

Concurrent Detection of Nasal and Visceral Schistosomosis in a Ewe: A Case study

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Abstract

Schistosomosis is an important parasitic infection of ruminants, although concurrent infection with multiple *Schistosoma* species is rarely documented in sheep. The present report describes the concurrent detection of *Schistosoma nasale* and *Schistosoma spindale* in a four-year-old Nellore Brown ewe presented to the Veterinary Clinical Complex (VCC), NTR College of Veterinary Science, Gannavaram, with clinical signs of anorexia, weakness, dyspnoea, nasal discharge, and blood-tinged diarrhoea. Nasal discharge and faecal samples were collected for parasitological examination, and whole blood was collected in an EDTA vial for haematological evaluation. Characteristic boomerang-shaped eggs morphologically consistent with *S. nasale* were detected in the nasal discharge, whereas spindle-shaped, terminal-spined eggs consistent with *S. spindale* were identified in the faecal sample. Strongyle-type eggs were also detected in the faecal sample. Haematological examination revealed anaemia, leucocytosis and neutrophilia. The animal was treated with a fenbendazole–praziquantel combination and supportive therapy; however, despite therapy, the ewe died two days after treatment. This case highlights concurrent *S. nasale* and *S. spindale* infections in sheep and emphasises the importance of examining both nasal discharge and faecal samples when schistosomosis is suspected in ruminants.

Introduction

Schistosomosis is an important snail-borne trematode infection affecting domestic animals, birds and humans in several tropical and subtropical regions. In India, several species of *Schistosoma*, including *Schistosoma nasale*, *S. spindale*, *S. indicum*, and *S. incognitum* have been reported in domestic animals (Agarwal and Rao 2011). Among these, *S. nasale* and *S. spindale* are of particular veterinary importance because they occur in ruminants and can cause nasal and visceral schistosomosis, respectively. *S. nasale* is primarily associated with “nasal schistosomosis” or “snoring disease”. Adult worms reside in the venous circulation of the nasal mucosa and deposit eggs in the nasal tissues, inducing inflammatory and granulomatous lesions. The eggs may be detected in nasal secretions, washings or scrapings during parasitological examination (De Bont et al. 1989). Although cattle are considered an important host, infection with *S. nasale* has also been reported in sheep and goats in India (Muraleedharan et al. 1973; Achuthan and Alwar 1973; Agarwal et al 2013). In contrast, *S. spindale* is associated with “intestinal schistosomosis” or “hepatic schistosomosis” in domestic ruminants, with adults residing in the mesenteric venules, and the eggs deposited in the intestinal tissues reach the intestinal lumen and are excreted in the faeces (Agrawal and Southgate 2000). Both species are associated with the freshwater snail *Indoplanorbis exustus*, which serves as an important intermediate host in their transmission. Although individual infections with *S. nasale* and *S. spindale* have been reported in sheep, published information on the concurrent detection of both species in the same sheep appears to be limited. The present report describes the clinical, parasitological and haematological findings in a sheep with eggs morphologically consistent with both species together with the presence of strongyle-type eggs in the faeces.

Case history and observations

A four-year-old Nellore brown ewe was presented with a 10-day history of anorexia, weakness, dyspnoea, nasal discharge, and blood-tinged diarrhoea. On clinical examination, the animal was found dehydrated with pale mucous membranes (Fig. 1), purulent muconasal discharge, soiling of the hindquarters (Fig. 2) and a temperature of 101.6°F (38.7°C). Faecal sample, nasal discharge and whole blood were collected for standard parasitological and haematological examination (Soulsby 1982). The faecal sample was examined by the sedimentation concentration method to identify parasitic ova/eggs/cysts. Nasal discharge was examined microscopically. Whole blood was analysed for haemoglobin, PCV, total erythrocyte count, and differential leucocyte count.

Diagnosis and treatment:

Examination of nasal discharge revealed characteristic boomerang-shaped eggs containing miracidia, typical of *S. nasale* (Fig. 3). Faecal examination revealed spindle-shaped eggs containing miracidia and a terminal spine, typical of *S. spindale* (Fig. 4), along with strongyle-type eggs (Fig. 5). Haematological analysis revealed haemoglobin 6.8 g%, packed cell volume 21%, total erythrocyte count $5.4 \times 10^6/\mu\text{l}$, total leucocyte count $19.8 \times 10^3/\mu\text{l}$ and differential leukocyte count of neutrophils 91% and lymphocytes 9%, consistent with severe anaemia, leucocytosis, and neutrophilia.

