

International Journal of Advanced Biochemistry Research



ISSN Print: 2617-4693

ISSN Online: 2617-4707

NAAS Rating (2026): 5.29

IJABR 2026; 10(6): 225-227

www.biochemjournal.com

Received: 01-03-2026

Accepted: 05-04-2026

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Therapeutic management of nasal schistosomiasis in cattle: A case report

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DOI: <https://www.doi.org/10.33545/26174693.2026.v10.i6c.8591>

Abstract

Nasal schistosomiasis is a snail borne trematode infection in cattle and buffalo caused by *Schistosoma nasale*. 21 nos. of cattle in a village in Lakhimpur district of Assam were found snoring in villages near river Subansiri which are flood affected and low-lying areas. In some other locations of Lakhimpur district 16 nos. of buffaloes were found exhibiting same symptoms, 3 of them were died later without treatment. The microscopic examination of nasal washings/scrapings after processing in 10% potassium hydroxide revealed boomerang shaped/palanquin shaped egg with terminal spine and fully developed miracidium inside which is the characteristics of *Schistosoma nasale* egg. Inj Anthiomaline (Lithium Antimony Thiomaleate) was used @ 15 mL intramuscularly and was repeated at weekly intervals for the treatment of nasal schistosomiasis. There reduction in size of the granuloma was observed after the first dose itself. There was complete recovery after the second injection was administered.

Keywords: Nasal schistosomiasis, cattle, buffalo, Anthiomaline, Assam

Introduction

Nasal schistosomiasis is a snail borne trematode infection in cattle and buffalo caused by *Schistosomanasale*. The disease is characterized by rhinitis, profuse mucopurulent nasal discharge, sneezing, dyspnoea and snoring sound hence the disease is called 'snoring disease' [1]. Chronic infections show proliferation of nasal epithelium as granuloma and small abscesses containing eggs [2]. In field condition, clinical symptoms and demonstration of boomerang shaped eggs in the nasal discharge and scrapings helps in diagnosis of the condition. Accordingly, field veterinarians go for examination of nasal scrapping to detect the characteristic eggs when the nasal polyps become large and obstruct the air passage resulting in snoring sound. So, detection of subclinical nasal schistosomosis in cattle is difficult, since the affected animals do not show obvious signs of disease throughout the year [2]. The intermediate host of this parasite are the *Indoplanorbis exustus* snails, which becomes abundant in monsoon seasons and hence the prevalence of the disease becomes higher in rainy season [3]. The cercariae released from the snails actively enter the host through skin penetration. Sometimes accidental entry to human host causes cercarial dermatitis. Adult *Schistosoma nasale* lodged in the nasal veins wherein formation of granuloma takes place due to host immune response against the eggs. For treatment of nasal schistosomosis, anthiomaline is the drug of choice [4]. The severity of the disease is found to be more in cattle in comparison to buffalo. Nasal schistosomosis adversely affects the health and production of domestic livestock in various parts of India [5]. In the field basically routine diagnosis of nasal schistosomosis relies heavily on the observation of clinical symptoms [6]. The prevalence of nasal schistosomosis was more in monsoon season [7, 8, 9]. Though the disease is widely prevalent in Assam but the published reports are scanty. Prevalence of nasal schistosomosis was found to be high in Kamrup district of Assam in the month of July in cattle [3]. A few studies have been carried out in Assam to diagnosis of nasal granuloma [7, 10] but these studies were based on clinical symptoms thus the methodical approach were lacking. Present communication is intended to report 2 cases of nasal schistosomosis in large nos. of cattle and buffalo in Lakhimpur district of Assam with its therapeutic management.

