpm by 12 hours of therapy (Fig.2). Electrolyte levels reached normal range (serum potassium improved to 4.2 mmol/L, serum sodium 146mmol/L and serum chloride 106mmol/L). The general activity of the pet was improved, all vitals were stable within 24 hours and was discharged from the hospital. Salbutamol is a  $\beta_2$  agonist that triggers the movement of potassium into cells by stimulating endogenous insulin and also by activation of membrane-bound Na/K-ATPase pumps outside the cell membrane, without requiring insulin (Ogrodny *et al.*, 2022). Reduced potassium in the blood suppresses potassium conductance which results in reduction of conduction reserves. Hypokalemia also results in increased intracellular  $\text{Na}^+$  and  $\text{Ca}^{2+}$  through inhibition of  $\text{Na}^+ - \text{K}^+$  ATPase activity. This positive feedback promotes early after depolarisation arrhythmias (EAD), delayed after depolarisation arrhythmias (DAD) and automaticity (Weiss *et al.*, 2017). Dogs affected with salbutamol toxicity commonly exhibit tachycardia, tachypnea, depression and vomiting as reported by Crouchley and Bates (2022). Oral thermal injury due to salbutamol inhaler was also reported in dog which is a rare complication (Mackenzie *et al.*, 2012). In cases

affected with salbutamol toxicity, timely correction of the electrolyte abnormality is crucial as delayed cases with tachycardia and arrhythmias can lead to untoward outcome. Propranolol, a non-selective beta antagonist was orally administered to counteract the beta agonistic action of salbutamol and reducing the tachycardia.

## References

- Crouchley, J. and Bates, N. 2022. Retrospective evaluation of acute salbutamol (albuterol) exposure in dogs: 501 cases. *J. Vet. Emerg. Crit. Care*, **32(4)**:500-506.
- Mackenzie, S.D., Blois, S., Hayes, G. and Vince, A.R., 2012. Oral thermal injury associated with puncture of a salbutamol metered-dose inhaler in a dog. *J. Vet. Emerg. Crit. Care*, **22(4)** : 494-497.
- Ogrodny, A., Jaffey, J.A., Kreisler, R., Acierno, M., Jones, T., Costa, R.S., da Cunha, A. and Westerback, E. 2022. Effect of inhaled albuterol on whole blood potassium concentrations in dogs. *J. Vet. Intern. Med.*, **36(6)**: 2002–2008
- Weiss, J.N., Qu, Z. and Shivkumar, K. 2017. The Electrophysiology of Hypo- and Hyperkalemia. *Circ. Arrhythm. Electrophysiol.*, **10(3)**: 1, 21.



## Prevalence of non-vaccine strains in leptospira affected dogs in Chennai - A Retrospective study

Prabhavathy Harikrishnan\*, G. Vijayakumar<sup>1</sup>, N. Premalatha<sup>2</sup> and S. Kavitha<sup>3</sup>

Department of Clinic, Madras Veterinary College, Chennai-7.

Tamil Nadu Veterinary and Animal Sciences University, Chennai

<sup>1</sup> Professor and Head

<sup>2</sup> Department of Veterinary Preventive Medicine, MVC, Chennai -7

<sup>3</sup> Department of Veterinary Clinical Medicine, MVC, Chennai -7.

### Abstract

The present study was aimed to report the positive prevalence of *Leptospira* strains in and around Chennai. The dogs presented to Madras Veterinary College Teaching Hospital from January 2023 to December 2023 were included for this retrospective study. Overall positive prevalence of canine leptospirosis was 41.17 per cent (42/102) based on microscopic agglutination test (MAT). Canine leptospirosis was found to be higher in the age group of 1 year to 5 years. Positive prevalence was higher in male dogs than female in canine leptospirosis. Leptospirosis strains included in vaccine are *Canicola*, *Pomona*, *Icterohaemorrhagiae* and *Grippotyphosa*. The unvaccinated strains including *Autumnalis*, *Australis*, *ballum* were highly prevalent among dogs and less prevalent strains were *Pyrogenes*, *Javonica* and *Hebdomadis*.

**Keywords:** leptospirosis, Positive prevalence, zoonotic disease, MAT

Leptospirosis is a zoonotic disease caused by pathogenic genus *Leptospira* (Schuller *et al.*, 2015). It is a zoonotic disease and cause globally veterinary and public health problem. *Leptospira* consist of 66 species and includes more than 300 serovars (Schuller *et al.*, 2015). Common serovars affecting dogs includes *canicola*, *icterohaemorrhagiae*, *Pomona*, *Grippotyphosa*, *Bratislava* and *Australis* (Koteeswaran, 2006). Dogs acts as a Sentinel species for the environmental risk to human, hence monitoring Leptospirosis in dogs play the crucial rule to protect the risk of Leptospirosis in human (Koizumi *et al.*, 2013). The purpose of this study was to provide details need to update the vaccine strains to reduce the infection of leptospirosis among the dog population.

Dogs presented to the Madras veterinary College teaching Hospital, Chennai suspected with the clinical symptoms of vomition, fever, oliguria, echhymotic patches with icteric mucous membrane and elevated creatinine level during the period from January 2023 to December 2023 were subjected to retrospective study. The collected data included details of breed, age, sex, vaccination history, haematology, serum biochemistry and MAT results.

Positive prevalence was higher in male dogs than female in canine leptospirosis. Canine leptospirosis was found to be higher in the age group of 1 year to 5 years.

**Table 1: Sex-wise Positive prevalence of Leptospirosis**

Sex	Positive	Positive prevalence (Per centage)
Female	15	35.71
Male	27	64.28

\*Corresponding author : drprabhavet2003@gmail.com

**Table 2: Age-wise Positive Prevalence of Leptospirosis**

Age	Positive	Positive prevalence (Per centage)
0-1 yr	18	42.85
1-5yrs	21	50
>5yrs	3	7.14
Total	42	

**Table 3: Positive prevalence of Leptospira serovar**

S.No	Strains	Total no. of positive	Positive prevalence (Per centage)
1	Autumnalis	12	28.57
2	Australis	23	54.76
3	Ballum	10	23.80
4	Pyrogenes	3	7.1
5	Tarssavi	2	4.7
6	Javanica	2	4.7
7	Hebdomadis	2	4.7

Overall positive prevalence of canine leptospirosis was 41.17 per cent (42/102) based on microscopic agglutination test (MAT). Among 42 positive dogs, the prevalence of Australis, Autumnalis, Ballum and Pyrogenes were 23 (54.76 %), 12 (28.57%), 10 (23.80%) and 3 (7.1 %) respectively. While the prevalence of Tarssovi, Javanica and Hebdomadis were 2 (4.7%) each.

Microscopic agglutination test is the gold standard test for the diagnosis of Leptospirosis. MAT is serovar-specific and a titre of 1:100 and above is considered as positive (OIE, 2004). In this study overall Positive performance of canine Leptospirosis in and around Chennai was 41.17 per cent based on microscopic agglutination test this report was in compared with results of seroprevalence of 36 percent among dogs reported by Senthilkumar *et al.* (2023). Canine leptospirosis positive prevalence was found to be higher in the age group of 1year to 5years (50 per cent ) and greater risks in middle-aged and older dogs (Arent *et al.*, 2013, Senthilkumar *et al.*, 2023). It is due to regular vaccination of puppies, irregular vaccination for adult dogs, senility, poor immune response and in urban areas during rainy season dogs were exposed to stagnant water found to be risk factor ( Senthilkumar *et al.*, 2023).

Male dogs had higher positive prevalence when compared to female. Similar findings were noticed in the studies of Prabhavathy and Cecilia (2018) and might be due to fact that male dogs were more likely to roam and exposed to infection. Balakrishnan *et al.* (2008), Ambily *et al.*(2013) reported that serovars Australis and Autumnalis were found to be more predominant. Dogs acts as a maintenance host for serovar Canicola and Incidental host for other serovars and dogs acts as link between the reservoir of infection in the environment and human being.

### Conclusion

Based on the retrospective study, it was found that Australis and Autumnalis was the predominant serovars in dogs while serovars like Ballum, Pyrogenes, Tarssovi, Javanica and Hebdomadis was the emerging strains. However, the commercial vaccine contains Canicola, icterohaemorrhagiae, Pomona and Grippotyphosa. Hence inclusion of new strains in the vaccine may prevent the infection between dogs and human being.

### Acknowledgement

This work is supported by Tamil Nadu Veterinary and Animal Sciences University, Chennai, India. The authors are thankful to the Director, Directorate of

Clinics, TANUVAS, Chennai and the Dean, Madras Veterinary College, TANUVAS, Chennai for providing data and information details.

## References

- Ambily R., Mini M., Joseph S., Krishna S.V., Abhinai G. 2013. Canine leptospirosis—A seroprevalence study from Kerala, India. *Vet. World.*, **6**:42–44.
- Arent, Z.J., Andrews, S., Adamama-moraitou, K., Gilmore, C., Pardali, D., Ellis, W.A. 2013. Emergence of novel *Leptospira* serovars: A need for adjusting vaccination policies for dogs. *Epidemiology and Infection*, **141**: 1148–1153.
- Balakrishnan, G., Govindarajan, R., Meenambigai, T. V., Jayakumar, V. and Manohar, M. B. 2008. Seroprevalence of animal leptospirosis in certain parts of Tamil Nadu. *Indian Vet. J.*, **85**: 227- 228
- Delaude, A, Rodriguez-Campos, S., Dreyfus, A., Counotte, M.J. and Francey ,T. 2017. Canine leptospirosis in Switzerland- A prospective cross-sectional study examining seroprevalence, risk factors and urinary shedding of pathogenic leptospires. *Prevent Vet Med.*, **141**: 48-60, doi: 10.1016/j.prevetmed.2017.04.008
- Koteeswaran, A. (2006). Seroprevalence of leptospirosis in man and animals in Tamilnadu. *Indian J. Med. Microbiol.*, **24**:329-331.
- Koizumi, N., Muto, M.M., Akachi, S., Okano, S., Yamamoto, S. 2013. Molecular and serological investigation of *Leptospira* and leptospirosis in dogs in Japan. *J Med Microbiol.*, **62(4)**: 630-636, doi: 10.1099/jmm.0.050039-0.
- Office Internationale des Epizootis. 2004. Leptospirosis. In Manual of Diagnostic Tests and Vaccines for Terrestrial Animals. Volume 1. 5th edition. OIE Biological Standards Commission, Paris, France; 2004:316-27
- Prabhavathy, H. and Cecilia Joseph. 2018. A Study on Prevalence of Canine Leptospirosis in Chennai. *Intas Polivet*, **19 (II)**: 393-394.
- Schuller, S., Francey, T., Hartmann, K., Hugonnard, M., Kohn, B., Nally, J.E. and Sykes. J. 2015. European consensus statement on leptospirosis in dogs and cats. *J. Small Anim. Pract.*, **6**:159–179. doi: 10.1111/jsap.12328.
- Senthilkumar, K., Tirumurugaan, K.G. and Ravikumar, G. 2023. Understanding the seroepidemiology of canine leptospirosis in Tamil Nadu: need for inclusion of additional serovars in dog vaccines. *Int J Bio-Resource Stress Manag*, **14(1)**: 75-82, doi: 10.23910/1.2023.3341.

## Diphyllobothriidae Infection in three dogs

Sirigireddy Sivajothi<sup>1</sup>, Bhavanam Sudhakara Reddy<sup>2</sup> and Gungi Saritha<sup>2</sup>

<sup>1</sup>Department of Veterinary Parasitology

<sup>2</sup>Department of Veterinary Medicine

College of Veterinary Science, Proddatur-516360

Sri Venkateswara Veterinary University, Andhra Pradesh, India.

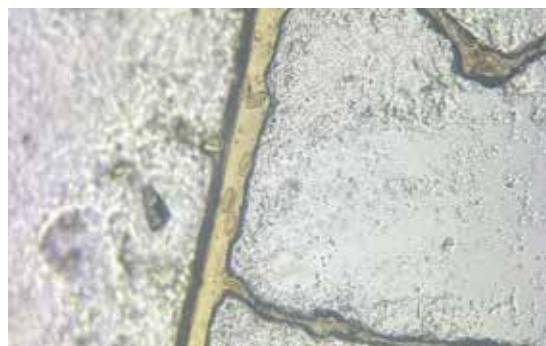
### Abstract

Diphyllobothriosis, a parasitic infection caused by broad or fish tapeworms, has been increasingly observed in non-endemic regions of Andhra Pradesh. Three dogs were identified suffering with diarrhoea, loss of appetite, vomiting, chronic weight loss, and abdominal distention. Microscopic examination of their faeces identified elliptical to oval-shaped, operculated eggs characteristic of the *Diphyllobothriidae* family. Serum biochemistry revealed low cobalamin levels ( $117 \pm 14.29$  ng/L) in these dogs compared. The dogs were treated with praziquantel and all the dogs showed clinical improvement.