The animal was treated with a combination of fenbendazole and praziquantel suspension (®Fentas Plus, Intas Animal Health Ahmedabad; @1ml/3kg body weight) orally twice, along with supportive therapy: Ringer lactate @ 20mL/kg body weight intravenously and Chlorpheniramine maleate @0.5mg/kg body weight intramuscularly. Despite rigorous therapy, the animal died after two days.

Discussion

The present case describes the concurrent detection of eggs morphologically consistent with *S. nasale* and *S. spindale* in a sheep presented with respiratory and gastrointestinal clinical signs. The presence of *S. spindale* in the present study is consistent with the occurrence of visceral schistosomosis in sheep in Andhra Pradesh (Sree et al. 2022) reported *S. spindale* in 2.82% of 283 sheep examined by faecal examination and in 1.08% of 185 sheep examined at necropsy in Krishna district. Symptoms observed in the present study, such as bloody diarrhoea mixed with mucus, are concurrent with the observations of Kumari et al. (2026) in cattle. Muraleedharan et al. (1973) reported *S. nasale* infection in sheep, while Achuthan and Alwar (1973) documented nasal schistosomosis in sheep and goats in Tamil Nadu. Nasal schistosomosis with symptoms similar to the present case, such as rhinitis, mucopurulent nasal discharge, sneezing, and dyspnoea, has been reported in other domestic ruminants, including cattle (Jyothi et al. 2025). Although *S. nasale* is predominantly reported in cattle and buffalo, clinical cases of infection in small ruminants, particularly in sheep and goats, appear to be uncommon. Although both species are commonly reported in ruminants in India, mixed infections are rare; Sumanth et al. (2004) reported concurrent *S. nasale* and *S. spindale* infection in 163 of 300 cattle examined in Bangalore. Both

species are associated with the freshwater snail *Indoplanorbis exustus* as an intermediate host. Therefore, sheep grazing/drinking in contaminated aquatic environments could potentially be exposed to cercariae of both species. Schistosomiasis in this case is also associated with the presence of Strongyle-type eggs, indicating it is a mixed helminth infection. Gastrointestinal nematode infections are the major economic concern in small ruminant rearing. Species belonging to *Trichostrongylidae* are the major species contributing to gastrointestinal parasitism, thereby causing morbidity and mortality in sheep. Both *S. spindale* and gastrointestinal strongyle infection might have contributed to the severe haemorrhagic diarrhoea, anaemia, and death in this case.

Declarations

The authors declare that no funds, grants, or other support were received during the preparation of this manuscript

Competing Interests

The authors have no relevant financial or non-financial interests to disclose.

Ethics approval

This is an observational study. No research ethics committee approval was required.

Author contributions

Manuscript preparation: P. Ramesh and P. Ramadevi; Clinical examination: P. Ramesh and M. Sreenu; Sample collection and Diagnosis: C. Pavan Kumar; Critical review and corrections: C. Sreedevi. All authors read and approved the final manuscript.

