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Diagnosis and management of pneumonic pasteurellosis in a sheep farm: A case study

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Abstract
A Eight month old Mecheri sheep was found dead by the farm owner on November – 2022 in his farm which is located at thirumoorthi hills, Udumalpet, Tiruppur district. Six sheep were showing the signs of cough, purulent nasal discharge and facial edema on the same day. Clinical examination of affected animals were showing fever (104^0 F), congested mucous membrane, tachycardia and tachypnoea. On post – mortem examination of dead animal - trachea was filled with frothy exudate, congested and firm lung lobes were observed. The samples (Impression smear and sterile swab) were taken from trachea and bronchi and staining revealed bipolar organism. It was confirmed as *Mannheimia haemolytica* by culture. All the Sheep (120) in the farm including healthy and diseased were treated with Inj. Tilmicosin 10mg/kg BW S/C and repeated three days apart as a therapeutic and prophylactic management. Diseased sheep were recovered uneventfully healthy sheep were not showing any signs of respiratory illness after a week.

Keywords: Sheep, pasteurellosis, Tilmicosin

Introduction
Pneumonia refers to the inflammations of the pulmonary parenchyma, bronchi and bronchioles. Pneumonic pasteurellosis caused by *Manhemia haemolytica*, its coming under the family of Pasteurellaceae (Abera and Mossie 2023) [1]. It's a common commensal of the tonsils and nasopharyngeal microflora of healthy sheep and goats and its becomes pathogenic in immunocompromised animal that causes cranioventral bronchopneumonia in sheep and goats of all ages worldwide. The organisms are small Gram-negative bacillus with bipolar staining. It causes high mortality and major economic loses for sheep farmers (Chakraborty *et al.*, 2014) [3]. The main signs and symptoms are facial edema, dyspnoea, fever, depression, anorexia, coughing, oronasal discharge, and increased or abnormal lung sounds (Hussain *et al.* 2017) [4]. Pneumonia may be observed in conjunction with increased septicaemia, polyarthritis, meningitis and mastitis in the herd. Early identification of the disease and introduction of effective antimicrobial treatment is necessary. Treatment is frequently unrewarding unless begun early in the disease process because of rapid progression of lung damage and release of endotoxin. (Brooks, 2022) [2].

History, Observation and Diagnosis
A Eight month old Mecheri sheep was found dead by the farm owner on November – 2022 (post monsoon season) in his own farm which is located at thirumoorthi hills, Udumalpet, Tiruppur district. Six sheep were showing the signs of persistent cough, purulent nasal discharge (Bilateral) and facial edema on the same day. Clinical examination of affected animals were showing fever (104^0 F), congested conjunctival mucous membrane, tachycardia (106 bpm) and tachypnea (52/min) with exaggerated lung sound on auscultation (Reddy *et al.* 2018) [7]. Post – mortem examination was performed in dead animal and it was showing that trachea filled with frothy exudate, congested and firm cranio-ventral lung lobe. The samples (Impression smear and sterile swab) were taken from trachea and bronchi of the dead animal and blood samples were taken from affected animals. Laboratory results were showing bipolar organism and gram negative coccobacilli (Abera and Mossie 2023 & Reddy *et al.*, 2018) [1, 7].

Impression smears shows bipolar (Plate - 1) staining organism with methylene blue. It was confirmed as *Mannheimia haemolytica* by culture. Pin point pink colonies on mackonkey agar (Plate - 2). Based on the diagnosis all sheep were treated.

Treatment and Discussion

Based on the diagnosis it was confirmed as Pneumonic pasteurellosis caused by *Manhemia haemolytica* and treated with Tilmicosin @ 10 mg/kg S/C repeated three days apart (Kabeta *et al.* 2015) [5]. Inj. Dexamethasone @ 0.2 mg /kg I/M and Inj. Chlorepheneramine maleate 0.2 mg/kg I/M as supportive therapy for Lower respiratory infection. After a week no sheep were showing the signs of pneumonia. Broad spectrum antibiotics like Oxytetracycline and Sulphatrimethoprim are recommended as an initial therapy. After confirmation tilmicosin is effective and it's a drug of choice for pneumonic pasteurellosis than other broad spectrum antibiotics. (Kabeta *et al.* 2015) [5]. Recent studies indicate the use of gamma-irradiated vaccine showed better protective effect when compare to formalin killed vaccines (Melaku *et al.* 2019) [9].

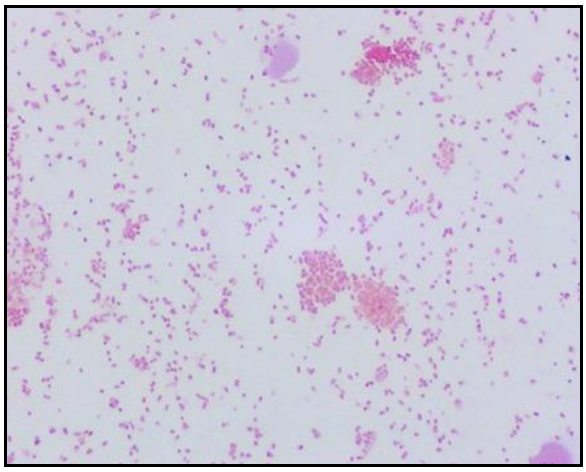

Plate 1: Gram negative coccobacilli with bipolar

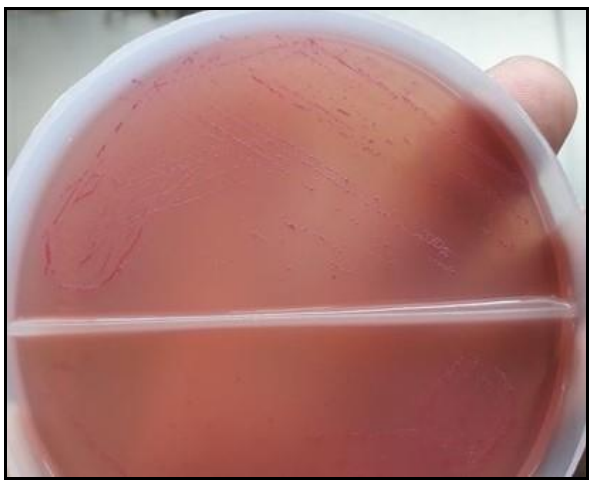

Plate 2: Pin point pink colonies on mackonkey agar

Conclusion

In conclusion, the case of pneumonic pasteurellosis in Mecheri sheep, occurring post-monsoon in Thirumoorthi Hills, Udumalpet, Tiruppur district, underscored the severity of respiratory infections in livestock. Clinical symptoms, post-mortem findings, and laboratory results confirmed Mannheimia haemolytica as the causative agent. Treatment with Tilmicosin, supported by adjunct therapies, proved effective in resolving symptoms within a week. Notably, Tilmicosin emerged as the preferred choice over broad-spectrum antibiotics, highlighting its efficacy in managing pneumonic pasteurellosis. Additionally, recent research advocates for the use of gamma-irradiated vaccines for better protection, suggesting advancements in preventive strategies against such infections in sheep populations.

Conflict of Interest

Not available

Financial Support

Not available

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