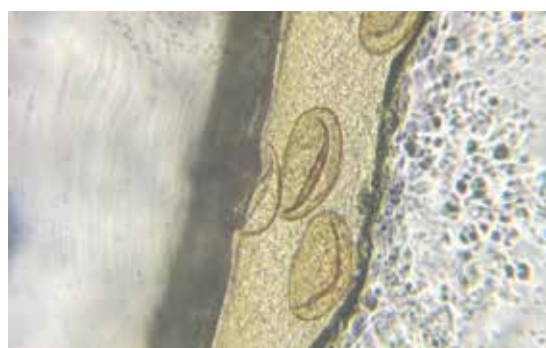
**Keywords:** Diphyllobothriosis, eggs, praziquantel, cobalamin

Diphyllobothriosis is the disease caused by *Diphyllobothrium* species, a parasitic flatworm that infests the small intestine of mammals. In dogs, this condition is relatively rare and typically occurs when they consume raw or undercooked fish or tadpoles carrying the larval plerocercoid stages of the worm (Scholz *et al.*, 2019). Reports of *Diphyllobothriidae* infection in dogs were very limited in the present geographical region. This article documents the occurrence of *Diphyllobothriidae* infection in dogs.

Three dogs were identified suffering with clinical diphyllobothriosis with signs of diarrhoea, loss of appetite, vomiting, chronic weight loss, and abdominal distension. These dogs were reported to feed with non-edible parts of raw fish while processing of fish for human consumption. Physical examination revealed pale mucous membranes and a distended abdomen. Faecal examination revealed eggs with morphological characteristics of the genus *Diphyllobothrium*. Eggs were brown and ovoid, with a smooth thin wall, and possessed an operculum at the narrower end and a minute terminal knob at the opposite end. They were unembryonated eggs containing vitelline cells of vague limits and granular cytoplasm (Fig. 1 and 2). Serum biochemical analysis revealed low cobalamin levels (108, 145, 98 with mean  $\pm$  SE of  $117 \pm 14.29$  ng/L) compared to the apparently healthy dogs ( $380 \pm 50.02$  ng/L).



**Fig.1. Eggs of Diphyllobothriidae (10x)**



**Fig.2. Eggs of Diphyllobothriidae (40x)**

The dogs were treated orally with praziquantel at a dose rate of 7.5 mg/kg body weight and was repeated after 15 days along with supportive and symptomatic therapy. The dogs had uneventful recovery. *Diphyllobothrium spp.* is one of the longest intestinal tapeworms of fish-eating mammals, such as humans, dogs, cats, foxes, and other wild canines. The intestinal

\*Corresponding author : bhavanamvet@gmail.com

worms directly compete with the host for nutrition, resulting in a deficiency of essential nutrients, especially vitamin B<sub>12</sub>. In dogs, this condition is relatively rare and typically occurs when they ingest raw or undercooked fish or tadpoles carrying the larval plerocercoid stages of the worm.

#### **Acknowledgement**

The authors express their gratitude to the authorities of Sri Venkateswara Veterinary University,

Tirupati, for providing the necessary facilities to conduct this research.

#### **References**

- Scholz, T., Kuchta, R. and Brabec, J. 2019. Broad tapeworms (Diphyllobothriidae), parasites of wildlife and humans: Recent progress and future challenges. *Int. J. Parasitol. Parasites Wildl.*, **9**:359-369.

## Chronic Renocardiac Syndrome in a Non-descript dog- A case report

Nagella Naveen<sup>1\*</sup>, C. Pavan Kumar<sup>1</sup>, N. Lakshmi Rani<sup>1</sup>, Y. Chaitanya<sup>1</sup>

<sup>1</sup>Department of Veterinary Medicine, NTR College of Veterinary Science, Gannavaram-521101, Sri Venkateswara Veterinary University, Andhra Pradesh, India.

### Abstract

Ten old male mongrel dog weighing 18 kg was presented in recumbency to Veterinary Clinical Complex of NTR College of Veterinary Science, Gannavaram, with a history of anorexia, polyuria, polydipsia and halitosis. It was evident from the history that the dog was diagnosed to be having kidney dysfunction four months earlier and the owner had discontinued the medication. Clinical examination revealed subnormal temperature, pallor mucous membrane and tachycardia. Haemato-biochemical examination revealed anaemia, elevated creatinine, BUN, potassium and phosphorus levels indicating chronic kidney disease. ECG revealed tachycardia and spiked T waves. Ultrasonographic examination revealed shrunken kidneys, while echocardiography showed left ventricular hypertrophy and thickening of interventricular septum. Based on the diagnostic investigation, the case was diagnosed as chronic renocardiac syndrome. Therapy was initiated with fluid therapy, antibiotics, antiemetics, ACE inhibitors, diuretics, proton pump inhibitors and supportive therapy.

**Keywords:** Chronic renocardiac syndrome, Cardiorenal syndrome, chronic kidney disease, cardiovascular disease

### Introduction

Chronic Renocardiac Syndrome (CRS) is characterized by the intricate interplay between chronic kidney disease (CKD) and cardiovascular disease (CVD). The pathophysiology of CRS involves various mechanisms including neurohormonal activation, inflammation, oxidative stress, and endothelial dysfunction. For instance, chronic kidney disease can activate the renin-angiotensin-aldosterone system (RAAS), resulting in hypertension and increased cardiac workload, which may lead to left ventricular hypertrophy and heart failure (Quiroga *et al.*, 2023). Similarly, heart failure can reduce renal perfusion and increase venous pressure, worsening kidney function (Rangaswami *et al.*, 2019). A case of chronic renocardiac syndrome in a non-descript dogs is presented in this article.

### Case History and Observations

A 10 yr old male mongrel dog weighing about 18 kg was presented in recumbency to Veterinary Clinical Complex, NTR College of Veterinary Science, Gannavaram, with the history of anorexia, vomiting, polyuria, polydipsia and halitosis. Dog was diagnosed with kidney dysfunction four months earlier and the owner had discontinued the medication. Clinical examination revealed subnormal temperature (97°F), pallor mucous membranes and tachycardia. Anaemia along with mild leucocytosis and neutrophilia were noticed on

haematological examination. Elevated creatinine, BUN, potassium and phosphorus levels were suggestive of CKD. ECG revealed tachycardia (144 bpm) and spiked T waves. Nephrosonography revealed shrunken kidneys with an indistinct corticomedullary junction. Thickening of interventricular septum and left ventricular hypertrophy were noticed in echocardiography. Blood smear examination was negative for haemoprotezoans and rickettsial diseases.

**Table 1. Haematological profile**

Parameter	Result
Haemoglobin (g/dL)	6.8
Packed cell volume (%)	21
Total erythrocyte count (x 10 <sup>6</sup> /mm <sup>3</sup> )	3.89
Total leucocyte count (x 10 <sup>3</sup> /mm <sup>3</sup> )	18.2
Platelet count (x 10 <sup>3</sup> /μl)	216
Differential leucocyte count (%)	
Neutrophils (%)	77
Lymphocytes (%)	18
Monocytes (%)	2
Eosinophils (%)	3

\*Corresponding author : nagellanaveen124@gmail.com

**Table 2. Serum biochemical profile**

Parameter	Result
Total bilirubin (mg/dL)	0.4
ALT (IU/L)	35
AST (IU/L)	43
Total protein (g/dL)	6.5
Albumin (g/dL)	2.35
Globulin (g/dL)	4.15
Creatinine (mg/dL)	29.2
BUN (mg/dL)	124
Calcium (mg/dL)	10.4
Phosphorus (mg/dL)	25
Sodium(mEq/L)	145
Potassium(mEq/L)	6.6



**Figure 1. Electrocardiogram showing tachycardia and inverted tall spiked T waves (Lead II, Paper speed=50mm, 1cm=1mv)**



**Figure 2. Echocardiography showing left ventricular hypertrophy and reduced chamber size**

### Discussion

Haematological examination revealed significant abnormalities including reduced PCV (21%),

haemoglobin (6.8g/dL) and total erythrocyte count ( $3.89 \times 10^6/\text{mm}^3$ ), suggesting non regenerative anaemia. Additionally, there was mild leucocytosis with mild neutrophilia (Table 1). Serum biochemical tests revealed elevated levels of creatinine (29.2 mg/dL) and blood urea nitrogen (124 mg/dL), indicating that the animal is in stage IV CKD according to the IRIS classification (IRIS, 2023). Similar findings were reported by Orvalho and Cowgill (2017), who opined that anemia might be due to reduced production of erythropoietin in CKD. The increased levels of potassium and phosphorus suggest impaired kidney function, since the kidneys are responsible for excreting these electrolytes (Brunetto *et al.*, 2023). The serum calcium-phosphorus (sCaPP) product was assessed for prediction of survival of the dog and was found to be  $260 \text{ mg}^2/\text{dL}^2$ , significantly exceeding the threshold value of  $70 \text{ mg}^2/\text{dL}^2$  used to predict survival in canine CKD, thereby indicating a poor prognosis (Lucero *et al.*, 2019).

Electrocardiography characterized by inverted tall T waves was in accordance with Teymouri *et al.* (2022), who stated that up to nine per cent of patients suffering from chronic kidney disease (CKD) might be affected with hyperkalemia (5.5 mEq/L or more) which could eventually lead to arrhythmias and sudden death. The shrunken appearance of kidneys with indistinct corticomedullary junctions and irregular contour on ultrasonography is consistent with chronic kidney disease, where the kidneys lose their normal size and structure due to fibrosis and scarring (Perondi *et al.*, 2020). Echocardiographic assessment showed tachycardia and left ventricular hypertrophy, a common cardiac manifestation in chronic kidney disease due to systemic hypertension or increased cardiac workload. This finding was in agreement with Orvalho and Cowgill (2017).

Based on the diagnostic investigation, the case was diagnosed as Type IV cardiorenal syndrome, also known as chronic renocardiac syndrome (CKD complicated with hypertrophic cardiomyopathy). Therapy was initiated with Ringer's lactate (10 ml/kg IV, BID), 0.9% NS (10 ml/kg IV, BID), amoxicillin-sulbactam (20 mg/kg IV, BID), ondansetron (0.5 mg/kg IV, TID), enalapril (0.5 mg/kg PO, BID), furosemide (3 mg/kg PO, BID) and sevelamer (1 tablet PO, daily). The dog exhibited mild clinical improvement after therapy. But unfortunately, the patient succumbed to its illness a week later, reflecting the advanced stage of the disease at the time of presentation.

## References

- Brunetto, M. A., Ruberti, B., Halfen, D. P., Caragelasco, D. S., Vendramini, T. H. A., Pedrinelli, V., Macedo, H. T., Jeramias, J. T., Pontieri, C. F. F., Ocampos, F. F., Colnago, L. A., and Kogika, M. M. (2021). Healthy and chronic kidney disease (CKD) dogs have differences in serum metabolomics and renal diet may have slowed disease progression. *Metabolites*, **11(11)**: 782.
- Habas, E., Akbar, R., Khan, F., and Elzouki, A. N. (2021). Reno-Cardiac Syndrome (RCS): A Clinical Review. *International Journal of Science and Research*, **10(6)**: 1705-1712.
- IRIS (International Renal Interest Society). (2023). *IRIS Staging of CKD (modified 2023)*. Retrieved from [http://www.iris-kidney.com/pdf/2\\_IRIS\\_Staging\\_of\\_CKD\\_2023.pdf](http://www.iris-kidney.com/pdf/2_IRIS_Staging_of_CKD_2023.pdf).
- Lucero, M.C., Duque, F.J., Gil, M., Ruiz, P., Macías-García, B., Cristóbal, J.I., Zaragoza, C. and Barrera, R. (2019). A plasma calcium-phosphorus product can be used to predict the lifespan of dogs with chronic kidney disease. *The Canadian Veterinary Journal*, **60(12)**: 1319.
- Orvalho, J. S., and Cowgill, L. D. (2017). Cardiorenal syndrome: diagnosis and management. *Veterinary Clinics: Small Animal Practice*, **47(5)**: 1083-1102.
- Perondi, F., Lippi, I., Marchetti, V., Bruno, B., Borrelli, A., and Citi, S. (2020). How ultrasound can be useful for staging chronic kidney disease in dogs: ultrasound findings in 855 cases. *Veterinary Sciences*, **7(4)**: 147.
- Quiroga, B., Ortiz, A., Navarro-González, J. F., Santamaría, R., de Sequera, P., and Díez, J. (2023). From cardiorenal syndromes to cardioneurology: a reflection by nephrologists on renocardiac syndromes. *Clinical kidney journal*, **16(1)**: 19-29.
- Rangaswami, J., Bhalla, V., Blair, J. E., Chang, T. I., Costa, S., Lentine, K. L., Mezue, K., Molitch, M., Ronco, C., and American Heart Association Council on the Kidney in Cardiovascular Disease and Council on Clinical Cardiology. (2019). Cardiorenal syndrome: classification, pathophysiology, diagnosis, and treatment strategies: a scientific statement from the American Heart Association. *Circulation*, **139(16)**: 840-878.
- Teymouri, N., Mesbah, S., Navabian, S. M. H., Shekouh, D., Najafabadi, M. M., Norouzkhani, N., Poudineh, M., Qadirifard, M. S., Mehrtabar, S., and Deravi, N. (2022). ECG frequency changes in potassium disorders: a narrative review. *American Journal of Cardiovascular Disease*, **12(3)**: 112.



