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S Chandra Sekhar

Veterinary Hospital,
Mangalagiri, Guntur,
Andhra Pradesh, India

K Prasuna

Veterinary Hospital,
Mangalagiri, Guntur,
Andhra Pradesh, India

Afroz Jahan

NTR College of Veterinary
Science, Gannavaram,
Andhra Pradesh, India

Sanweer Khatoon

Department of Veterinary
Parasitology, CVSc, Navania,
Udaipur, Rajasthan, India

GS Rao

NTR College of Veterinary
Science, Gannavaram,
Andhra Pradesh, India

Corresponding Author:

S Chandra Sekhar

Veterinary Hospital,
Mangalagiri, Guntur,
Andhra Pradesh, India

Persistence of nasal schistosomiasis in cattle: A clinical case report

S Chandra Sekhar, K Prasuna, Afroz Jahan, Sanweer Khatoon and GS Rao

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Abstract

Nasal Schistosomiasis (*snoring disease*) is trematode (blood fluke) infection caused by *Schistosoma nasale* affecting both cattle and man in different parts of Asia and Africa. The present report is a rare case of persistence of Schistosomiasis in a non-descript cattle even after treatment and their uneventful recovery at Veterinary Hospital, Mangalagiri, Guntur district, Andhra Pradesh, India.

Keywords: schistosomiasis, cattle

Introduction

Nasal Schistosomiasis (*snoring disease*), is a snail borne trematode infection of cattle and man in different parts of Asia and Africa, caused by blood fluke *Schistosoma nasale*. It affects about 200 million people worldwide (De Bont and Vercruyssen, 1997) [1]. It was identified first at Madras Veterinary College, Tamil Nadu, India by Dr. M. Anant Narayanan Rao in 1933. The freshwater snail *Indoplanorbis exustus* acts as intermediate host (Liu, 2010) [2]. The disease was reported from Tamil Nadu, Karnataka, Andhra Pradesh, West Bengal, Assam, Bihar, Orissa and Maharashtra (Ramachandra Rao and Indira Devi 1971 [3]; Agrawal and Alwar 1992) [5].

It causes nasal granulomas in cattle and subclinical infection in buffaloes. The pathology of infection and clinical signs are less severe in buffalo than in cattle. Affected cattle shows rhinitis, profuse mucopurulent nasal discharge manifested clinically by sneezing, dyspnoea and snoring. Chronic infections show proliferation of nasal epithelium as granuloma and small abscesses containing eggs. Buffaloes are not much affected by the disease and show only pinhead sized eruptions and congestion of nasal mucosa (Rajamohan and Peter, 1975) [4]. The present communication reports the persistence of *S. nasale* infection in non-descript cattle from a village named Yerrabalem, Mangalagiri mandal of Guntur district of Andhra Pradesh, India.

Materials and Methods

Clinical history

A 6-year-old debilitated ND cow after second calving was presented at Veterinary Hospital, Mangalagiri of Guntur district, AP on 1st July, 2017 (OP Case no: 1256) with a case history of debilitating condition, dyspnea, bilateral nasal muco-purulent discharges and sneezing. The animal was brought third time with same condition relapsing in a span of 16 months with a previous history of treatment with Anthiomaline (Lithium Antimony thiomalate).

Clinical observation and sample collection

Examination of nasal mucosa showed a small peanut size granulomatous growth in both the nostrils causing partial obstruction of the nasal cavities and producing snoring sounds while breathing as presented Figure 1. Nasal swab/scrapings and washings of nasal mucosa were collected in normal saline solution and tested.

Microscopic examination of nasal washings

The samples were examined as per Sumanth *et al.*, 2004 [6] with slight modifications. The nasal washings/nasal scrapings were taken in a test tube and 5 ml of 10% potassium hydroxide

was added. The contents were boiled for 3-5 min over flame for lysis of mucus. It was cooled and centrifuged at 2000 rpm for 3 min. After centrifugation, supernatant was discarded, and the sediment was examined under low power of microscope.

Results and Discussion

The microscopic examination of nasal washings/scrapings revealed Napoleon hat/boomerang shaped/palanquin shaped egg with terminal spine (Fig. 2). Eggs of the particular *S. nasale* are identified as per the standard taxonomical keys (Soulsby, 1982) [7]. In Mangalagiri mandal of Guntur district, AP area the schistosomiasis is not so common but incidences are more in cattle than in buffaloes. The animal was allowed for grazing outside in the fields and water source for drinking is from nearby canal, irrigation and village pond etc. where snail population is more (Fig. 3a and b) which may be the reason for the persistence or recurrence of the condition and the condition became more aggravated in advanced pregnancy which may be due to gestational stress.

Physical examination of animal revealed sneezing, bilateral thick mucus discharge, congestion of nasal mucosa. The above findings were in accordance with previous reports where snoring was observed in animals and the workers also stated that detection of subclinical schistosomiasis in live animals is difficult (Soulsby, 1982) [7]. The presence of boomerang shaped eggs in nasal scrapings of cattle was also reported by Banerjee and Agrawal, (1992) [8] from Karnataka (Sumanth *et al.*, 2004) [6] and from Kerala (Ravindran and Kumar, 2012) [9].

The animal was treated with Inj Anthiomaline (Lithium Antimony Thiomolate) @ 15 ml by intra- muscular route. The animal responded after first dose of Anthiomaline and there was reduction in the size of nasal granuloma. The treatment was repeated at weekly interval. Further reduction in the size of nasal granuloma was recorded and snoring sound was also reduced slightly and very little sound was audible and it was found that animal is in condition of breathing normally. Then the third injection of Anthiomaline was given after one-week, complete recovery was reported by the owner.

Anthiomaline is the drug of choice for nasal schistosomiasis (Vaidyanathan, 1949) [10]. Antimony attaches to the sulphur moiety in trypanothione reductase of the parasites (the putative enzyme which is targeted by antimonial compounds). Even after 2 years, the disease is relapsing now in the animal (Fig 4) and the animal is not responding much for Anthiomalin treatment. It may be presumed that the animal might have developed resistance to Anthiomalin. The constant recurrence of the disease may be due to acquiring the infection through the water. The owner confessed that the main source of drinking water for the animal is irrigation canal and village water pond which are heavily infiltrated with snails.

Transmission of infection occurs by percutaneous penetration of cercaria of *S. nasale* from the infected *Indoplanorbis sp.* snails. The animals should be avoided from grazing near water bodies in which infected snails are noticed (Soulsby, 1982) [7]. Control of snails, avoiding animal grazing near snail infected areas and periodical anthelmintic treatment in cattle and treatment at the early stage of infection will help in control of schistosomiasis in ruminants.



Fig 1: Nasal granuloma of affected cattle



Fig 2: Boomerang shaped egg of *S. nasale*



Fig 3a: *Indoplanorbis spp.* Snail



Fig 3b: Waterlogged area



Fig 4: Animal showing the granulomatous lesions after two years

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