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Pseudopericarditis in a cow caused by theileriosis - a case report

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ABSTRACT

Pseudopericarditis has been used to describe jugular engorgement and oedema of the brisket and ventral abdominal wall. Similar symptoms can be seen in cattle with traumatic pericarditis. Pressure caused by tumours, abscesses, Echinococcus cysts, swollen lymph nodes resulting from tuberculosis and leukosis, one-sided pleuritis and diaphragmatic hernia to the base of cranial and caudal vena cava returning blood to the heart have been reported to cause pseudopericarditis in cattle. These mediastinal lymph nodes may also be swollen due to theileriosis and cause pressure on the v. cava. This study aims to describe the clinical, haematological and electrocardiographical findings of a pseudopericarditis case in a cow caused by theileriosis, and to add the disease into the aetiology of pseudopericarditis.

Key words: pseudopericarditis, theileriosis

Introduction

The term pseudopericarditis has been used to describe jugular engorgement and oedema of the brisket and ventral abdominal wall caused by pressure at the base of the cranial and caudal vena cava returning blood

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to the heart (RADOSTITS et al., 1994). It is used because similar symptoms can be seen in cattle with traumatic pericarditis. Tumours, abscesses, echinococcus cysts, swollen lymph nodes resulting from tuberculosis and leukosis, one-sided pleuritis and diaphragmatic hernia have been reported to cause pseudopericarditis in cattle (ÝMREN and ŢAHAL, 1996; ALAÇAM and ŢAHAL, 1997).

Theileria species are known to have a schizogony stage in the local lymph nodes, which causes them to swell (KETTLE, 1995). Mediastinal lymph nodes around the base of cranial and caudal vena cava returning blood to the heart may be affected by Theileria species, but this has not been reported to date in the literature for the aetiology of pseudopericarditis. This study describes the clinical, haematological and electrocardiographical findings of another disease to be added to the aetiology of pseudopericarditis.

Case history

A five-year-old cross-bred cow from Alabayýr village was brought to the Animal Hospital of the University of Yüzüncü Yil, Faculty of Veterinary Medicine, due to inappetence, weakness and exhaustion. These symptoms started three days before arrival to the animal hospital, according to anamnesis. The owner of the cow had two more cows, neither of which had had a similar problem.

Clinical findings

Clinical findings of the animal were as follows: a temperature of 39.5 ^{o}C, a pulse rate of 70 beats/minute, packet-cell volume of 35%, swollen prescapular lymph nodes, slight engorgement in the jugular vein, positive vein pulsation and imperceptible oedema on the submandibulae, neck and brisket. Auscultation revealed no pericardial friction rub, gurgling, splashing or tinkling. Tests on faecal samples were negative for fascioliasis, and blood smears were negative for blood parasites. The animal was given an anti-parasitic drug (Rabenzole; Topkim/Turkey) as treatment for possible fascioliasis. However, the general condition of the animal deteriorated a week later, and engorgement in the jugular vein and positive vein pulsation became much more obvious. The jugular vein had a string-like appearance

Table 1. Haematological findings in a cow having pseudopericarditis

Parameters	Findings	Reference ranges*	Parameters	Findings	Reference ranges**
Blood pH	7.384	7.35-7.50	Leucocytes	22.000/ml	8.000/ml
HCO3	25.9 mmol/L	20-30 mmol/L	Lymphocytes	48%	58%
Haemoglobin	9.7 g/dl	8-15 g/dl	Neutrophils	41%	28%
PCV	29%	24-46%	Monocytes	8%	4%
Na+	126.8 mmol/L	132-152 mmol/L	Basophils	2%	0.5%
Cl-	99 mmol/L	95-110 mmol/L	Eosinophils	1%	9%

*RADOSTITS et al. (1994)

**JAIN (1993)

(Fig. 1). The amount of oedema increased and became clearer, but auscultation still revealed no pericardial friction rub, gurgling, splashing or tinkling. The animal's temperature was 39.8 ^{o}C, it had a pulse of 85 beats/minute and blood smears were positive for *Theileria annulata* in very low numbers in erythrocytes. Haematological examination findings are shown in Table1.

Fig. 1. Clinical appearance of a cow with pseudopericarditis caused by theileriosis (appearance of string-like jugular vein)

Electrocardiographical (ECG) examination revealed that the heart was working with a normal sinus rhythm but heart beat was slightly high (87 beats/minute). QRS complex seen on the ECG was generally as QS complex when second derivation was examined (Fig. 2). QRS amplitude was –0.6 mv. The cow was treated with an anti-theilerial drug (Butalex; DÝF) and the clinical signs of pseudopericarditis disappeared one week later.