## Uroabdomen in an Umblachery bull- A case report

T. Poojalakshmi, K. Karthika<sup>1</sup>\*, S. Yogeshpriya<sup>1</sup>, M. Saravanan<sup>2</sup>

Department of Veterinary Medicine, Veterinary College and Research Institute, Orathanadu- 614 625.

<sup>1</sup>Assistant Professor, <sup>2</sup>Assistant Professor and Head

### Abstract

A 4-year-old Umblachery bull was presented to the Large Animal Medicine Unit at the Veterinary Clinical Complex, Veterinary College and Research Institute, Orathanadu, with a 5-day history of abdominal distension, anorexia, anuria, and absence of defecation. Clinical examination revealed depression, dehydration, elevated respiratory rate, bilateral abdominal distension with fluid thrill. Trans-abdominal ultrasonographic examination revealed the presence of anechoic free fluid in the abdominal cavity. Ultrasound-guided abdominocentesis yielded a light yellow-colored modified transudate with a low specific gravity of 1.013 and a distinct ammonia odor. Haematobiochemical examination revealed PCV= 41.8%, WBC=10,300 cells/cumm, elevated blood urea nitrogen, creatinine and lactate levels. Peritoneal fluid showed increased levels of blood urea nitrogen and creatinine compared to that of serum levels. Based on ultrasonographic examination of abdomen and peritoneal to serum creatinine ratio, the case was confirmed as uroabdomen. The animal was administered with strepto-penicillin, flunixin meglumine and supportive fluid therapy but the animal died due to delayed presentation and uraemia.

**Keywords:** Umblachery Bull, Abdominocentesis, Uroabdomen.

Urine accumulation in the peritoneal and retro-peritoneal spaces usually associated with urolithiasis, urethral rupture and cystorrhesis. Bilateral distention of the ventral abdomen may develop within 1-2 days following cystorrhesis, and is typically accompanied by signs of depression, anorexia, weakness, dehydration, and shock. (Smith *et al.*, 1986). In acute bladder rupture, urine may flood the abdomen, yielding a low-protein transudate and develop sterile peritonitis which is non-septic. Uremia and dehydration may ultimately lead to the death of the animal. Uroabdomen commonly reported in male animals with water belly appearance and rarely occurs in females due to complication of dystocia. Uremia and dehydration is the common sequela of uroabdomen which leads to death of animal. This article describes a case of uroabdomen in Umblachery bull.

### Case History and Observation

A four year old Umblachery bull was referred to the Large Animal Medicine Unit, Department of Clinics, Veterinary College and Research Institute, Orathanadu with the history of anorexia, dehydrated, anuria, achezia and severe bilateral abdominal distension (Fig1) for about five days. Congested conjunctival mucous membrane, enophthalmos and extremely dry muzzle and dry scanty faeces were noticed. Elevated pulse (128/min), respiratory rate (52/min), 99.8<sup>o</sup>F body temperature

and bilaterally distended abdomen with fluid thrill were appreciated. Mild elevation in total leukocyte count, elevated bicarbonate levels (34.5 mmol/L) and decline in partial pressure of oxygen (37 mmHg), serum fibrinogen level (9.9 g/L) were noticed (Table). The bull was administered with strepto-penicillin (@ 20,000 IU/kg b.wt. IM), flunixin meglumine (@ 1.1 mg/kg b.wt. IM), dextrose normal saline (@ 10 ml/kg b.wt. IV) and Ringer's lactate (@ 10 ml/kg b.wt. IV) for initial stabilization before surgery. The animal collapsed during surgical preparation for exploratory laparotomy to repair cystorrhesis.



**Figure 1: Bilateral abdominal distension**

\* Corresponding author : karthika1988.6@gmail.com

**Table 1: Haemogram values of Umblachery bull with uroabdomen**

HAEMOGRAM	VALUE	REFERENCE
Haemoglobin	12.6 g/dL	8.0-15.0 g/dL
Haematocrit	41.8 %	24-46 %
RBC	$10.45 \times 10^6$ cells/ $\mu$ L	$5.1-7.6 \times 10^6$ cells/ $\mu$ L
WBC	$14.3 \times 10^3$ cells/ $\mu$ l	$4.9-12 \times 10^3$ cells/ $\mu$ L

**Table 2: Blood gas analysis of Umblachery bull with uroabdomen**

BLOOD GAS	VALUE	REFERENCE
pH	7.55	7.35-7.50
pCO <sub>2</sub>	39.5 mmHg	35-45 mmHg
pO <sub>2</sub>	37 mmHg	56 mmHg
BE <sub>ecf</sub>	12 mmol/L	$\pm 2$ mmol/L
Bicarbonate	34.5 mmol/L	17-29 mmol/L
TCO <sub>2</sub>	36 mmol/L	20-30 mmol/L
sO <sub>2</sub>	78 %	>94%
Lactate	3.05 mmol/L	0.56-2.22 mmol/L

## Results and Discussion

The clinical signs found in the present case were in accordance with previous reports (Braun *et al.*, 2007; Saravanan *et al.*, 2024; Abdelaal *et al.*, 2016). Complication of cystorrhesis may lead to shift in the osmotic gradient leading to the movement of urine as well as extracellular fluid into the peritoneal cavity and may result in dehydration. Ultrasonography facilitated the detection of anechoic free fluid accumulation in the peritoneal cavity and further to rule out the condition from other abdominal affections. Metabolic signs associated with elevated blood urea nitrogen and creatinine levels were also cited by Sockett *et al.* (1986) and Ismail *et al.* (2018). Light yellow coloured modified transudate with pH 8, specific gravity 1.013 and urine smell lead this present case as a suspect for uroabdomen. The serum-peritoneal creatinine ratio in the present case was 3.2. The serum-peritoneal creatinine ratio and ultrasonography findings were important in the interpretation of the present case as uroabdomen. This observation correlated with Braun and Nuss, (2015), Saravanan *et al.*, (2024) and Ismail, (2018). Trans-abdominal ultrasonography revealed an accumulation of anechoic free fluid in the peritoneal cavity, extending to the level of the cranial abdomen, consistent with the findings of Venkatesakumar *et al.* (2019).

## Conclusion

Uroabdomen in Umblachery bull diagnosed based on ultrasonographic findings, serum peritoneal and creatinine ratio is placed on record

## References

- Abdelaal, A.M., S. Oday, Al-Abbadi and A.M. Abu-Seida. Transcutaneous and Transrectal Ultrasonography in buffalo calves with urine retention. *Asian Journal of Animal Veterinary Advances*. 2016; **11**:79-88.
- Braun, U and K. Nuss. Uroperitoneum in cattle: Ultrasonographic findings, diagnosis and treatment. *Acta Veterinaria Scandinavica*. 2015; **57**:36.
- Ismail, H.T.H., Haemato-biochemical parameters as comparative tools and prognostic indicators in urine retention cases with intact or ruptured urinary bladder in buffalo calves. *Advances in Animal and Veterinary Science*. 2018; **6(4)**:148-155.
- Saravanan, M., Kavitha, S., Ranjithkumar, M and Ravi, R. Uroabdomen in a Kangayam bullock- A Case report. *Indian Vet. J.* 2017, **94(5)**: 70-71.
- Saravanan, M., R. Keerthana, P.K. Ramkumar, M. Venkatesan, S. Yogeshpriya, M. Veeraselvam and K. Karthika. Serum-Peritoneal Creatinine Ratio in the Diagnosis of Uroperitoneum in A Gir Bull. (2024) *International Journal of Livestock Research*, **14 (5)**, 35-38.

- Smith, B.P., C. David, Van Metre and P. Nicola. Large Animal Internal Medicine. 6<sup>th</sup> edition, 1986.
- Sockett, D.C., A.P. Knight, M.J. Fettman, A. R. Kiehl, J.A. Smith and S.M. Arnold. Metabolic changes due to experimentally induced rupture of the bovine urinary bladder. *The Cornell Veterinarian*. 1986; **76**:198-212.
- Venkatesakumar. E., G. Vijayakumar, S. Sivaraman, R. Ravi, K. Mohanambal and B. Sudhakara Reddy. Ultrasonographic diagnosis of uroabdomen due to urinary bladder rupture in a Kangayam bull calf. *Journal of Entomology and Zoology Studies*. 2019; **7(3)**: 100-103.

## Atypical clinical manifestations in cattle infected with *Schistosoma nasale*

Sirigireddy Sivajothi<sup>1</sup> and Bhavanam Sudhakara Reddy<sup>2</sup>

Sri Venkateswara Veterinary University, Andhra Pradesh, India.

<sup>1</sup>Department of Veterinary Parasitology

<sup>2</sup>Department of Veterinary Medicine

College of Veterinary Science, Proddatur-516360

### Abstract

Present communication reports the neurological manifestations as head shaking in cattle with *Schistosoma nasale* infection. Cattle showed bilateral nasal discharges, dyspnoea and head shaking with flipping of head, rubbing of muzzle on the objectives. Nasal scrapings examined under a microscope revealed distinctive boomerang shaped eggs with a terminal spine, confirming the diagnosis of *Schistosoma nasale* infection. The cattle were treated with three injections of anthiomaline in combination with symptomatic and supportive medications. Clinical improvement was observed by the tenth day of treatment, and the head shaking resolved completely.

**Keywords:** Cow, *Schistosoma nasale*, Nervous signs, Anthiomaline

### Introduction

The blood fluke *Schistosoma nasale*, a snail-borne trematode infection in cattle, is the cause of nasal schistosomiasis. In cattle, it causes the development of nasal granulomas and snoring disease (Bulbul *et al.*, 2017). Several reports are available in various parts of India with *S. nasale* infection and reported the signs of serous to mucopurulent nasal discharge, epistaxis, sneezing, dyspnoea, and snoring. The nasal cavity may develop small abscesses and nasal granulomas during the chronicity (Kotle *et al.*, 2012; Yogeshpriya *et al.*, 2018). Reports of nervous signs associated with this disease are very limited (Mouli and Christopher, 1993).

### Case History and Observations

The Mega Animal Health Camp in Reddyvari Palli Village, Chinnmandem Mandal, YSR district of Andhra Pradesh, featured adult crossbred cattle exhibiting symptoms of bilateral nasal discharges. Congested conjunctival mucous membranes, parotid lymphadenopathy, dyspnoea, inspiratory distress, and sporadic head shaking with flipping of head, rubbing of muzzle on the objectives were observed (Fig.1). Samples of whole blood, serum, nasal scrapings, urine, and dung were collected. Stained blood smears and wet blood film analysis revealed no haemoprotozoan diseases. No parasitic ova were found in dung samples. Serum glucose levels (83 mg/dL) were within acceptable range, and a dipstick analysis of the urine revealed no

ketone bodies. The nasal scrapings examined under a microscope, revealed a boomerang shaped eggs with a terminal spine of *Schistosoma nasale* eggs (Fig. 2) and a fully developed miracidium inside the eggs (Fig. 3).

### Treatment and Discussion

Treatment included administration of anthiomaline (lithium antimony thiomalate, 15 ml deep IM, at weekly interval for three weeks), flunixin meglumine (@ 1.5 mg/kg body weight I/M), oxytetracycline (@ 7.5 mg/kg body weight I/M, BID), and oral supplementation with immune-modulatory herbal syrup (Restobal @ 50 ml BID) for five days. Cattle showed clinical improvement by altered respiration by the fifth day of therapy and disappearance of head shaking on tenth day of therapy.

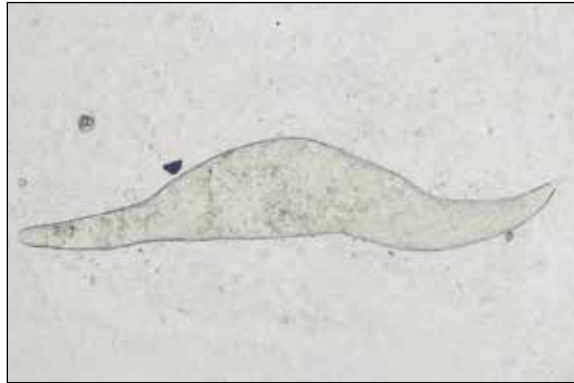
Cattle may develop noticeable growths, congestion, epistaxis, and unilateral or bilateral miliary/cauliflower-like nasal granulomas during the pathophysiology of infection (Ravindran and Kumar, 2012). The rhinoscopy diagnostic process revealed the extent of closely spaced lesions blocking the nostrils. Seromuroid nasal discharge and blood-tinged mucopurulent nasal discharge were typical clinical symptoms displayed by positive cattle (Ponnuswamy *et al.*, 2016). Paresis, lameness, limb and lower jaw oedema, recurrent tympany, purulent bilateral conjunctivitis, and respiratory distress are some of the uncommon clinical manifestations that Mouli and Christopher (1993) noted in buffaloes. In the present study, to rule out neurological

\*Corresponding author: bhavanamvet@gmail.com

signs, a blood examination was conducted, which tested negative for haemoprotozoan diseases. Additionally, there was no indication of hypoglycemia, and urine analysis revealed the absence of ketone bodies.