Data availability

This manuscript has no associated data

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Figures



Figure 1

Sheep showing pale mucous membranes



Figure 2

Soiling of hind quarters

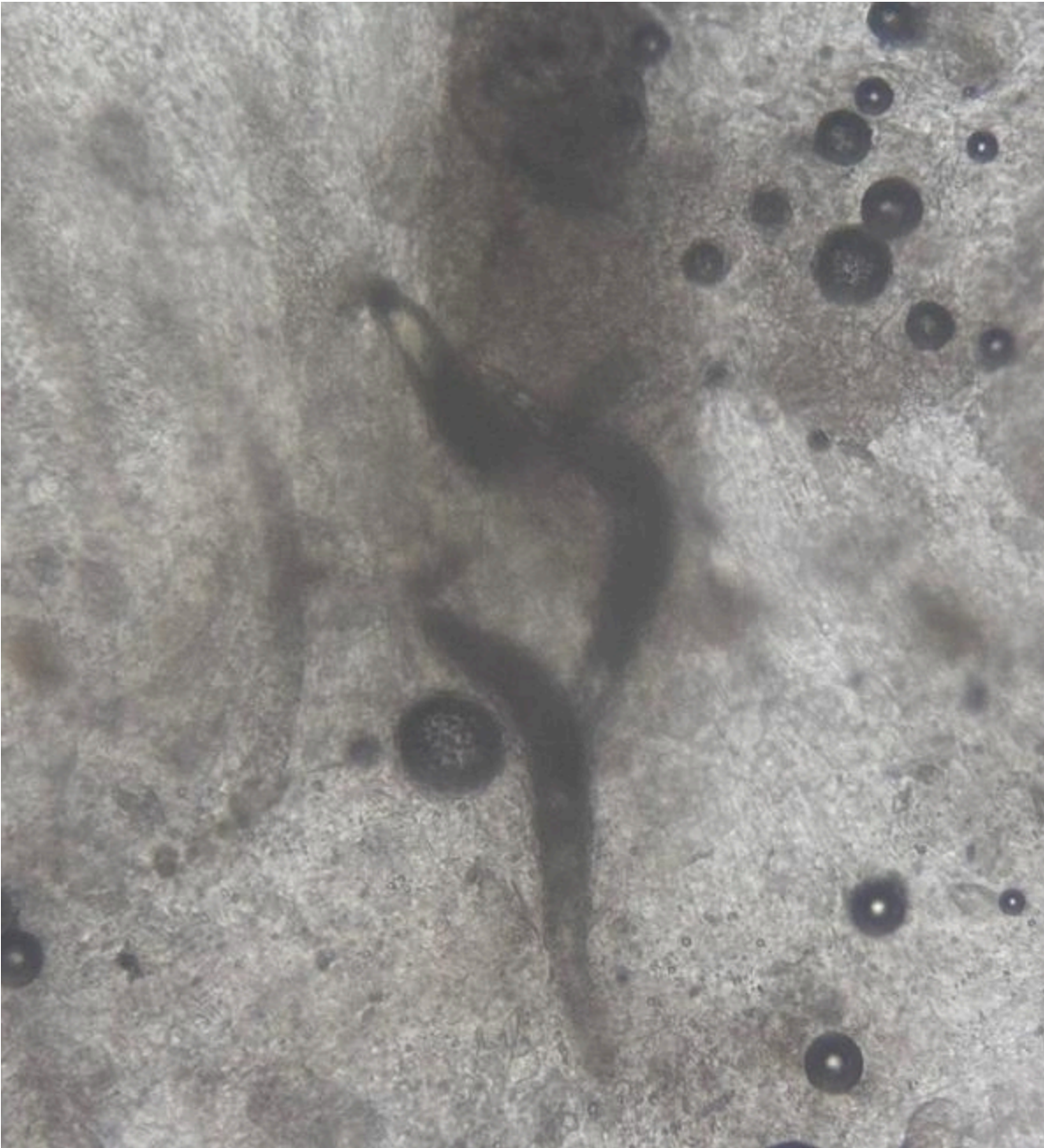


Figure 3

S.nasale eggs (100x)

