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Anaplasmosis (fever with anemia and lymph node enlargement) in sheep, goats and deer: A brief review

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ABSTRACT

Among tick-borne diseases, anaplasmosis is one of the most significant disease affecting sheep, goats and deer. This disease is more common in summer season and mostly caused by gram negative ricketssial pathogen, named as *Anaplasma ovis*. Goats are most susceptible to *Anaplasma* species as compared to sheep and infected animals remains persistent carrier throughout their life. Some of *Anaplasma* species also have zoonotic threat to public. Clinical signs in infected animals are included as fever, swollen lymph nodes, anemia, nasal discharge, and abortion. Diagnosis is based through microscopy, PCR and ELISA. Treatment approach includes use of imidocarbdipropinate, oxytetracycline along with supportive therapy B.complex. Anaplasmosis in sheep, goats and deer can be managed and controlled by using proper diagnostic methods and preventative measures such as the use of separate needles.

Keywords: Anaplasmosis, goats, fever, anemia

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Introduction

Small ruminants anaplasmosis is a common globally occurring infectious disease caused mainly by *Anaplasma ovis* and sometimes by other *Anaplasma* species which are transmitted principally by ticks of various genera (1). *Anaplasma* species are Gram-negative, obligate intraerythrocytic rickettsial organisms. The disease is more common in summer than in winter. Prevalence is higher in older sheep and goats than in younger ones (2). *Anaplasma ovis* is the main etiologic agent of anaplasmosis in sheep and goats and could be zoonotic (2). This organism occurs as irregularly shaped, spherical intraerythrocytic dark purple granules 60-70% of which are found on the margin of RBCs and the remaining 30-40% submarginally or centrally (3). The disease caused by this anaplasma species is more severe in goats than in sheep. Rarely, it also infects cattle (3). The infected animals may become life-long carriers with premunity which persists for life. The bacterial load fluctuates at different time points (4). Other anaplasma species which cause anaplasmosis in sheep and goats include (1, 2, 5):

Anaplasma marginale: It infects primarily cattle but sometimes also causes disease in sheep and goats (3).

Anaplasma centrale (a mildly pathogenic species of *Anaplasma* that is often used as a live blood-borne vaccine against *A. marginale* because it causes a very mild disease):

Anaplasma capra (a zoonotic species) (6).

Anaplasma phagocytophilum (a zoonotic species)

Anaplasma bovis (the main etiologic agent of anaplasmosis in cattle and buffaloes)

Most infected animals suffer from subclinical infections or show only mild signs.

Clinical signs when present are non-specific and include fever, loss of body weight with weakness, loss of appetite, constipation or bloody diarrhea, anemia, jaundice in some cases, hemoglobinuria (occasionally), lymph node enlargement (particularly prescapular lymph nodes), abortion in pregnant animals, nasal discharge, coughing, epiphora and occasionally death (5, 7, 8, 9, 10). Field diagnosis is generally based on clinical signs.

Laboratory confirmation of field diagnosis generally relies on microscopic examination Giemsa-stained blood smears, ELISA and PCR (1, 2, 6). Field diagnosis and lab tests should be considered in association with the presence of ticks, seasonality of the disease and lab. indicators of anemia.

Differential diagnoses include G.I. tract parasitism, heat stress, nutritional deficiencies, surra, theileriosis, babesiosis, leptospirosis, bacillary hemoglobinuria etc. Appropriate tests should be conducted to differentiate small ruminants anaplasmosis from these diseases.

Rx

a) Inject a long-acting oxytetracycline preparation (e.g. Inj. Oxtra-LA®, Fatro Pharma, Italy marketed in Pakistan by Prix Pharma, contains 200mg oxytetracycline/ml) @ 20 mg/kg b.wt. by deep IM. Repeat once at an interval of 48 hours interval (10).

OR inject imidocarb dipropionate (e.g. Inj. Imizol®, ICI, Pakistan; each ml contains 120 mg of imidocarb dipropionate; the recommended dose rate is 3 mg/kg b.wt.) subcut (1).

OR inject a long-acting enrofloxacin @7.5 mg/kg b.wt. Repeat once after 3 days (5).

b) Administer meloxicam (e.g. Inj. Meloxi-10®, Selmore Pharma, Pakistan; contains 10 mg of meloxicam/ml) @ 0.5 mg/kg b.wt. IM (10). Repeat daily as per the need of the case.

c) Give IM injection of vitamin B complex (e.g. Inj. Neurobion®, Merck Pharma, Pakistan; contains vitamin B1, B6 & B12) @ 3-6 ml/adult sheep or goat (10) daily for 3-5 days.

d) To kill the ticks, give subcut injection of ivermectin (e.g. Inj. Endectin®, ICI, Pakistan, each ml contains 10mg of ivermectin) @ 0.2 mg/kg b.wt, corresponding to 1 ml/50 kg b.wt. Repeat once after 10-14 days.

Notes:

1) The prevalence of anaplasmosis in sheep and goats in Faisalabad (Pakistan) was much higher (73.75%) than the prevalence of babesiosis/theileriosis (3.75%) (9).
2) In order to prevent iatrogenic transmission of anaplasmosis and other blood-borne diseases, a separate needle should be used for each sheep or goat in all veterinary related work.

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