**Fig.1 Cattle showing the nasal discharges**



**Fig.2. Microscopic examination of nasal scrapings – Presence of *Schistosoma nasale* egg (400x)**



**Fig.3. Microscopic examination of nasal scrapings – Presence of *Schistosoma nasale* egg with matured miracidium (400x)**

Cattle that have a chronic *Schistosoma nasale* infection may develop squamous cell metaplasia, a buildup of inflammatory cells, inflammation surrounding parasitic eggs, and vein congestion in the afflicted areas. Similar to trigeminal neuralgia in humans, the head

shaking observed in the present cases may involve the ophthalmic branch and maxillary portion of the trigeminal nerve. According to the available literature, neurological signs have been reported in one study involving buffaloes, but no additional documentation has been found.

## Conclusions

It is recommended that cattle showing nervous signs of head shaking to be screened for the *Schistosoma nasale* infection, especially in geographical areas with a high snail population.

## References

- Bulbul, K.H., Das, M., Islam, S., Sarmah, P.C., Tamuly, S., Borah, P. and Hussain, J (2017). Prevalence of nasal schistosomiasis in cattle of Kamrup district of Assam, India. *Vet. Pract.*, **18**, 213-215.
- Kolte, S.W., Kurkure, N.V., Maske, D.K. and Khatoon, S. (2012). Prevalence of *Schistosoma nasale* infection in bovines from eastern Vidharbha (Maharashtra) vis-à-vis infection in *Indoplanorbis exustus*. *Vet. Parasitol.*, **26**, 140-143.
- Mouli, S.P. and Christopher, J. (1993). Some unusual clinical manifestations associated with *Schistosoma nasalis* infection in buffaloes. *Buffalo Bull*, **12**, (1) 3-6.
- Ravindran, R. and Kumar, A. (2012). Nasal schistosomiasis among large ruminants in Wayanad, India. *Southeast Asian J Trop Med Public Health*, **43**, 586-588.
- Ponnuswamy, K.K., Sivaraman, S., Venkatesakumar, E., Sivaseelan, S. and Vijayakumar, G. (2016). Rhinoscopic diagnosis of nasal schistosomiasis and its medical management in a cow. *Indian Vet. J.*, **93(6)**, 33-35
- Yogeshpriya. S., Veerselvan, M., Jayalaksmi, K., Krishna Kumar, S. and Selvaraj, R. (2018). Epidemiology and clinical features of naturally occurring nasal schistosomiasis. *Indian Vet. J.*, **95(3)**, 81-82.

## Ascites in a Labrador retriever puppy with *Babesiosis* – A case report

P. Udhayabanu<sup>1\*</sup>, Mayur M. Jadav<sup>1</sup>, K. Mahendran<sup>2</sup>

<sup>1</sup>M.V.Sc scholar, <sup>2</sup>Senior Scientist - Division of Medicine,  
ICAR-Indian Veterinary Research Institute, Izatnagar-243 122, Bareilly

### Abstract

A 2-month-old male Labrador puppy was presented to Referral Veterinary Polyclinic-Teaching Veterinary Clinical Complex, ICAR- Indian Veterinary Research Institute with a history of inappetence and bilaterally distended abdomen for a period of 15 days. On physical examination, generalized weakness, pale mucous membrane, pyrexia, tachycardia, tachypnea and fluid thrill on the abdomen were noticed. Severe anemia, reduced hematocrit, neutrophilic leukocytosis, hypoproteinemia, hypoalbuminemia and elevated liver enzymes were noticed in haemato-biochemical examination. *Babesia sp.* was detected in blood smear examination. Ultrasound examination revealed hepatomegaly and ascites. Based on these findings, the case was diagnosed as ascites due to *Babesiosis*. Forty ml of whole blood was transfused and the animal was treated with Inj. Dextrose, Inj. Imidocarb, Inj. Furosemide for 2 days. Case was discharged with the advice of continuing the treatment with triple drug therapy (doxycycline, clindamycin and metronidazole) for 10 days, hepato-protectant (Susp. Silybon®), haematinic (Syp. Hemobest®) and diuretics (Spironolactone and furosemide combination) orally for 30 days at home and regular follow up. The animal showed uneventful recovery following treatment.

**Keywords:** *Babesia sp.*, Ascites, Imidocarb and Triple drug therapy

*Babesiosis* is a fatal, infectious, tick-borne protozoal disease caused by haemotropic protozoa of the genus *Babesia* respectively (Ghosh *et al.*, 2020; Gonde *et al.*, 2014). *Babesiosis* is clinically manifested anorexia, dullness, vomiting, weight loss, systemic inflammatory response syndrome, multi organ failure and ascites (Ghosh *et al.*, 2020). Ascites is defined as the pathological accumulation of fluid in the abdominal cavity and the etiology are multi-factorial in nature. The present case describes about ascites in a labrador pup with babesiosis.

### Case History and Observation

A 2-month-old male Labrador puppy weighing around 2 kg was presented with the history of inappetence and bilaterally distended abdomen for a period of 15 days. The puppy was dewormed once with fenbendazole suspension and not vaccinated. On physical and clinical examination, pale conjunctival and buccal mucous membrane, dullness, pyrexia, tachycardia and tachypnoea were noticed. On tactile percussion of the abdomen, fluid thrill was noticed. Blood sample was taken for haematological and biochemical examination. Peripheral blood smear made from the ear vein for haemo-protozoal examination. The animal

was subjected to electrocardiographic, radiographic and ultrasonographic examination. Ascitic fluid was taken for further analysis.

Haematological examination revealed severe anemia (Hb – 4.4 g/dl, PCV- 13.2 %, TLC-  $18.6 \times 10^3 / \mu\text{l}$ , TEC –  $2.09 \times 10^6 / \mu\text{l}$ , N-72/ $\mu\text{l}$ , L-17/ $\mu\text{l}$ , M- 9/ $\mu\text{l}$ ) along with severe thrombocytopenia (PLT-  $76 \times 10^3 / \mu\text{l}$ ). Blood smear examination was found to be positive for *Babesia gibsoni*. Serum biochemistry revealed elevated ALT (150.75 IU/L), AST (183.64 IU/L), decreased total protein (2.09 g/dl), Albumin (0.74 g/dl), normal serum creatinine (1.74 mg/dl) and blood urea nitrogen (7.5 mg/dl). Faecal examination was negative for endoparasites. Radiographic examination revealed ground glass appearance indicating the presence of free fluid in the abdominal cavity. Ultrasonographic examination showed the presence of clear anechoic fluid in the abdominal cavity and hepatomegaly. Electrocardiographic examination showed tachycardia and normal duration and amplitude of PQRST waves. Ascitic fluid examination revealed increased total protein (1.75g/dl) and albumin (0.33g/dl). Based on history and clinical examination, the presented case was diagnosed as ascites in a Labrador puppy with *Babesiosis*.

\*Corresponding author: udhayabanu651999@gmail.com





**Fig 1: Trophozoites in the erythrocyte of thin blood smear under 100 X, oil immersion (Leishman stain)**



**Fig 2: X-ray of the pup revealed ground glass appearance in the abdominal cavity indicating ascites**



**Fig 3: ECG pattern shows tachycardia with 120 bpm and normal PQRST waves**



**Fig 4: Ultrasound of the liver showing hyper-echogenicity with anechoic area around the liver denoting the presence of free fluid in the abdominal cavity**



Imidocarb dipropionate helps in reducing the morbidity and mortality rate of affected animal but it unable to eliminate the *B.gibsoni* from the body (Nandini *et al.*, 2016). Combination of doxycycline-enrofloxacin-metronidazole was 83.3 % effective in treating Babesiosis (Lin and Huang, 2010). As an alternative, drug combinations of doxycycline-clindamycin-metronidazole was given by (Sharma *et al.*, 2016; Nandini *et al.*, 2016; Ponnu Swamy *et al.*, 2019), helps in treating *B.gibsoni*. Therefore, a combination of doxycycline-clindamycin-metronidazole was prescribed in this case and recovery was noticed after 10 days. Blood transfusion was highly effective in the severe case of Babesiosis and it is considered as a lifesaving therapy in the present case. Similar reports were mentioned by (Kanwarpal *et al.*, 2020). Earlier diagnosis of *Babesia gibsoni* mitigates the mortality and aids in improving the animal condition.

#### Conflict of interest

The author declares no conflict of interest in publishing this paper.

#### Acknowledgement

The authors are thankful to the Director, ICAR-Indian Veterinary Research Institute, Izatnagar for providing necessary facilities for this research work.

#### References

- Ghosh, C.K., Banerjee, A., Mridha, F., Sarkar, P., and Sarkar, S. (2020). Ascites in a Doberman pinscher pup due to babesia infection: A case report, *J. Pharm. Innov.* 2020, **SP-9(7)**: 253-55.
- Gonde, S., Chhabra, S., Singla, L.D and Bansal, B.K. (2014). Peritoneal Effusion in a Dog due to Babesia gibsoni Infection, Hindawi Publishing Corporation, *Case Rep. Vet. Med.*, Volume 2014-Article ID 807141, 4 pages.
- Lin, M.Y, and Huang, H.P. (2010). Use of doxycycline–enrofloxacin– metronidazole combination with and without injections of diminazene diaceturate to treat naturally occurring canine babesiosis caused by *Babesia gibsoni*. *Acta Vet Scand.*, 52:27.
- Kanwarpal Singh Dhillon., Simran Jot Kaur., Alamjit Singh., and Mukal Gupta. (2020). Successful Therapeutic Management of Babesiosis in a Labrador Dog along with Blood Transfusion. *Int.J.Curr.Microbiol.App.Sci.* **9(05)**: 2058-2062.
- Nandini, M.K., Poonam Vishwakarma., and Ansar Kamran. (2016). New therapeutic protocol for canine babesiosis: a case report. *J Dairy Vet Anim Res.*, **3(3)**:112–113.
- Ponnu Swamy, K. K., Mohanapriya, T., Enbavelan, P. A., Sundararajan, R. C., Saravanan, S. and Ramprabhu, R. (2019). Triple Therapy in Canine Babesiosis - A Case Report. *Int. J. Curr. Microbiol. App. Sci.*, **8(12)**: 964-967.
- Sharma, D.K., Mahendran, K, Chethan, G.E., Banerjee, P. S., Mondal, D.B. and Gupta, V.K. (2016). Medical management of Babesia gibsoni induced hepatopathy and acute renal injury in a dog. *Journal of Veterinary Parasitology.*, **30** (1), 32-34.

## Emergency Thoracocentesis in a dog with Pleural effusion

\*Bhavanam Sudhakara Reddy, Gollapalli Nagarjuna and Sirigireddy Sivajothi

Department of Veterinary Medicine, College of Veterinary Science, Proddatur-516360

Sri Venkateswara Veterinary University, Andhra Pradesh, India.

### Abstract

A five-year-old Labrador was presented to the clinic with a history of exercise intolerance, respiratory distress, and panting. During clinical examination, the dog showed signs of dyspnoea, salivation, cyanotic discoloration of the tongue, rapid shallow breathing, and muffled cardiac sounds. Laboratory tests indicated neutrophilic leucocytosis, low serum levels of albumin, sodium, potassium, and chloride. An electrocardiogram revealed low-voltage QRS complexes; radiography and echocardiography confirmed pleural effusion. Based on these findings, the diagnosis was pleural effusion, and an emergency thoracocentesis was performed. Approximately 1500 ml of fluid were drained from the thoracic cavity. The dog showed clinical improvement following the therapy.

**Keywords:** Pleural effusion, Dog, Thoracocentesis, Emergency intervention

### Introduction

Pleural effusion can result from various conditions including pyothorax, congestive heart failure, intrathoracic neoplasia (such as lymphoma, thymoma, pulmonary tumors, mesothelioma), chylothorax, heartworm disease, haemothorax, hypoalbuminemia, lung lobe torsion, and diaphragmatic hernia (Sherding and Birchard, 2006). Common clinical signs in dogs with pleural effusion include restrictive breathing, tachypnea, dyspnea, open-mouth breathing, cyanosis, and lethargy (Sabev *et al.*, 2008). This article describes an emergency thoracocentesis performed to save the life of a Labrador dog suffering from pleural effusion

### Case History and Observations

A 5-year-old Labrador was referred to the clinic with a history of weakness, exercise intolerance, respiratory distress and panting. During the clinical examination, the dog exhibited dyspnea, salivation, cyanotic discoloration of the tongue, rapid shallow respiration, tachycardia, elevated rectal temperature, and inability to move (Fig. 1). Thoracic auscultation muffled heart sounds. Haematological evaluation showed neutrophilic leukocytosis (Haemoglobin 9.2 g/dL, PCV 28 %, TEC 4.65 million/cumm, TLC 26500 cells/cumm, N 84%, L 12%, M 2%, E 2%). Blood smear examination did not detect any blood parasites. Serum biochemistry indicated low levels of albumin (1.86 g/dL), sodium (126 mmol/L), potassium (4.2 mmol/L), and chloride (103 mmol/L). Radiography confirmed

the presence of pleural effusion (Fig. 2), while an electrocardiogram revealed low-voltage QRS complexes (Fig. 3). Echocardiography confirmed the presence of pleural effusion (Fig. 4). Based on these findings, the case was diagnosed as pleural effusion.

