

Incidence and Clinical Study Ovine Pregnancy Toxemia in Al-Hassa Region, Saudi Arabia

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Abstract: Retrospective data concerning the occurrence of pregnancy toxemia in ewes presented to Veterinary Teaching Hospital, King Faisal University from 1992-2003 was obtained. Twenty seven ewes presented to same clinic in 2004 with the suspicious of pregnancy toxemia were subjected to clinical and laboratory examinations. Blood samples for glucose level determination were taken from the 6 ewes proved to have pregnancy toxemia. At the same time blood samples were collected from 6 healthy non pregnant and 6 healthy pregnant ewes as control. The incidence of pregnancy toxemia in the 12 years recorded ranges between 6.5-37%. The highest incidence was reported in 1998 (37%), while the lowest incidence was reported in 2003 (6.5%). The clinical manifestations showed by the 6 animals proved to have disease were mainly nervous manifestations. The level of blood glucose in ewes with pregnancy toxemia was $1.02 \pm 0.14 \text{ mmol L}^{-1}$, while in healthy non pregnant and pregnant was $2.95 \pm 0.65 \text{ mmol L}^{-1}$ and $2.7 \pm 0.14 \text{ mmol L}^{-1}$, respectively. It could be concluded that the incidence of the disease in reported years is low to moderate and the disease has significant effect of blood glucose level.

Key words: Pregnancy toxemia, ewes, glucose, Saudi Arabia

INTRODUCTION

Pregnancy toxemia is one of the major metabolic diseases affecting sheep and goat causing economical losses due to substantial mortality among these animals. It occurs mainly within the last 6 weeks of pregnancy when the fetuses exert the maximum demand of energy for their growth; also the disease is more common in ewes bearing more than one fetus (Radostits *et al.*, 2000; Cantley *et al.*, 1991; Ford, 1983). Furthermore, decrease in ruminal volume as a result of expanding uterus in late pregnancy or due to presence of foreign bodies in the rumen may interfere with breakdown of carbohydrate and its metabolism in the rumen (Cheema *et al.*, 1985; Thatcher and Keith, 1986). The clinical signs of the disease has been documented (Ford, 1983; Caple and Mclean, 1986; Radostits *et al.*, 2000; Al-Mugalli, 2001). The disease is characterized by listless and lag behind the flock and make no effort to move even when approached by man or dog. In general the affected ewes appear dull and hang their head and appetite is lost, in the latter stages neuromuscular disturbances appear. The occurrence of a significant hypoglycemia is the characteristic features of the demand for glucose by both developing fetus and the ewe. Beside

hypoglycemia, both ketonemia and ketonaureia are characteristic features of the disease (Caple and Mclean, 1986; Radostits *et al.*, 2000).

In the this study there were scanty information on the incidence of pregnancy toxemia in sheep in Al-hassa region in Saudi Arabia.

The aim of this investigation is to study the incidence and clinical aspect of the disease between 1992-2004 years in cases admitted to Veterinary Teaching hospital-K.F.U at Al-hassa region and throw some light on its recent epidemiological and clinical aspects as well.

MATERIALS AND METHODS

Data concerning the occurrence of pregnancy toxemia and metabolic diseases in ewes from the year 1992-2003, were obtained from the record kept in the Veterinary Teaching Hospital. Diseased ewes in the year 2004 were subjected to thorough clinical investigations for the confirmation of metabolic diseases and pregnancy toxemia. Those with pregnancy toxemia (27) were closely followed the confirmation and recording of the various clinical manifestations of the disease.

Six of the ewes reported to have pregnancy toxemia in the university farm were kept in isolated fences and

followed closely for clinical observation. These together with 6 healthy pregnant ewes and other 6 healthy non-pregnant served as model for determination of glucose level. Appropriate blood samples were collected and serum was prepared. The level of serum glucose was measured by using Kodak Ektachemdt Slide (Germany).

Statistical analysis was performed by one-way Analysis of Variance (ANOVA) by using Duncan test.

RESULTS AND DISCUSSION

The results of this study are shown in Fig. 1. The number of ewes with pregnancy toxemia ranged from 7-29 cases as compared with total number of sheep diagnosed to have metabolic diseases during the years 1992-2004. The highest incidence recorded was 37% in the year 1998, this was followed by 32% in 1997, 26% in 1999, 25% in 2000 and 24% in the year 1996. During the year 1992, 1993, 1994 and 1995 the incidence was 18, 21, 22 and 20%, respectively. The least incidences were recorded in the year 2003 (6.5%) followed by the year 2004 (9.8%) and year 2002 (11%).

