

## Cystic degeneration of liver and lung parenchyma in two cross bred cattle

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### Abstract

Two cross bred cattle presented to the large animal clinic of GADVASU were included in this study. After taking history of illness, physical and clinical examination was performed to rule out the cause. To obtain the confirmatory diagnosis, further laboratory tests like complete blood count, radiography and ultrasonography were carried out. Based on the history, clinical signs, physical and clinical examination, x-ray and ultrasonography, the cases were diagnosed as cystic degeneration of liver and lung parenchyma. The animals were treated with praziquantel 5 mg/kg b.wt once and repeated after 3 days along with supportive therapy. Over a period of time, uneventful recovery from the clinical signs was reported successfully.

**Key words:** Cystic degeneration, Liver, Lung, Crossbred cattle, Praziquantel.

Echinococcosis is one of the major public health concern caused by the metacestode stage of *Echinococcus granulosus*. These organisms were found in the small intestine of the dogs and the metacestode stage (hydatid cyst) was seen in variety of tissues in cattle due to provision of fodder contaminated with dog feces. Pathogenicity and severity of the condition depends on the organ in which the cyst is present. No apparent clinical signs are observed until severe cystic affection is there. The Indian subcontinent provides suitable arena for the establishment, propagation and dissemination of hydatidosis to human beings as well as livestock population. This parasite is mostly observed in food producing animals and causes major economic losses to the farming community due to decline in milk and meat production (Torgerson, 2003). Most of the animals with hydatidosis are asymptomatic and definite diagnosis is based on the necropsy findings or during slaughter due to non availability of reliable tool to diagnose the condition. Some recent reports documented that the animal evincing respiratory signs like coughing, inspiratory dyspnea, respiratory distress, stridor etc. could be helpful to diagnose the hydatidosis (Chuadhari *et al.*, 2017). Sidhu *et al.* (2019) documented the presentation of cystic disease in cattle and buffaloes with atypical signs like ventral edema, dyspnoea and jugular engorgement and the confirmatory diagnosis of the underlying condition in animals with these signs are based on ultrasonography.

### Case History and Clinical Observations

**CASE 1:** A five years old female Holstein Friesian

crossbred cattle was brought to the large animal clinic of GADVASU, Ludhiana with the chief complaint of inappetance and respiratory distress from the last two months along with open mouth breathing. The animal had a blood mixed nasal discharge occasionally. The animal was seven month pregnant. On physical examination, the animal was dull and depressed, with extended head and neck and flaring of both the nostrils (Fig 1). On general clinical examination, the vital parameters showed that animal had a temperature of 100.4°F, respiratory rate 20 breaths per minute, heart rate 120 beats per minute, mucous membrane was pale pink and moist and had ruminal atony. Blood samples were collected aseptically for routine hematological examination. In hematological examination the animal had hemoglobin of 7 g/dl, TLC count of 19400 / microlitre with the relative cell count of neutrophil 80 %, lymphocyte 18 % and eosinophilic count of 2 %.

On auscultation of chest, exaggerated heart sounds were appreciable. To arrive at prompt diagnosis, the animal was subjected to further diagnostic aids i.e. radiography and ultrasonography. In x-ray, lateral view of the thorax showed multiple cystic nodules on the caudal lung lobe. In ultrasonography, at the 7<sup>th</sup> ICS on right side, numerous cystic lesions were observed in the lung area and at 10<sup>th</sup>-11<sup>th</sup> ICS on right side, multiple encapsulated thin walled cystic lesions in the hepatic parenchyma were observed (Fig 2). Due to gradual growth and multiplication of the metacestodes, damage to the organ occurs which becomes dysfunctional leading to severe clinical signs (Zhang and Mc manus, 2006).



Fig 1: Flaring of nostrils observed in a cow presented with respiratory distress

**CASE 2:** A three year old female Holstein Friesian crossbred cattle brought to the large animal clinic of GADVASU, Ludhiana with the chief complaint of inappetance and history of fever from the last three days. The animal had an occasional serous nasal discharge. Rumination was reduced. On physical examination, the animal was dull and depressed. On general clinical examination, the vital parameters showed temperature of 101.6°F, respiratory rate 16 breaths per minute, heart rate 76 beats per minute, mucous membrane pink and moist with normal ruminal motility. On hematological examination, the animal had a hemoglobin of 6.6 g/dl, TLC count of 20800 / microlitre with the relative cell count of neutrophil 74 %, lymphocyte 26 %, moderate normocytic normochromic anemia and neutrophilic leucocytosis along with shift to left.