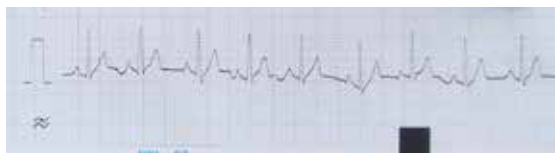


**Fig.1. Dog showing the salivation, cyanotic tongue and open mouth breathing**



**Fig.2. Lateral radiography of thorax – Presence of pleural effusion**

\*Corresponding author: bhavanamvet@gmail.com



**Fig.3. Electrocardiography – Showing the reduced QRS complex voltage**



**Fig.4. Short axis view of echocardiography showing severe thoracic effusions**

### Treatment and Discussion

Emergency thoracocentesis was performed with the dog placed in sternal recumbency. A 21-gauge scalp vein set connected to a 20 ml syringe was inserted into the middle of the 7<sup>th</sup> intercostal space along the cranial border of the rib. Approximately 1500 ml of straw-colored fluid was removed from the thoracic cavity without applying significant pressure to the thorax. Following the procedure, the dog's cyanotic discoloration resolved, and normal respiration was restored. The dog was then treated with injections of amoxicillin-clavulanate at 10 mg/kg body weight intravenously BID, theophylline at 10 mg/kg body weight intramuscularly, furosemide at 2 mg/kg body weight intravenously, and a vitamin B complex supplement at 1 ml/10 kg body weight intramuscularly, followed by oral medications.

Pleural effusion occurs when the factors regulating pleural fluid dynamics are disrupted, resulting in increased fluid production, decreased absorption, or both. Severe hypoalbuminemia can lower systemic colloidal osmotic pressure, leading to increased fluid formation and impaired absorption. Inflammation of the pleura can cause elevated pleural fluid levels due to increased blood flow (hydrostatic pressure), enhanced

capillary permeability, and elevated intrapleural colloidal osmotic pressure from higher protein concentrations. The abnormal accumulation of pleural fluid is usually caused by increased capillary hydrostatic pressure, enhanced capillary permeability, or impaired lymphatic drainage. Clinical signs of pleural space disease include increased respiratory rate and effort, often seen as rapid, shallow breathing, dyspnoea, and sometimes coughing, exercise intolerance, tachypnoea, and cyanosis (Vijayakumar *et al.*, 2018). Thoracic auscultation often reveals a localized or diffuse reduction in heart and lung sounds, a common finding in pleural effusion cases (Sigrist, 2011). Ultrasonography aids in determining the optimal site for thoracocentesis, diagnosing cardiac conditions, and visualizing intrathoracic masses.

In the present study, pleural effusion fluid did not reveal any abnormal cells. Serum albumin levels were reduced and the aetiology for development of pleural effusion might be due to hypalbuminaemia or congestive heart failure.

### Conclusion

Emergency thoracocentesis done in a Labrador dog with pleural effusion is placed on record.

### Acknowledgement

The authors are thankful to the authorities of Sri Venkateswara Veterinary University, Tirupati for providing the facilities to carry out the work.

### References

- Sabev, S., Rusenov, A., Rusenova, N. and Uzunova, K. (2008) A case of hydrothorax in a dog-clinical, blood laboratory and electrocardiographic changes. *Trakia J. Sci.*: **6(2)**: 61-65.
- Sherding, R.G. and Birchard, S.J. (2006) Pleural effusion. In: Birchard SJ, editor. *Sherding RG. Saunders Manual of Small Animal Practice*. Third Edit. Columbia: Saunders; 1696–1707.
- Sigrist, N. (2011) Stabilisation of the emergency patient. Part 1: Airway and breathing. *Eur. J. Companion Anim. Pract.*, **21(1)**:13-21.
- Vijayakumar, G., Reddy, B.S., Ravi, R. and Mohanambal, K (2018) Thoracocentesis – A lifesaving procedure in a cat with pyothorax. *Indian Journal of Canine Practice*. **10(2)**: 117-118.



## An unusual case of reversible blindness associated with ophthalmomyiasis in a sow

Vivek Joshi, Mayur M. Jadav, Deepsikha and U. Dimri

Clinical Medicine Laboratory, Division of Medicine, ICAR-Indian Veterinary Research Institute, Izatnagar 243122, Bareilly, Uttar Pradesh

### Abstract

Ophthalmomyiasis is a rare condition occurring when maggots feed on the orbital tissues of living organisms. Its treatment is often difficult as sensitive tissues like eyes are affected. A crossbred sow was presented with anorexia for the last 3 days, related to swelling of left eye and difficulty in movement and locating the feeding manger. Clinical examination revealed periorbital swelling, complete closure of left eye, blindness, foul odor and maggot infestation of eye socket. Treatment began with placing of turpentine oil dipped gauze over the eye and removal of maggots infesting the eye socket, followed by wound dressing. Ivermectin (0.3 mg/kg body weight S/C) once in a week (total two dosages), enrofloxacin (7.5 mg/kg I/M q72h) and meloxicam (0.5 mg/kg I/M O.D. for 5 days) were administered and the sow recovered completely after 2 weeks of therapy.

**Keywords:** Blindness; Maggots; Ophthalmomyiasis

### Introduction

In swine population, the threat of myiasis is underestimated and still there exists a reduced awareness among farmers and veterinarians concerning the significance of preventive measures against myiasis. Ophthalmomyiasis is a rare condition occurring when fly larvae (maggots) feed exclusively on the orbital tissues of living organisms (Dunbar *et al.*, 2008). Maggoted wounds are easy to treat but their treatment can be difficult if certain sensitive tissues like eyes are affected. Treatment frequently involves removal of maggots, dressing of wound with turpentine oil or tincture of iodine and systemic administration of antibiotics and ivermectin (Rahman *et al.*, 2009; Sucilathangam *et al.*, 2013; López Millán *et al.*, 2015). This article describes successful treatment of ophthalmomyiasis in a sow.

### Case History and Observation

A multiparous crossbred sow in early lactation maintained at Swine Production Farm of ICAR-Indian Veterinary Research Institute, Izatnagar was presented with anorexia for a period of 3 days, related to swelling

of left eye and difficulty in movement and locating the feeding manger. A thorough clinical examination revealed that sow had periorbital swelling, epiphora, characteristic foul odor, painful eye, itching, blindness, maggot infestation of orbital tissues and complete closure of the left eye.

### Treatment and Discussion

The affected sow was suitably restrained and gauze soaked in turpentine oil was placed over the eye for 5 minutes (Fig. 1a). The maggots crawling out from the eye socket to the eye surface were manually detached with a sterile forceps (Fig. 1b, c). Ivermectin (Hitek® @0.3 mg/kg body weight S/C, two dosages at 1 week interval), enrofloxacin (long-acting, Fortivir® @7.5 mg/kg I/M q72h) and meloxicam (Melonex® @0.5 mg/kg I/M O.D.) were administered. The systemic treatment was given for 5 days; however, topical application of fly repellent and healing cream (Lorexane®) was continued for 2 weeks. After 5 days of the treatment, sow's condition started to improve, vision and feeding behavior was restored and had complete recovery by 14 days post-therapy (Fig. 2).



(a)



(b)



(c)

**Fig.1 (a) & (b) Day 0: Surfacing of maggots after placement of turpentine oil gauze (c) Manual removal of maggots from the eye**



(a)



(b)

**Fig. 2 Recovered sow post-therapy on (a) Day 7 & (b) Day 14**

In the present case, application of turpentine oil resulted in moving of maggots from eye socket. Moreover, turpentine oil stimulates antioxidant ceruloplasmin which in turn inhibits the inflammation of eye and promotes wound healing by increasing concentration of plasma fibrinogen (Moniruzzaman, 2023). Enrofloxacin was used to control the microbial infection. The administration of ivermectin yielded speedy recovery as it is a broad spectrum endectocide effective against the maggots. Ivermectin kills mature and immature parasites by blocking the nerve impulses and causing palsy and death (Rahman *et al.*, 2009).

In conclusion, this case underscores the significance of promptly addressing maggot infestations, particularly in sensitive anatomical regions like the eyes. By employing a combination of manual removal of maggots, treatment, and supportive care, veterinarians can effectively manage ophthalmomyiasis cases and facilitate the timely recovery of affected animals.

## References

- Dunbar, J., Cooper, B., Hodgetts, T., Yskandar, H., van Thiel, P., Whelan, S. & Woods, D. R. 2008. An outbreak of human external ophthalmomyiasis due to *Oestrus ovis* in southern Afghanistan. *Clinical Infectious Diseases*, 46(11), e124-e126.
- López Millán, C., Olea, M. S., & Dantur Juri, M. J. 2015. Unusual presence of *Ornidia robusta* (Diptera: Syrphidae) causing pig myiasis in Argentina. *Parasitology research*, 114, 4731-4735.
- Moniruzzaman, M. 2023. A case report on maggot infestation in ruminants (cattle, goat and sheep): treatment efficacy and comparative analysis. *Chattogram Veterinary & Animal Sciences University, Khulshi, Chattogram*.
- Rahman, M. A., Hossain, M. A., & Alam, M. R. 2009. Clinical evaluation of different treatment regimes for management of myiasis in cattle. *Bangladesh Journal of Veterinary Medicine*, 7(2), 348-352.
- Sucilathangam, G., Meenakshisundaram, A., Hariramasubramanian, S., Anandhi, D., Palaniappan, N., & Anna, T. 2013. External ophthalmomyiasis which was caused by sheep botfly (*Oestrus ovis*) larva: a report of 10 cases. *Journal of Clinical and Diagnostic Research: JCDR*, 7(3), 539.



## Successful Management of Oesophageal foreign body in a jersey Crossbred cow

Mohanambal. K, Sivaraman. S, Sumathi. D\*, Ravi. R and Ponnuswamy, K. K.

Department of Veterinary Clinical Medicine

Veterinary College and Research Institute, Namakkal

Tamil Nadu Veterinary and Animal Sciences University

### Abstract

Four year aged Jersey crossbred non-pregnant cow was presented with a history of anorexia and dysphagia. The animal had not consumed feed or water for a day and was unable to swallow. Oesophageal palpation revealed a mild enlargement in the left lateral neck region. An attempt to pass a stomach tube failed, indicating oesophageal obstruction. After sedation and manual intervention, a foreign body composed of groundnut cake and feed material was retrieved. The condition of the cow has improved following the removal of the obstruction. This case emphasizes the need for proper preparation of proper feed to prevent the occurrence of oesophageal foreign body obstruction in cattle,

**Keywords:** oesophageal obstruction, foreign body, groundnut cake, manual retrieval

### Introduction

Oesophageal foreign bodies in cattle are uncommon but potentially life-threatening. Ingested foreign bodies can result in dysphagia, anorexia, bloat which in turn leads to difficulty in respiratory and dehydration. Cattle are prone to swallowing foreign materials owing to their indiscriminate feeding habits, making oesophageal obstruction an emergency condition in large animal practice (Constable *et al.*, 2017). Cases of oesophageal obstruction in livestock have been documented in various species. For instance, Mohanambal *et al.* (2018) reported the endoscopic retrieval of a sewing needle and thread from the esophagus of a 45-day-old goat kid. Such cases highlight the importance of timely intervention to avoid serious complications (Smith *et al.*, 2019). Oesophageal obstruction is considered one of the more serious conditions due to the risk of dehydration, electrolyte imbalances, and bloat (Singh and Tyagi, 2012). Similar reports in cattle include the retrieval of a linear foreign body in a Holstein Friesian cow (Ravi *et al.*, 2018) and the removal of a metallic needle from the neck of Kangayam cattle (Ammu *et al.*, 2019). These cases emphasize the importance of prompt diagnosis and effective treatment to avoid further complications. Early diagnosis and timely intervention are crucial to prevent further complications, such as aspiration pneumonia and oesophageal rupture (Wilson and Mallinson, 2017). This case report discusses the successful removal of a feed-related foreign body from the esophagus of a Jersey crossbred cow and stresses the importance of proper feed management to prevent future occurrences.

### Case History and Observation

Four year aged Jersey crossbred non-pregnant cow was presented to Veterinary clinical Complex, Veterinary College and Research Institute, Namakkal with a history of not taking feed and water for a day. The owner reported that the cow had been unable to swallow feed and water since the previous day. Attempts to offer feed and water were unsuccessful, as the cow appeared to struggle with swallowing and showed signs of discomfort while drinking water. Profuse salivation was present and the cow exhibited repeated attempts to swallow, which were unsuccessful. Palpation of the neck revealed a mild enlargement on the left lateral aspect of the cervical esophagus (Fig 1). Attempts to pass a stomach tube were unsuccessful, as it could not advance beyond the cranial esophagus, suggesting an obstruction. Rumen showed mild distention and no other abnormalities were detected. Rectal temperature, pulse and respiratory rates were within normal limits.