21 nos. of cattle in a village in Lakhimpur district of Assam were found snoring in the month of July, 2022 near river Subansiri which are flood affected and low-lying areas. Similarly in the month of August, 2024, 16 nos. of buffaloes in a different location of Lakhimpur district of Assam were showing same symptoms, 3 of them were died later without treatment. On preliminary clinical examination there was sneezing and bilateral muco-purulent nasal discharge, nasal mucosa showed cauliflower like granulomatous growth and partial obstruction of the nasal cavity results in difficulty in breathing (Fig.1). Nasal swab/scrapings and washings in normal saline was collected and processed as per standard procedures^[11]. The nasal contents were mixed with 5 mL of 10% potassium hydroxide in a test tube and boiled over flame for 3-5 minutes for the lysis of mucus. It was then cooled and centrifuged at 2000 rpm for 3 minutes. After centrifugation, supernatant was discarded and the sediment was examined under low power (10x) and high power (40x) objective of light microscope.

The microscopic examination of nasal washings/scrapings after processing in 10% potassium hydroxide revealed boomerang shaped/palanquin shaped egg with terminal spine and fully developed miracidium inside (Fig. 2). The eggs belong to *S. nasale* as per the standard taxonomical keys^[1]. The presence of boomerang shaped eggs in nasal scrapings of cattle was also reported from Karnataka and Kerala^[11, 12, 13]. Clinical findings in the present study like muco-purulent nasal discharge, cauliflower like granulomatous growth in nasal mucosa and partial obstruction of the nasal cavity are characteristic and due to dyspnoea, the snoring sound is produced which is why the name 'snoring disease' is given^[1, 2]. Nasal schistosomiasis adversely affect the health and productivity of domestic livestock in various parts of India as per available literatures^[5]. No such reports are there from the present area of study till date. Hence in future an extensive and systematic study can be designed to assess the impact on health and productivity and epidemiology of schistosomiasis. Sudden increase of nasal schistosomiasis in cattle in July, 2022 and in buffalo in August, 2024 in the present area of study was in accordance with the previous findings from Assam^[3]. Incidence of schistosomiasis was found to be higher in older than younger animals^[11, 14]. In the present study also, similar observation was noticed. Low-lying and water-logged areas with aquatic vegetations in the present area of study might have favoured the *Indoplanorbis exustus* snail population that played significant role in spread of the disease among large nos. of cattle as described by previous workers^[3].

Treatment of the affected animals were started with Inj Anthiomaline (Lithium Antimony Thiomalate) @ 15 mL intramuscularly. The cow responded after first dose of Anthiomaline and there was reduction in the size of nasal granuloma. Further reduction in size of the nasal granuloma was recorded and snoring sound was also reduced to slight sound that was audible, animal was breathing normally (Fig. 3). Then the second injection of Anthiomaline was given after one week, reports complete recovery. Anthiomaline was the drug of choice for nasal schistosomiasis^[4]. Antimony attached itself to sulphur atoms in trypanothione reductase (the putative enzyme targeted by antimonial compounds) which was used by the parasites. High incidence of schistosomiasis was seen in older animals^[11, 14] and also it is observed that the prevalence of *Schistosoma*

species was high during monsoon and lowest in summer season amongst ruminants.

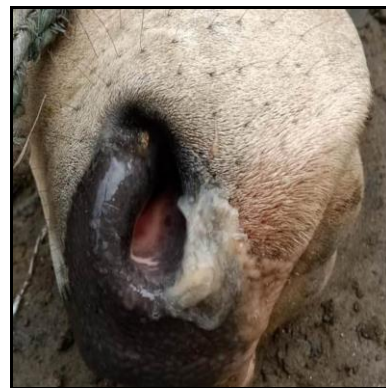


Fig 1: Before treatment



Fig 2: *Schistosoma nasale* egg (10x)



Fig 3: After treatment

Conflict of interest

Authors have no conflict of interest in this study.

Acknowledgement

The author(s) deeply acknowledges the Associate Deal, Lakhimpur College of Veterinary Science, Assam Agricultural University, Joyhing, North Lakhimpur-787051, Assam for providing all the facilities required to complete the present work.

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