Fig. 2. Electrocardiogram findings of a cow with pseudopericarditis caused by theileriosis (25 mm/sn, 1mV= 10mm)

Discussion

Pseudopericarditis is a rarely seen circulatory system disorder of cattle. Jugular engorgement, oedema inappetence, weakness and exhaustion are the clinical signs. The signs reported in the present study were similar to

those described for pseudopericarditis in the literature (FRASER et al., 1991; RADOSTITS et al., 1994; ÝMREN and ŢAHAL, 1996; ALAÇAM and ŢAHAL, 1997). However, theileriosis has not been mentioned in the aetiology of the disorder. The clinical signs for pseudopericarditis in the present case were not obvious when the animal was first admitted to the hospital. The *Theileria* species were most probably at the schizogony stage in the mediastinal lymph nodes on admission. In fact, clinical signs for theileriosis, such as fever and piroplasm forms in erythrocytes, were not present. Therefore, fascioliasis was suspected due to the slight oedema. Although faecal examination was negative for fascioliasis, the cow was treated for this disorder since this problem is common in this region. A week after admission, clinical signs such as the string-like jugular vein, increased amount of oedema, slight fever, evident swelling of the prescapular lymph nodes, were more apparent. Furthermore, a few ring forms of *Theileria annulata* in the erythrocytes were seen after microscopic examination of blood smears.

It is well known that infective *Theileria* agents (sporozoite) in the salivary glands of the ticks transfer to the host during feeding of the ticks. The organisms then replicate in the local lymph nodes around the blood sucked area. Later, they are transported to the other lymphoid organs through the blood. Schizonts of the organism occur through the szhizogony stage from the sporozoites. These schizonts cause swelling and leucocytosis in the lymphoid tissue and cells (TAŢÇI, 1985) and could have caused the leucocytosis and swollen prescapular lymph nodes in the present case. If mediastinal lymph nodes around the caudal and cranial vena cava are affected, they could also be swollen. As a result, clinical signs reported for pseudopericarditis occurred in the present case. Meanwhile, some authors have reported leucocytosis (FLACHER and SAY, 1989) and leukopenia (GÜL, 1999) in animals with theileriosis. It is suggested that leucocytosis developed during the early stages of the disease in the present case. Leukopenia may also develop, but in the later stages of the disease, as has been reported in the literature (SAYIN, 1985; GÜL, 1999).

Electrocardiographical examination revealed that the heart was working with a normal sinus rhythm but heart beat was slightly high (87 beats/minute). Increased heart rate and anorexia indicate excitation of the sympathetic system. In fact, the levels of sodium ions in the plasma were

low in the present case. When the sympathetic system is excited the levels of sodium ions decrease while intracellular sodium levels increase (GUYTON, 1991). QRS complex seen on the ECG was generally as QS complex when second derivation was examined, which is considered normal for cattle (YILMAZ, 2000). QRS amplitude was –0.6 mv, which was high compared with the normal values reported for cattle of 0.29 mv (KONUK, 1966). Electrical axis, which is the indication of electromotive power of the heart, was around –140° in the present study. Similar values have been reported in the literature (YILMAZ, 2000).

When clinical signs as reported in this case are seen in cattle, pseudopericaditis can be diagnosed and the findings in this study indicate the cause as theileriosis. Therefore, the disease has to be taken into consideration. Apart from clinical signs, haematological and ECG findings could also be helpful in the diagnosis of the disorder. Oedema of the brisket and ventral abdominal wall may also develop in animals with severe fascioliasis, but jugular engorgement and the string-like appearance of the jugular vein does not occur. Percussion and auscultation findings are also helpful to differentiate between pseudopericarditis and commonly seen exudative pericarditis.

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SAŽETAK

Opisan je pseudoperikarditis kod zastoja u jugularnoj veni te edema prsišta i ventralne abdominalne stijenke. Slični simptomi mogu se zabilježiti u goveda kod traumatskog perikarditisa. Pritisak uzrokovan tumorima, apscesima, hidatidnim cistama, povećanim limfnim čvorovima kod tuberkuloze i leukoze, jednostranim pleuritisom te dijafragmatskom hernijom prema bazi kranijalne i kaudalne šuplje vene već su opisani kod pseudoperikarditisa u goveda. Medijastinalni limfni čvorovi mogu biti povećani i kod tajlerioze te pritisnuti šuplju venu. Opisani su klinički, hematološki i elektrokardiografski nalazi kod pseudoperikarditisa u krave uzrokovanog tajleriozom čime je povećan niz uzroka koji dovode do navedene bolesti.

Ključne riječi: pseudoperikarditis, tajlerioza