### Treatment and discussion

The cow was sedated with xylazine (@ 0.1 mg/kg body weight IM) and Butler's mouth gag was used for manual exploration. One veterinarian inserted their hand into the oral cavity. External pressure was applied on the esophagus, pushing the foreign body retrograde from the neck towards the mouth while another clinician attempted to retrieve the foreign body by inserting a hand through the oral cavity. After several attempts, the foreign body, consisting of groundnut cake mixed with feed material, was successfully removed (Fig. 2). Intravenous fluid (RL @ 10 ml/kg, IV and DNS

\*Corresponding author: dev\_sumi@yahoo.com

@10ml/kg IV), ceftriazone (@5mg/kg body wt IM), and Vitamin B complex (10ml IM) were administered. The

cow showed marked improvement and had uneventful recovery,



**Fig. 1: Mild enlargement on the left lateral aspect of the cervical esophagus**



**Fig. 2: Groundnut cake mixed with feed material**

Esophageal obstruction in cattle, especially by foreign bodies, can present with clinical signs such as dysphagia, salivation, and anorexia. In the present case, the obstruction was caused by groundnut cake and feed material. Similar interventions are described by Ravi *et al.* (2018), where a linear rope was removed from the epiglottis of a Holstein Friesian cow, and by Mohanambal *et al.* (2018), where a sewing needle with a thread extending to the rumen was endoscopically retrieved from a goat kid. Foreign bodies lodged in the esophagus can vary widely in both material and size, with some requiring endoscopic techniques for diagnosis and safe removal. The method of sedation and manual intervention is a common approach in large animal practice and has shown successful outcomes in similar cases (Ammu *et al.*, 2019; Kumar and Suthar, 2018; Ravi *et al.*, 2018 and Raju, 2020).

### Conclusion

This case highlights the importance of early diagnosis and appropriate management of oesophageal foreign body obstruction in cattle. Preventive measures such as proper feed preparation are essential in reducing the risk of future obstructions.

### References

Ammu, P. A., Ravi, R., Reddy, B. S., Mohanambal, K. and Vijayakumar, G. 2019. Retrieval of metallic needle from neck in a Kangayam cattle. *Indian Vet. J.*, **96(7)**, 65-66.

Constable, P. D., Hinchcliff, K. W., Done, S. H., and Grünberg, W. 2017. *Veterinary Medicine: A textbook of the diseases of cattle, horses, sheep, pigs, and goats*. 11th ed. Elsevier. Pp. 483.

Mohanambal, K., Vijayakumar, G., Ravi, R., Sivaraman, S. and Reddy, B. S. 2018. Endoscopic Retrieval of Linear Foreign Body in Oesophagus of Kid – A Case Report. *Indian Vet. J.*, **95(7)**, 75-76.

Ravi, R., Reddy, B. S., Vijayakumar, G., Mohanambal, K. and Sivaraman, S. 2018. Choke due to linear foreign body in cattle – A case report. *Indian Vet. J.*, **95(7)**, 240-241.

Smith, B. P., David C Van Metre and Nicola Pusterla. 2019. *Large Animal Internal Medicine*. 6th ed. St. Louis, MO: Elsevier. pp. 765-766.

Tyagi, R. P. S. and Singh, J. 2013. *Ruminant Surgery*. 1st ed. CBS Publishers and Distributors. Pp. 192-193.

Kumar, A. and Suthar, N. 2018. Esophageal Obstruction in Cattle: A Case Report. *J. Vet. Med.*, **19(3)**, 257-261.

Raju, S. 2020. Management of Esophageal Foreign Bodies in Cattle. *Indian Vet. J.*, **97(4)**, 65-68.

Wilson, R. C. and Mallinson, D. 2017. Foreign Body Obstructions in Dairy Cattle. *Vet. Rec.*, **180(2)**, 48-52.

## Peripheral vestibular dysfunction and Horner's syndrome secondary to extension of chronic exudative otitis externa in a cat - A case report

Mayur M. Jadav, Vivek Joshi\*, Manas Das, Deepsikha and Umesh Dimri

Division of Medicine, ICAR-Indian Veterinary Research Institute, Izatnagar 243122, Bareilly, Uttar Pradesh

### Abstract

Otitis media and interna are significant causes of peripheral vestibular disease in cats, often accompanied by Horner's syndrome. This case report presents a 4-month-old male long-haired cat diagnosed with peripheral vestibular disease secondary to extension of exudative otitis externa. Clinically apparent signs were exudation from external ear, circling, ataxia and Horner's syndrome. Treatment included a combination of amoxicillin-potassium clavulanate, prednisolone, neuroprotective agents and antibacterial/antifungal ear drops. The cat showed gradual improvement and completely recovered after two weeks of continual therapy.

**Keywords:** Horner's syndrome; Otitis externa; Otitis media and interna

### Introduction

Otitis interna is a common cause of peripheral vestibular dysfunction in cats. This article presents a case of peripheral vestibular dysfunction and Horner's syndrome secondary to extension of chronic exudative otitis externa in a cat

### Case History and Observation

A 4-month-old intact male long-haired cat was presented to the Referral Veterinary Polyclinic of ICAR-Indian Veterinary Research Institute, Izatnagar (UP), with the history of yellow-brown exudate from the right external ear canal over a period of 2 weeks (Fig.

1) and falling over when walking. Clinical examination revealed suppuration, narrowing of the distal and proximal external ear canal, head tilt (Fig. 2), ataxia and Horner's syndrome (consisting of unilateral ptosis of left eye, miosis of right eye and enophthalmos; Fig. 3). Heart rate (146 beats per minute), respiratory rate (28 per minute) and rectal temperature (99.5 °F) were within the normal range. The cat showed normal pupillary light reflexes and spinal reflexes. Complete blood count and serum biochemistry revealed unremarkable changes. However, middle/inner ear examination and bacterial culture/sensitivity could not be performed due to the owner's refusal for further examination.



**Fig. 1. Brownish exudation from the right ear**



**Fig. 2. Head tilt**



**Fig. 3. Ptosis of left eye and miosis of right eye)**



**Fig. 4. Recovered cat**

\*Corresponding author: joshignet@gmail.com

### Treatment and Discussion

Treatment was initiated with amoxicillin-potassium clavulanate (14 mg/kg PO q 12 h), prednisolone (0.5 mg/kg PO q 12 h for first 7 days and q 24 h for next 7 days), ofloxacin-clotrimazole-betamethasone-lignocaine ear drops (10 gtt into affected ear q 12 h) and mecobalamin-vitamins-minerals syrup (5 ml PO q 12 h). Cat showed clinical improvement in Horner's Syndrome in first week and had uneventful recovery by 14<sup>th</sup> day of therapy. (Fig. 4). Otitis interna / media is a common cause of peripheral vestibular disease in dogs and cats. Nelson and Couto (2019) reported that early diagnosis based on a thorough physical examination, neurological assessment and ancillary tests is crucial for treatment.. Bollez *et al.*, (2018) reported that *Pasteurella multocida* was commonly found in these cases. Feline otitis interna / media is often a result of an ascending bacterial infection from the oral cavity via eustachian

tube (Rand, 2006). However, in the present case, as there were clinically apparent signs and a history of chronic otitis externa, it is likely that the route of infection into the middle ear was via the external ear

### References

- Bollez, A., De Rooster, H., Furcas, A., & Vandenabeele, S. 2018. Prevalence of external ear disorders in Belgian stray cats. *J. Feline Med. Sur.*, **20(2)**, 149-154.
- Nelson, R. W., and Couto, C. G. 2019. *Small Animal Internal Medicine-E-Book: Small Animal Internal Medicine-E-Book*. Elsevier Health Sciences.
- Rand, J. 2006. *Problem-based Feline Medicine*. Elsevier Health Sciences. pp 126-128
- Vernau, K. M., and LeCouteur, R. A. 1999. Feline vestibular disorders. Part II: diagnostic approach and differential diagnosis. *J. Feline Med. Sur.*, **1(2)**, 81-88.

## Successful management of haemoglobinuria in a buffalo

Richard Thounaojam, Vivek Joshi\*, Nagella Naveen and D. B. Mondal

Division of Medicine, ICAR-Indian Veterinary Research Institute, Izatnagar 243122, Bareilly, Uttar Pradesh

### Abstract

Nutritional hemoglobinuria is a disease of high-yielding buffaloes due to hypophosphatemia or cruciferous plant poisoning, causing intravascular haemolysis and haemoglobinuria. A 7-year-old non-descript multiparous buffalo in advanced pregnancy was presented to Referral Veterinary Polyclinic of ICAR-Indian Veterinary Research Institute, Izatnagar with a history of coffee-coloured urine and anorexia for a period of two days. It was reported that buffalo had ingested radish shoots about 7 days earlier. Clinical examination revealed dullness with pale mucus membranes and reduced rumination. Haematobiochemical examination revealed reduced levels of haemoglobin, PCV, marked neutrophilia, hypophosphatemia, elevated BUN and hypoproteinemia. The buffalo was treated with sodium acid phosphate (50 ml IV q12h on 3 occasions), ascorbic acid (5 mg/kg IV q24h for 1-week), vitamin B-complex and iron sorbitol folic acid complex. The buffalo recovered uneventfully following therapy.

**Keywords:** Buffaloes; Cruciferous plant; Nutritional hemoglobinuria

### Introduction

Nutritional hemoglobinuria is a sporadic non-infectious disease of high yielding dairy cattle and buffaloes observed in early lactation ( $\leq 30$  days) and advanced gestation period ( $\geq 7$  months) (Constable *et al.*, 2016). It is frequently attributed to hypophosphatemia or diets containing cruciferous plants like cabbage, rapeseed, sugar beet, turnip or radish (Biswas *et al.*, 2024). Dietary consumption of cruciferous plants like radish (*Raphanus sativus*) induces severe oxidative damage by production of toxic compounds like glucosinolates, thiocyanates, etc. (Kataria *et al.*, 2022; Ruiz *et al.*, 2022). This article present haemoglobinuria in a buffalo following ingestion of radish shoots and its successful management.

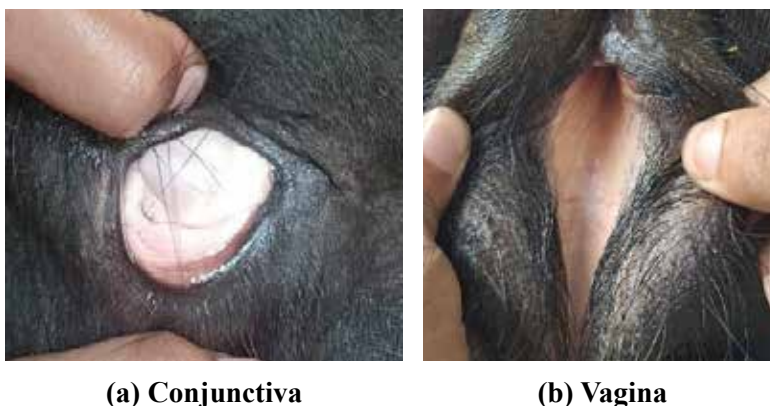
### Case History and Observation

A 7-year-old non-descript multiparous buffalo in advanced pregnancy was presented to Referral Veterinary Polyclinic of ICAR-Indian Veterinary Research Institute, Izatnagar with complaints of anorexia and excretion of coffee-colored urine (Fig. 1) for a period of two days. It was reported that buffalo had ingested radish shoots about 7 days earlier. Clinical examination revealed dullness, pale mucus membranes (Fig. 2), heart rate of 58 bpm, rectal temperature as 100.8°F and reduced rumination. Blood smear examination did not reveal any haemoprotozoan infection. Haematobiochemical examination revealed reduced haemoglobin, red blood cells, neutrophilia, hypophosphataemia, and hypoproteinaemia.



**Fig. 1. Coffee-coloured urine collected from a 7-year-old buffalo in advanced pregnancy**

\*Corresponding author: joshignet@gmail.com



**Fig. 2. Pale mucous membranes of a pregnant buffalo with nutritional hemoglobinuria**

### Treatment and Discussion

The buffalo was treated with sodium acid phosphate (50 ml IV q12h on 3 occasions) and ascorbic acid (5 mg/kg IV q24h for 1-week). The ancillary therapy included administration of vitamin B-complex (10 ml IM q24h) rumenotonic (2 boli PO q24h) for five-days along with iron sorbitol, folic acid and vitamin B<sub>12</sub>. The buffalo gradually resumed feeding and urine became normal in colour two days post-therapy; however, the complete clinical recovery was observed at the end of one-week long therapy. The buffalo successfully progressed through remaining gestation period and later, delivered a healthy calf.

Reduced Hb, PCV, TEC and phosphorus are associated with intravascular haemolysis and are characteristic findings in parturient haemoglobinuria and dietary hypophosphatemia (Sarma *et al.*, 2014). Neutrophilia (shift to the left) occurs due to stress-induced release of corticosteroids (Rashid *et al.*, 2021). Increased BUN may be attributed to acute kidney injury from Hb precipitation in renal tubules and reduced glomerular filtration rate (Chaudhary *et al.*, 2021). Successful management of haemoglobinuria due to ingestion of radish shoots in buffalo is reported.

