An outbreak of Septicaemic pasteurellosis (Haemorrhagic septicaemia) among dairy cattle in the Eastern Region of Saudi Arabia

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ABSTRACT:

An outbreak of Haemorrhagic septicaemia among dairy cattle was investigated. Clinical signs and necropsy findings were described. Morphological, cultural and biochemical characteristics obtained from staining and culturing of 18 blood samples, collected from morbid cows, demonstrated the presence of Pasteurella multocida.

INTRODUCTION:

Septicaemic pasteurellosis (Haemorrhagic septicaemia) is an acute disease of cattle, buffaloes and camel and to a lesser extend of horses and sheep (Radostits et al. 1997). Since the description of the disease, Pasteurellosis has proven to be one of the major economic problems of cattle industry. The disease is mainly caused by *Pasteurella multocida* type B and occasionally by type D and type E (Francis and Schels 1980; Shigidi and Mustafa, 1979).

Septicaemic pasteurellosis usually occurs in outbreaks during environmental stress (Grossmann et al 1988). Mustafa et al. (1978) stated that approximately 45% of the healthy cattle, in herds associated with the disease, harbour the organisms in a carrier state. However, the carriers were only 3-5% in cattle from herds which are associated with the disease .

Prevention of pasteurellosis has proven difficult and recent techniques are now in use to evaluate the potency of the various pasteurellosis vaccines. It was therefore, decided to issue this paper to document the occurrence of Septicaemic Pasteurellosis among dairy cattle in the Eastern region of Saudi Arabia.

MATERIALS AND METHODS

A. FIELD INVESTIGATION:

The outbreak was investigated in a dairy farm situated in Al-Hasa region of the Eastern Province . The cows were kept in isolated fences with 200 animals per fence . The outbreak occurred in early winter (mid – October) 1999 in one herd and comprised Freisian cows with different ages which were vaccinated against Septicaemic pasteurellosis . Report from the farm included increasing deaths , among the morbid cows , with morbidity rate above 50% and mortality rate (10-15 %) within 24 – 48 hours from the initial occurrence of the illness. The observed predominant clinical signs included dullness , lethargy , pyrexia (40-41C) difficulty in breathing with dyspnea at later stages and ruminal atony , profuse salivation and painful swelling about the throat and brisket in individual cases .

Following thorough clinical examination of the affected cows, heparinized blood samples were collected from the jugular vein of 18 morbid cows for culture and blood smear preparation . Cows that died were subjected to post- mortem examination and gross pathological lesions in different organs were reported .

B. ISOLATION AN IDENTIFICATION OF CAUSATIVE AGENT:

Blood smears were initially made from the collected blood samples. These were fixed by heat and stained with Gram's and leishmanns stains. Following examination of the stained blood smears the 18 collected blood samples were each inoculated in three types of media, these included blood agar (Oxoid) brain – heart infusion agar (Oxoid) and Hekton enteric agar (Oxoid) .The inoculated plates were incubated aerobically and anaerobialy a 37^{o}C for 24-72 hour. Following purification, through subcultures , the isolates were subjected to further identification with the use of API 2ONE system (Biomerieux, France)

RESULTS:

The necropsy findings in dead cows were congested trachea, emphysematous lung, petechial haemorrhage in the myocardium, congested abomasum, focal peticheal haemorrhage in the small intestine, swollen or congested mesentiric lymph nodes and congested, fragile liver. Grams stained blood smears and growing colonies yielded a pure Gram negative coccobacilli. Direct Leishmann's staining of blood smear revealed the presence of the bipolarity, which is a characteristic of *Pasteurella spp.* Aerobic overnight incubation at 37^{o}C showed a cultural characteristics of white pasty colonies, with irregular shape, and Alpha-haemolysis on blood agar. There was no detected anaerobic growth for 24-48 hrs. incubation. Completion of the identification of the isolates were undertaken by the use of API 20E. The morphological, cultural and biochemical findings confirmed that the isolated organism was *Pasteurella multocida.*

DISCUSSION:

Septicaemic pasteurellosis (Haemorrhagic septicaemia) as an acute disease of cattle, which induce a great economic losses, is world-wide in distribution (Radostits et al. 1997). This report is considered as the first of its type on septicaemic pasteurellosis in dairy farms in the eastern region of Saudi Arabia. Sporadic outbreaks of the disease, despite routine vaccination, have been reported world wide by a number of authors (Taylor, 1998; Courlay et al. 1989; Saharee and Chandrasekaran 1986). Vaccination of animals against Pasteurellosis is a routine practice in Saudi Arabia particularly in well-controlled dairy farms including the herd under the present investigation .

The clinical picture, necropsy findings, morphological and cultural characteristics were in accord with that reported by Buxton and Fraser (1977); Howard (1986) and Radostits et al (1997). The clinical signs and postmortem lesions were strongly suggested the presence of septicaemic pasteurellosis. This outbreak may be due to either faulty vaccination programme or as a result of infection with different strain of *Pasteurella multocida* which was not incorporated in the vaccine used. This further strengthen the view that incorporation of locally isolated strains as a main component of the vaccine is vital (Moiser et al. 1989).

Different serotypes *of Pasteurella multocida* have been isolated from Septicaemic pasteurellosis in many parts of the world (Francis, 1980; Shigidi and Mustafa, 1979). Therefore, serotyping of the present isolate is in progress. Moreover, studies on the immunogenicity and protective efficacy of Pasteurellosis vaccine is one of the on going projects adopted by the College of Veterinary Medicine and Animal Resources, King Faisal University.

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حالة تفشي لمرض التسمم الدموي (باستيرولوزس) بين الأبقار الحلوبه في المنطقة الشرقية بالمملكة العربية السعودية

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الملخص :

لقد تم استقصاء لحالة تفشي مرض التسمم الدموي (الباستيرولوزس) بين الأبقار الحلوبه. كذلك تم توصيف كامل للأعراض المرضيه والأعراض التشريحيه. بعد الصبغة والزراعة لثمانية عشر عينه من الدم جمعت من الأبقار المصابة بالمرض، دلت النتائج المتضمنة للخواص الشكلية والاستنباتية والبايوكيماوية على وجود جرثومه الباستيرولا ملتوسيدا المسببة لمرض التسمم الدموي.