Auscultation of the heart and lungs revealed normal sounds. In x-ray, lateral view of the thorax showed multiple cystic nodules on the caudal lung lobe. In ultrasonography, at the 6-7<sup>th</sup> ICS right side, multiple anechoic cystic lesions were observed in the lung parenchyma. Liver appeared as normal in echogenicity and single anechoic structure was found on the liver.

Both the cows were treated with Praziquantel @ 5 mg per kg body weight and the owner was advised to repeat the same after 3 days along with supportive treatment. Over a period of 15 days, the animal showed an uneventful recovery from all clinical signs.

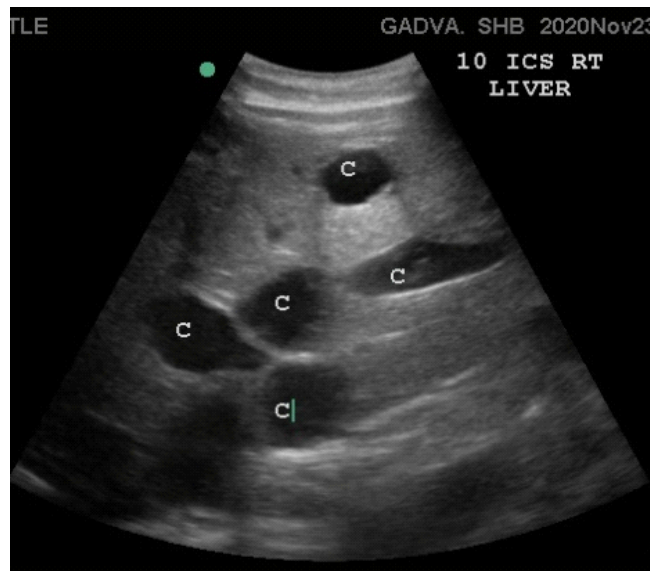


Fig 2: Ultrasonographic image of liver parenchyma on right side at 10<sup>th</sup> ICS showing multiple cystic densities (C)

## Discussion

Hydatid cysts in food producing animals lower the productive value of the animal and lead to major economic losses to the farming community. Higher prevalence is reported in female animals due to productive reasons, immunosuppression during pregnancy and lactation (Pour *et al.*, 2012). The clinician should have keen observance towards hydatidosis in animals evincing respiratory signs keeping in view the endemic aspect. It is not possible to detect the lung cyst through ultrasonography alone in all the cases because the cyst may be lying deep in the lung parenchyma. Hence, x-ray along with USG is warranted to rule out the cystic lesions and degeneration of the organs (Guarnera *et al.*, 2001). The clinical signs observed in these two animals were variable i.e. one animal had a severe respiratory distress and the other animal had normal respiration without distress. But with radiography and ultrasonography, we could find cystic densities in the lung in both the cases so it was concluded that the appearance of clinical signs is based on the severity and location of the lesion (Besbes *et al.*, 2010), However this may not be true in all the cases as it has been documented (Sidhu *et al.*, 2019) that some of the animals can show atypical signs, suggestive of some other ailments. So, it is important to include hydatidosis in differential diagnosis while investigating the animals with respiratory problems. It is mandatory to deworm the animals including dogs on the farm premises periodically and proper disposal of

canine feces without contamination also helps to reduce the incidence of cystic infections. Even single treatment of animal with praziquantel 5 mg/ kg bwt. was seen to give clinical recovery from the disease (Sharma *et al.*, 2015). Proper disposal of affected organs and increasing the awareness among butchers and animal owners will help to reduce the occurrence along with implementing the effective surveillance of the disease. Clinical recovery of these cases due to the death of protoscolices and inhibition of further cystic growth leads to decrease in the weight and pressure of the cyst on the organ.

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