**Table 1. Haemato-biochemical alterations in buffalo with haemoglobinuria**

Parameters	Observation	Reference range
Hb (g/dL)	6.1	8.5-12
PCV (%)	28	33-34
TEC (10 <sup>3</sup> /c.mm)	3.5	5.1-7.6
PLT (10 <sup>3</sup> /c.mm)	204	200-650
TLC (10 <sup>3</sup> /c.mm)	5.1	7-8
Granulocytes (%)	73	21-35
Lymphocytes (%)	23	45-65
Monocytes (%)	4	0-9
SGOT (U/L)	185	78-132
SDH (U/L)	10.4	4.3-15.3
BUN (mg/dL)	32	10-25
Creatinine (mg/dL)	1.62	0.5-2.2
Calcium (mg/dL)	8.94	9-12
Phosphorus (mg/dL)	3.49	5.6-6.5
Albumin (g/dL)	1.93	2.1-3.6
Total protein (g/dL)	4.8	5.7-8.1

## References

- Biswas, S., Chaudhuri, S., & Rana, T. (2024). Nutritional Haemoglobinuria. *Periparturient Diseases of Cattle*, 295-301.
- Chaudhary, M., Kumar, A., & Sood, N. K. (2021). Acute kidney injury and cystitis associated with post parturient haemoglobinuria in bovines: 6 cases. *Veterinary Practitioner*, 22(1).
- Constable, P. D., Hinchcliff, K. W., Done, S. H., & Grünberg, W. (2016). *Veterinary medicine: a textbook of the diseases of cattle, horses, sheep, pigs and goats*. Elsevier Health Sciences.
- Kataria, C., Sharma, A. K., & Gupta, D. K. (2022). Epidemiological, Hemato-biochemical and Therapeutic study on Nutritional Haemoglobinuria in Cattle and Buffaloes. *Indian J. Vet. Med.*, 42(2), 47-54.
- Rashid, S. M., Amin, I., Ahmad, R., Razak, R., Rashid, S. A., & u Rahman, M. (2021). Biochemical and haematological aspect of hypophosphatemia in pregnant Murrah buffaloes. *Buffalo Bulletin*, 40(3), 389-397.
- Ruiz, H., Lacasta, D., Ramos, J. J., Quintas, H., Ruiz de Arcaute, M., Ramo, M. Á., and Ferrer, L. M. (2022). Anaemia in ruminants caused by plant consumption. *Animals*, 12(18), 2373.
- Sarma, K., Saravanan, M., Kumar, P., Kumar, M., Jadav, R. K., & Mondal, D. B. (2014). Influence on haemato-biochemical and oxidative indices of post parturient haemoglobinuric (PHU) buffalo. *Buffalo Bulletin*, 33(4): 343-348.



## Intoxication of *Cleistanthus collinus* leaves in a Jersey Cross-Bred Cattle - A Case Report

Mohanambal, K.<sup>1\*</sup> and Vijayakumar .G.<sup>2</sup>

<sup>1</sup>Assistant Professor, Department of Veterinary Clinical Medicine  
Veterinary College and Research Institute, Namakkal

<sup>2</sup>Professor and Head, Department of Clinics, Madras Veterinary College, Chennai  
Tamil Nadu Veterinary and Animal Sciences University, Chennai-600 051

### Abstract

The present article reports intoxication of leaves of *Cleistanthus collinus* in a pleuriparous Jersey cross-bred cow. The cow was presented with lethargy, anxiety, ataxia, colic, and muscle tremors following grazing in a field with *Cleistanthus collinus* plant. Serum biochemistry revealed elevated liver enzymes, BUN and creatinine. Cow was administered with intravenous fluids therapy, N-acetylcysteine and oral activated charcoal. Cow died in spite of the treatment. This case underscores the need for creating awareness among farmers on plant toxicity in farm animals.

**Keywords:** *Cleistanthus collinus*, intoxication, cow

### Introduction

*Cleistanthus collinus*, locally known as oduvanthalai, is a toxic plant which poses high risks to livestock and human population. Glycosides present in the plant was reported to be toxic with the dose ranging of 1% to 5% of the body weight (Kumar *et al.*, 2015). Ingesting quantities above this dose range will lead to severe clinical manifestations, such as neurological disturbances, gastrointestinal affections and commonly death. This article describes the toxicity due to leaves of *Cleistanthus collinus* in a pleuriparous Jersey cross-bred cow.

### Case History and Observation

A pleuriparous Jersey cross bred cow was presented to Veterinary College and Research Institute Teaching Hospital, Namakkal with a history of grazing in a field having oduvanthalai leaves. The owner of the cow also brought sample of the leaves and informed about the consumption of the toxic plant by the cow. The cow appeared lethargic, dull, and unresponsive to the external stimuli. Cow exhibited distress, characterized by anxiety, restlessness, ataxia and signs of colic. Tachycardia (120/min), tachypnea (68/min) and elevated body temperature (103.9°C) were recorded. Incoordination, weakness of the limbs, and muscle tremors were observed. Elevated BUN (49 mg/dL), creatinine (12.5 mg/dL), ALT (105 u/l), AST (180 U/L) and ALP (145 U/L) with leucocytosis were

noticed. These clinical findings and history underscore the systemic impact of oduvanthalai poisoning.

### Treatment and Discussion

Cow was administered with intravenous fluids (DNS @ 10ml/kg, IV and RL (@ 10ml/kg) along with N-acetylcysteine (@ 25 mg/kg, IV) and activated charcoal (@ 1g/kg PO). In spite of the aggressive treatment, the cow died indicating the quantum of toxic laves ingested by the animal. The owner was informed of the potential benefits of a post-mortem examination to confirm the cause of death but refused to proceed. This decision limited the ability to gain insights into the specific pathophysiological processes involved (Kumar and Dutta, 2014). The observations in the present study stresses the importance of creating awareness among the livestock farmers regarding the dangerous toxic effect of the plant, *Cleistanthus collinus*. Insights gained from this cases is vital for developing effective management strategies and improving livestock health outcomes in areas where these toxic plants are prevalent (Bhargava, 2016). Ingestion of liquid extracted from crushed leaves of *Cleistanthus collinus*, lead to life-threatening complications such as hypokalaemia, cardiac arrhythmias, renal failure and later death in two young patients (Eswarappa *et al.*, 2003).

### Conclusion

*Cleistanthus collinus* (oduvanthalai) poisoning in a pleuriparous Jersey cross bred cow is placed on record.

\*Corresponding author: mohanambalmvsc@gmail.com

**References**

- Bhargava, P. 2016. Clinical management of poisoning in cattle: An overview. *J. Anim. Health Prod.*, **4**(2), 10-14.
- Chrispal, A. 2012. *Cleistanthus collinus* poisoning. *J. Emer. Trauma, and Shock*, **5**(2): 160-166.
- Eswarappa, S., Chakraborty, A. R., Palatty, B. U. and Vasnaik, M. 2003. *Cleistanthus collinus* poisoning: Case reports and review of the literature. *J.Toxicol.: Clinical Toxicology*, **41**(4): 369–372.
- Kumar, P., Singh, R. and Sharma, A. 2015. Toxic plants and their effects on livestock in India. *Vet. World*, **8**(5): 576-580.
- Kumar, S. and Dutta, T. K. 2014. Oduvanthalai (*Cleistanthus collinus*) poisoning in cattle: A case report. *J. Vet. Sci. Technol.*, **5**(2): 1-4.
- Mishra, S. K. and Bhattacharyya, D. 2012. Plant poisoning in cattle: A review. *Vet. World*, **5**(1): 66-69.
- Raghunath, M. 2010. Toxic plants in India and their impact on livestock. *Indian J. Anim. Sci.*, **80**(12): 1167-1170.

## Endoscopic Retrieval of a shaving blade from stomach of a dog - A Case Report

G. Vijayakumar<sup>1\*</sup> and Sasikala. K<sup>2</sup>

Department of Veterinary Clinical Medicine

Veterinary College and Research Institute, Namakkal

<sup>1</sup>Professor and Head, Department of Clinics, Madras Veterinary College, Chennai

<sup>2</sup>Assistant Professor

Tamil Nadu Veterinary and Animal Sciences University, Chennai-600 051

### Abstract

Ingestion of foreign bodies is common in dogs. A non-descript male dog was presented to Veterinary College and Research Institute Hospital with suspicion of having swallowed a shaving blade two days earlier. Clinical examination revealed hydrated animal with normal vital signs. Radiography confirmed the presence of a blade in the stomach. Dog was premedicated with glycopyrrolate. Indication of anaesthesia was done with propofol and maintenance was done using ketamine and diazepam. Endoscopy revealed the presence of blade, linear ulcerations and erosions in the stomach. The blade was retrieved using snare under endoscopic guidance. An over-tube to protect the oesophagus was used during the retrieval of the blade. Dog was administered with amoxicillin- clavulanate, pantaprazole and fluid therapy for three days. The dog had uneventful recovery following therapy.

**Keywords:** Endoscopy- shaving blade- stomach - dog

### Introduction

Gastrointestinal foreign bodies are common in dogs owing to their indiscriminate eating habits, playful activity, deglutition of incompletely masticated food, attention seeking behaviour and availability of toys in the vicinity (Sale and Williams, 2006; Leib and Sartor, 2008; Gianella *et al.*, 2009). Variety of foreign bodies including bone, hooks, jumping ball, puffer ball, socks, coins, feeding bottle nipple, tablets and toys are reported in dogs (Gianella *et al.*, 2009; Vijayakumar *et al.*, 2009; Shalini *et al.*, 2017; Reddy *et al.*, 2018; Vijayakumar *et al.*, 2018a-c and Vijayakumar *et al.*, 2019). This article describes retrieval of a shaving blade from stomach of a dog under endoscopic guidance.

### Case History and Observation

A non-descript male dog was brought to Veterinary College and Research Institute Hospital with suspicion of having swallowed a shaving blade two days earlier. Clinical examination revealed well hydrated animal with normal vital signs (Rectal temp: 100.6 F, Pulse rate 112/mt, Respiratory rate 26/mt). Haematobiochemical parameters were within the normal range. Radiography confirmed the presence of a blade in the stomach (Fig.1). It was decided to explore through gastroscopy and retrieve the same.

### Treatment and Discussion

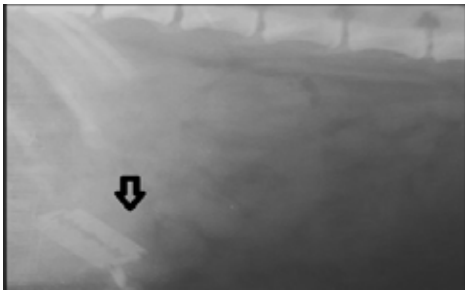
Dog was administered with atropine sulfate (@ 0.04 mg/kg SC). Premedication was done with xylazine (@ 0.5 mg/kg IM) and induction of anaesthesia using propofol (@ 1-2 mg/kg IV) was done. Maintenance of anaesthesia was carried out with ketamine and diazepam (@ 5 mg/kg IV and @ 0.25 mg/kg IV respectively) combination. Vital signs were monitored during the procedure. Endoscopy was first inserted into the stomach tube and both the stomach tube and the endoscope was advanced through the oesophagus into the stomach. Endoscopic evaluation revealed the presence of shaving blade within the stomach (Fig. 2) with ulceration and erosions of mucosa. The snare was passed through the working channel of the endoscope and the shaving blade was grasped (Fig. 3). After squeezing the blade into a semicircular fashion on its long axis, the endoscope along with snare snugly holding the blade was withdrawn within the outer- tube (stomach tube). Endoscope with the over- tube was quickly withdrawn from the animal through the oesophagus. After the removal of endoscope from the animal, the endoscope was advanced through the over- tube and the snare was loosened and the blade was removed (Fig.4). Dog was administered with amoxicillin- clavulanate (@10mg/kg body wt IV bid), pantaprazole (10mg IV, sid) and dextrose normal saline

\*Corresponding author: drvijaymvc@gmail.com

@@10ml/kg body wt IV, bid) for three days. The dog had uneventful recovery following therapy.

Hayes (2009) reported that foreign bodies can pass through the gastrointestinal tract without showing clinical signs, or they could partial or complete obstruction. Sherding (2013) reported that gastric foreign bodies were usually asymptomatic or they might cause symptoms in pyloric obstruction or gastric mucosal damage. The absence of clinical signs in the present study is supported by the above reports. Endoscopy

was used in the present study to both diagnose and retrieve the foreign body. Use of outer tube to protect the mucosa during the retrieval of the sharp foreign body was also done by other workers. Wood and Gallagher (2021) reported that foreign body hood was used by endoscopist during retrieval of sharp foreign bodies or bones. Shehata *et al.* (2024) used a stomach tube over the endoscope to protect the oesophagus from getting damaged during their endoscopic retrieval of 35 blades from the stomach of a patient.



**Fig. 1: Lateral radiograph showing radio opaque shaving blade (arrow)**



**Fig. 2: Endoscopy of stomach revealing shaving blade**



**Fig. 3: Endoscopy: Blade secured with endoscopic snare**



**Fig. 4: Retrieved shaving blade**

## Conclusion

Successful retrieval of a shaving blade from the stomach of a dog under endoscopic guidance is placed on record.

## Acknowledgements

The authors are thankful to the Dean, Veterinary College and Research Institute, Namakkal for the facilities provided.

## References

Gianella, p., Pfammatter, N.S. and Burgener, I. A. 2009. Oesophageal and gastric endoscopic foreign body removal: complications and follow-up of 102 dogs. *J. Small Anim. Pract.*, **50**: 649–654.

Hayes, G. 2009. Gastrointestinal foreign bodies in dogs and cats: A retrospective study of 208 cases. *J. Small Anim. Pract.*, **50**: 576–583.

Leib, M. S. and Sartor, L.L. 2008. Esophageal foreign body obstruction caused by a dental chew treat in 31 dogs (2000-2006). *J. Am. Vet. Med. Assoc.*, **232**, 1021-1025.

