Thoraco-reticulocentesis and Ultrasonographic Diagnosis of Diaphragmatic Hernia - A Study of Two Cows

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Abstract
Two cows in last trimester of pregnancy were presented with anorexia, recurrent abdominal distension, passing scanty dung for last five days. Clinical examination revealed tympany and increased rumen motility. Ultrasonographic examination of thorax and abdomen revealed presence of hyperechogenic wall of reticulum nearer to heart and reticular motility was evident between 4th and 5th intercostal spaces. Contrast radiography revealed herniated reticulum into the thoracic cavity. Thoracoreticulocentesis examination of aspirated contents enabled confirmation of diaphragmatic hernia.

Keywords: Contrast radiography; diaphragmatic hernia; thoracoreticulocentesis; ultrasonography

Introduction
Diaphragmatic hernia (DH) is a condition in which a part of abdominal viscera mainly reticulum herniates into thoracic cavity through an opening in diaphragm. It causes recurrent ruminal tympany, anorexia, regurgitation and displacement of heart (Radostits et al., 2007). Diaphragmatic hernia is observed mostly in adult dairy animals that are either in late gestation or calved recently (Smith, 2002). The present communication reports use of ultrasonography, thoracocentesis and contrast radiography for diagnosing diaphragmatic hernia in cows.

History and Clinical Observations
Two cows were presented with history of anorexia, recurrent tympany, passing of scanty dung since last five days. Both cows were in last trimester of pregnancy. Clinical examination revealed tympany, scanty faeces, abnormally high rumen motility (6 contractions/2 minutes), temperature, pulse rate and respiration rate were within normal range (Fig. 1 and 2). Peristaltic sounds were heard on auscultation of right thoracic area. Haematological parameters were within the normal range. Contrast radiography revealed presence of contrast agent into the herniated reticulum in diaphragm (Fig. 3). Ultrasonographic examination at the level of right fourth and fifth intercostal spaces revealed presence of hyperechoic reticulum wall with reduction in reticular motility (Fig. 3). Reticulocentesis was done at fourth intercostal space on right side of thorax and fluid was aspirated. The collected fluid revealed alkaline pH and presence of rumen protozoa. Based on radiographic, ultrasonographic and thoracoreticulo centesis findings animals were diagnosed affected with reticular diaphragmatic hernia.

Discussion
Diaphragmatic hernia is observed mostly in dairy cattle that have calved recently or during advanced pregnancy but occasionally in heifers. Responsible factors for development of diaphragmatic hernia included congenital weakness in diaphragm, difficulty during parturition and external trauma. Ultrasonographically, presence of reticular motility at the level of 4th and 5th intercostal spaces indicated reticular herniation into thorax. The most observed signs of diaphragmatic hernia are dullness, depression, inappetance, tympany and scanty faeces (Smith, 2009). The diagnosis of diaphragmatic hernia is based upon clinical examination, plain and contrast radiography, laparorumenotomy (Saini et al., 2000). In present study, lateral radiographs showing indistinct line of diaphragm and contrast radiograph showed passage of contrast agent into herniated reticulum located cranial to diaphragm. Ultrasonography had been reported as a non-invasive imaging modality for diagnosis of traumatic pericarditis and...
diaphragmatic hernia (Mohindroo, 2007).
Radiography is used extensively for diagnosis of abdominal and thoracic affections especially caused by metallic foreign bodies. Thoracocentesis is useful in confirmation of diaphragmatic hernia and can be used for field level (Misk, 2015). In places, where radiography, ultrasonography facilities are not available, thoracoreticulocentesis could be used to confirm diaphragmatic hernia in cows in which peristaltic sound were heard in thoracic auscultation.

Summary
Present communication reports thoraco reticulocentesis for confirmation of diaphragmatic hernia in cows.

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References