Clinically the disease manifest itself mainly with the nervous forms. The predominant signs observed included apparent blindness pressing of head against adjacent objects, drowsiness and dullness. Grinding of teeth, tremor and lateral deviations of head with in coordination of movement and "Stargazing" posture were encounter in varying degree in the diseased ewes.

The mean level of glucose in healthy non-pregnant was 2.95 ± 0.65 mmol L⁻¹. That of the healthy pregnant

ewes was 2.7 ± 0.45 mmol L⁻¹, while the level in the pregnant ewes with signs of pregnancy toxemia was 1.02 ± 0.14 mmol L⁻¹. Statistical analysis showed that there was a significant differences ($p < 0.0001$) in glucose level between both healthy non-pregnant and healthy pregnant ewes and that of pregnant ewes having pregnancy toxemia.

The present study indicated that the incidence of pregnancy toxemia among sheep brought to the Veterinary Teaching Hospital, as related to other metabolic diseases, varied between 6.5 and 37% during the year 1992-2004. In the year 1992 the incidence was 18%. Almost similar findings in the same year (15%) were recorded by El-Sebaie. Several factors had been shown to contribute to the occurrence of pregnancy toxemia in sheep, either singularly or as group of influences, these include nutritional, metabolic, genetic, physiologic, environmental, health and management factors (Rook, 2000). Moreover, Radostits *et al.* (2000) stated that the disease may have a high fatality to a level of incidence sufficient to be classified as an outbreak. The obvious decrease in the incidence of the last three years could be attributed to the increase in nutritional and management knowledge among the animals owner together with the marked improvement in veterinary service. Mean glucose level in the non-pregnant, healthy pregnant and in pregnant ewes with pregnancy toxemia were 2.95 ± 0.65 , 2.7 ± 0.45 and 1.02 ± 0.14 , respectively. Similar levels were reported in sheep in Saudi Arabia by El-sebaie, which were 2.5 ± 0.9 mmol L⁻¹ in healthy ewes

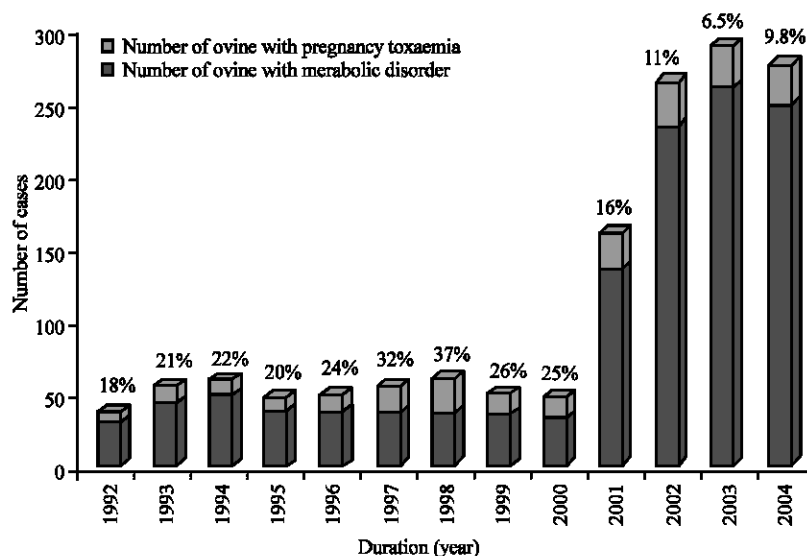


Fig. 1: Incidence of pregnancy toxemia and metabolic disorders in ovine admitted to the veterinary teaching hospital (VTH) between 1992-2004

and 1.3 ± 0.6 Advance case of pregnancy toxemia. The significance decrease of glucose in ewes with pregnancy toxemia was thought to result from disruption of the dam's glucose homeostatic mechanism in response to increased nutritional demands of the rapidly developing fetal placental unit (Rook, 2000; Van Saun, 2000). Schlumbohm and Harmeyer (2003) found that hyperketonemia and hypocalcaemia which occurred in the last trimester of gestation in sheep, facilitate the development of pregnancy toxemia. The same authors (2004) suggested that additional unknown factors must be involved in the development of the disease.

CONCLUSION

It could be concluded that early diagnosis of pregnancy toxemia is essential for better control of the disease. Future measurement of β -hydroxybutyrate and calcium level simultaneously with glucose would substantially aid in the early diagnosis of the disease in sheep.

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