Reddy, B.S., Periyasamy, A., Vijayakumar, G., Sivaraman, S., Sankar, P. and Ravi, R. 2018. Endoscopic Retrieval of Gastric Metallic Foreign Bodies in a Labrador. *Indian Vet. J.*, **95** :70-71.

Sale, C. S. and Williams, J.M. 2006. Results of transthoracic oesophagotomy retrieval of oesophageal foreign body obstructions in dogs: 14 cases (2000-2004). *J. Am. Anim. Hosp. Assoc.*, **42**, 450-456.

- Shalini, A.S., Vijayakumar, G., Periyasamy, A. and Sivaraman, S. 2017. Endoscopic removal of button from the stomach of golden retriever pup- a case report. *Indian Vet. J.*, **94** (11):73-75.
- Shehata, M., Dafalla, H.A. and Singh, Y. 2024. Successful Retrieval of 35 Razors From the Stomach via Upper Gastrointestinal (GI) Endoscopy: A Case Report. *Cureus*, **16(1)**: e52856. DOI 10.7759/cureus.52856.
- Sherding, R.G. 2013. Oesophageal foreign body. In: Canine and Feline Gastroenterology. Washabau, R. J and Day, M.J (Eds.), Elsevier Saunders, St. Louis, pp. 576-577.
- Vijayakumar, G., Reddy, B.S., Ravi, R., Mohanambal, K. and Sivaraman, S. 2018a. Successful endoscopic retrieval of flashing puffer ball from stomach of great Dane pup. *Indian Vet. J.*, **95**:58-59.
- Vijayakumar, G., Reddy, B.S. and Sivaraman.S. 2018b. Endoscopic retrieval of chicken bone from oesophagus in a spitz – a case report. *Indian Vet. J.*, **95**: 73-74.
- Vijayakumar, G., Saravanan, S., Reddy, B.S., Napolean, R.E. and Kathirvel, S. 2018c. Retrieval of fish hook from pharynx in a dog under endoscopic guidance. *Indian Vet. J.*, **95**:79-80.
- Vijayakumar, G., Reddy, B.S. and Sivaraman.S. 2019. Endoscopic retrieval of feeding bottle nipple from stomach of a Rottweiler pup. *Indian Vet. J.*, **96(1)**: 72-73.
- Vijayakumar, G., Nambi, A.P., Sumathi, D., Thirunavukkarrasu, P. and Prathaban, P. 2009. Endoscopic retrieval of a coin from a dalmatian dog- A Case report. *Intas Polivet*, **10**:360-362.
- Wood, A.N. and Gallagher, A.E. 2021. Survey of Instruments and Techniques for Endoscopic Retrieval of Oesophageal and Gastric Foreign Bodies in Cats and Dogs. *Topics in Companion Anim. Med.*, **45** : 100555 <http://dx.doi.org/10.1016/j.tcam.2021.100555> 1938-9736/© 2021

**Indian Journal of Veterinary Medicine**  
**Vol. 44 No. 2 (December 2024)**

**Author Index**

Aishwarya Mohan	22	Poojalakshmi, T	39
Alok Kumar Chaudhary	19	Prabhavathy, H	31
Annie Mariam John	8	Premalatha, N	17, 31
Anuradha Nema	19	Rajesh, K	22
Arun, V	29	Ramprabhu, R	27
Bhardwaj, R.K	5	Ramya Sai, T.	1
Chaitanya, Y	14, 36	Ravi. R	53
Deepsikha	51, 55	Richard Thounaojam	57
Deepti, B	14	Sai Soumya Konjeti	14
Dimri, U	51, 55	Saikrishna, K. S	22, 29
Gollapalli Nagarjuna	12, 25, 49	Sangeetha, A	1
Himani Sharma	5	Saravanan, M	39
Jadav, M . M	45, 51, 55	Saritha, G	34
Jeyaraja, K	27, 29	Sasikala, K	62
Karthika, K	17, 39	Satish Kumar, K	1
Kavitha, S	8, 27, 31	Shubhangi Choudhary	19
Lakshmi Rani, N	36	Sivajothi, S	12, 25, 34, 42, 49
Lakshmikantan, A	17	Sivaraman. S	53
Mahendran, K	45	Sudhakara Reddy, B	12, 25, 34, 42, 49
Manas Das	55	Sudhir Kumar	5
Md Shafiuzama	8	Sumathi. D	53
Mohanambal, K.	1, 53, 60	Suresh, K	14
Mondal,D. B.	57	Swetha, K	27
Mukesh Shrivastva	21	Udhayabanu, P	45
Nagella Naveen	36, 57	Ujwala, K.	1
Nasreen, A	22	Vaikunta Rao, V	22
Nisha Chaudhary	19	Vijayakumar, G	8, 31, 60, 62
Pavan Kumar, C	36	Vivek Joshi	51, 55, 57
Pazhanivel, N	27	Yamini thakur	29
Ponnuswamy, K. K.	53	Yogeshpriya, S	17, 39

## GENERAL GUIDELINES FOR CONTRIBUTORS

The Indian Journal of Veterinary Medicine is published twice in a year, June and December. It contains review articles (guest), original/applied research articles, clinical observations, preliminary reports of scientific studies and short communications on Veterinary Medicine and animal Health. In addition, the journal also publishes Letters to the Editor, Tips to Vets and other relevant informations.

**Manuscripts.** The manuscripts are accepted on the basis of scientific importance and suitability for publications on the understanding that they have not been published, submitted or accepted for publication elsewhere wholly or partly in any language. The copyright of papers, accepted for publication, belongs to *The Indian Society for Veterinary Medicine*.

The official language of journal is English. The articles should be submitted through online at [epubs.icar.org.in/index.php/IJVM/login](http://epubs.icar.org.in/index.php/IJVM/login). The manuscript should be typewritten on one side of the paper with wide margins and double spacing throughout except in abstracts, footnotes and references which should be in single spacing. It should be sent in duplicate. Each page of the manuscript should be numbered on the top corner including title page, references, table, etc. All the pages should contain running title of the paper and surname of author(s) at the top.

Small corrections, if necessary, in the manuscript may be inserted in between the lines but the space where they should go, must be clearly indicated. Large corrections should preferably be typed on separate sheets and attached at proper places.

The manuscript should be organized in the following order in general:

Title with author(s) name(s) and complete address for correspondence with PIN code

Abstract, Keywords, Introduction, Materials and Methods, Results, Discussion, Acknowledgement, if any, references, Tables, Figures

**Title:** Papers should be headed with full title, the initials and surname(s) of the author(s) and address of the Institution where the work was carried out. A shortened version of the title should also be supplied for running headlines. The serial titles are not acceptable, so each paper should have an individual title.

**Abstract:** This should not exceed 300 words and should outline briefly the purpose of the study, important findings and conclusions.

Repetition and generally known information should be avoided.

**Keywords:** Important and relevant 4-6 keywords be mentioned

**Introduction:** This part should state briefly the nature and purpose of the work together with the important findings of previous workers.

**Materials and Methods:** The author(s) should describe materials, methods, apparatus, experimental procedure and statistical methods in detail to allow other workers to reproduce the results. Sub-heading may be used in this part.

**Results:** The experimental data should be presented clearly and concisely. Information presented in tables and figures should not be repeated.

**Discussion:** This should focus the interpretation of experimental findings. Do not repeat data presented in the introduction or information given in the result. References in this part should be cited as follows....as observed by Kumar *et al.* (1984) or in parentheses..... were found (Dwivedi *et al.*, 1983; Singh and Singh, 1984)

**Acknowledgement(s):** This should be short. Grants and technical helps provided should be acknowledged.

**References:** All publications cited in the text should be presented in the form of a list of references arranged alphabetically according to authors' surnames. Don't give serial numbers. Use the following system for arranging the references.

For periodicals: name(s) and initials of author(s) year of publication, title of the paper, abbreviated title of the journal (in conformity with the World list of Periodicals), volume number (bold), colon, first and last page numbers.

a. For periodicals:

Bartley, E.E., Wheatcroft, K.L., Claydon, T.J. Fountaine, F.C. and Parrish, D.V. 1951. Effect of feedings aureomycin to dairy calves. *J. Anim. Sci.* **10**: 1036-1038.

b. For books:

Snedecor, G.W. and Cochran, W.G. 1994. *Statistical Methods*. VIII edn. Iowa State University Press, Iowa, USA, pp. 287-192.

c. For chapter in a book:

Thomas, J.R. and Charles, C.C. 1997. Calcium regulating hormones and diseases of abnormal mineral metabolism. In: *Clinical Biochemistry of Domestic Animals*. Kaneko, J.J., Harvey, J.W. and Bruss, M.L. (eds) V. edn. Academic Press, London, pp. 619-702.

d. For thesis:

Singh, S.K. 1998. Studies on clinico-biochemical changes in Downer cow syndrome. M.V.Sc. thesis, Punjab Agriculture University, Ludhiana, India.

e. For proceedings of symposia/conference:

Shah, R.L., Kataria, J.M., Arya, S.C. and Verma, K.C. 1996. Study on inclusion body hepatitis in broiler chicks. *Proc. XX World Poul. Congress* held on Sept. 2-5, 1996, New Delhi, Vol. IV, pp. 313-314.



*Tables:* These should be as few as possible and typed on separate sheets and numbered in roman numerical. Each table should have a brief and self-explanatory title.

*Figures:* Only good quality, unfolded and unmounted glossy prints of half-tone illustrations and clear lines drawings in India ink are accepted. The number of figure, the author's name and top of figure should be indicated lightly on the back by soft pencil. Legends to the figures should be typed on a separate sheet of manuscript. All the figures should be referred to in the text and their approximate place be indicated on the margin. A statement of the magnification of illustrations should be given wherever applicable. The coloured illustration are also accepted.

*Abbreviations and Symbols:* Metric system should be followed in the text. The quantities should be expressed in SI units.

Contributor(s) are requested to use the following abbreviations.

Body weight	b wt	Litre	l	Calory	cal
Meter	m	Centimeter	cm	Microlitre	μl
Counts per minute	cpm	Milligram	mg	Cubic centimeter	cm <sup>3</sup>
Millilitre	ml	Degree centigrade	°C	Minute(s)	min
Degree Fahrenheit	°F	Once a day	od	Decilitre	dl
Parts per million	ppm	Gram	g	Percent	%
Hour(s)	hr	Picogram	pg	Inch	in
Revolution per min	rpm	Intramuscular	im	Seconds(s)	sec
Intraperitoneal	ip	Square centimeter	cm <sup>2</sup>	Intravenous	iv
Subcutaneous	sc	Kilo calories	kcal	Thrice a day	tid
Kilogram	Kg	Year(s)	yr	Twice a day	bid
Volts	V				

All other abbreviations should be spelled out when first use din the text.

*Footnotes:* These should be used only when absolutely essential. When used, they should be numbered in text, indicated by superscript numbers and kept as short as possible.

### **CLINICAL ARTICLES**

Clinical case reports of interesting and rare nature are published under this heading. The article sent for publication under this head, should not contain more than three typed pages including references and illustrations and should be marked 'Clinical Article' at the right upper corner of the first page of manuscript. An abstract of the case is necessary along with keywords. The manuscript should contain history and important clinical observations of the case, tentative diagnosis and its confirmation, line of treatment used and fate of the case. At last, it should have a brief discussion on the line of treatment and conclusion. All these can be given in separate paragraphs sequentially and sub-heading are not required.

The acknowledgement, if necessary, may be given but it should be as short as possible and should not bear subheadings.

The references should be given as per format for the research articles.

### **SHORT COMMUNICATION**

They should be in the same general format as full length papers, but should not exceed a maximum of three typed pages including tables and illustrations. An abstract of the case is necessary along with keywords. The subheading, except for acknowledgement and references, should not be written in the manuscript. The manuscript for this head should be clearly marked 'Short Communication' at the right corner on the top of the first page of manuscript.

**INDIAN JOURNAL OF VETERINARY MEDICINE**  
**DECLARATION**  
**FORM IV (See Rule 8)**

1. Place of publication : Department of Clinical Veterinary Medicine  
Madras Veterinary College  
Tamil Nadu Veterinary and Animal Sciences University  
Chennai - 600007, Tamil Nadu
2. Periodicity of its publication : Bi-annual
3. Printer's Name : Shri Vignesh Prints
- Nationality : Indian
- Address : Old No. 33 ( New No.65), 2nd Street, Pudur,  
Ashok Nagar, Chennai - 600 083
5. Editor's Name : Dr. G. Vijayakumar
- Nationality : Indian
- Address : Department of Veterinary Clinical Medicine  
Madras Veterinary College  
Tamil Nadu Veterinary and Animal Sciences University  
Chennai - 600007, Tamil Nadu
6. Proprietor's Name : Department of Veterinary Clinical Medicine, Ethics and  
Jurisprudence, Mumbai Veterinary College (MAFSU),  
Parel-Mumbai 400012

I, Dr. G. Vijayakumar, Department of Veterinary Clinical Medicine, Tamil Nadu Veterinary and Animal Sciences University, Chennai-600 007, Tamil Nadu hereby declare that the particulars given above are true to the best of my knowledge and belief.

Dated: 1<sup>st</sup> December, 2024

**Dr. G. Vijayakumar**