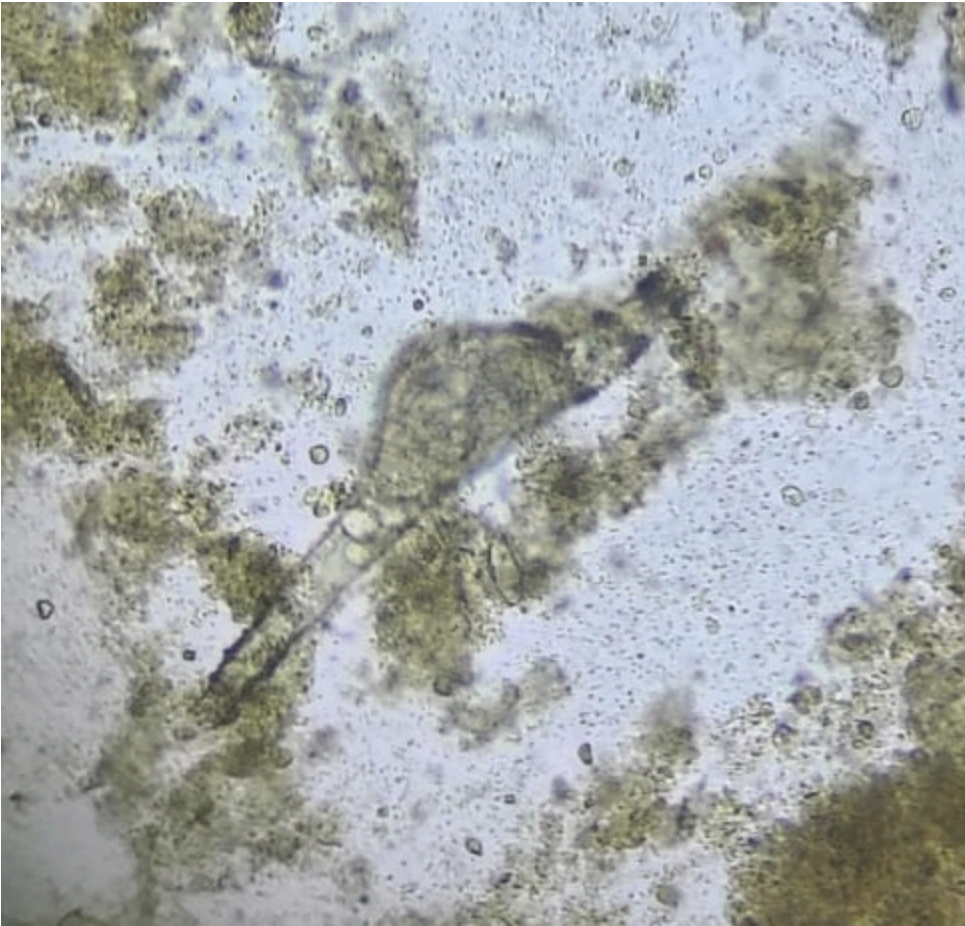


Figure 4

S. spindale egg (100X)

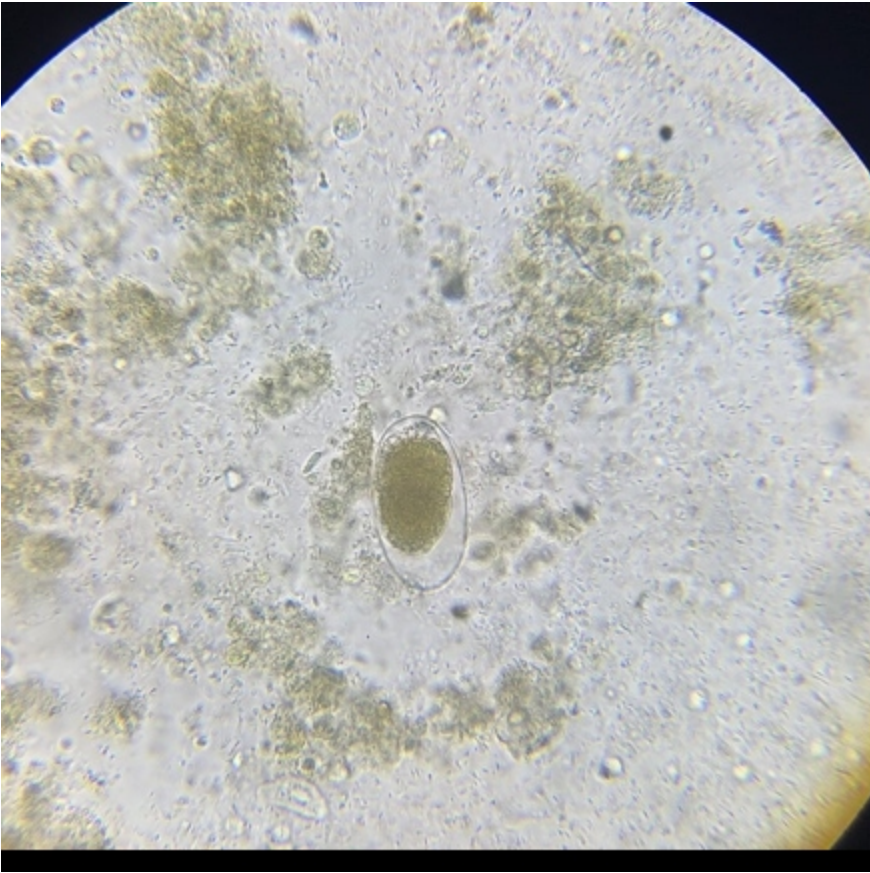


Figure 5

Strongyle-type egg (400X)