

CASE REPORT

Rhinosporidiosis in A 10-Year-Old Child: A Case Report Highlighting the Environmental and Public Health Implications of Aquatic Spore Exposure

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ABSTRACT

Rhinosporidiosis, a chronic granulomatous infection that can be prevented and is mainly caused by community practices such as bathing in contaminated ponds, is endemic in places like Tamil Nadu, India. The treatment of a 10-year-old girl from Palakkad, Kerala, who presented with a reddish mass jutting from her left nasal cavity resulting in nasal obstruction and epistaxis, is detailed in this case report. Contrast-enhanced CT scan revealed a nasal mass with reduced central density was discovered at the inferior turbinate. An endoscopic nasal polypectomy with cauterization was performed. Rhinosporidiosis with distinctive sporangia was confirmed by histopathological examination. The higher prevalence of *Rhinosporidium seeberi* in neighbouring Tamil Nadu raises the possibility of exposure through pond bathing, even though Palakkad's ponds are not officially recognized as reservoirs for the disease. This case emphasizes the preventable nature of rhinosporidiosis and the effectiveness of combined surgical and medical management through public health initiatives in endemic areas.

KEYWORDS

• Rhinosporidiosis • Aquatic Exposure • Sporangia • Polypectomy • Dapsone

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INTRODUCTION

Rhinosporidiosis is a chronic granulomatous condition caused by *Rhinosporidium seeberi*, an aquatic protozoan belonging to the mesomycetozoea group. Historically classified as a fungus, it is now placed among a group of organisms considered to be at the boundary between fungi and eukaryotic animals.¹ It is endemic in certain parts of South Asia and Africa. In the southern India, the disease is common in Tamil Nadu particularly in Kanyakumari, Madurai, Ramanathapuram, Rajapalayam and Shivaganga districts.² However, although Palakkad, Kerala, is close to Tamil Nadu and follows similar cultural customs, it is unknown whether *Rhinosporidium seeberi* is present in its ponds.

The disease affects the mucous membranes of the nose, nasopharynx and, rarely the larynx. The most common clinical presentation is a painless, fleshy polypoidal mass often associated with recurrent spontaneous bleeding and obstruction. The lesions are vascular with surface granularity resembling strawberry. Granularity is due to the presence

of large sporangia containing numerous endospores which are the infective form. The dissemination of the same can cause auto-inoculation in traumatised mucosa that can be adjacent to or far away from the primary lesion.³

Considered to be a condition seen in patients of rural or low socioeconomic backgrounds, this disease is currently not confined to any socioeconomic strata. Disease occurrence is closely linked to exposure to stagnant water bodies such as village ponds, water bodies infected with spores of the organism. In other words, a contaminated swimming pool can serve as a reservoir for the pathogen.^[4] Because rhinosporidiosis is preventable, public health measures such as community education and water sanitation are essential, especially in high-prevalence areas.

Children are prone to this disease because of their recreational water habits and lack of knowledge about hygiene practices. Here we report a case of nasal rhinosporidiosis in a 10-year-old child with a middle-socioeconomic family background, who presented with spontaneous nasal bleeding.



Figure 1: Figure showing fleshy mass with granular appearance protruding from left nasal cavity

CASE REPORT

A 10-year-old girl presented to the emergency department by her parents with a complaint of mass protruding from the left nasal cavity after repeated episodes of sneezing, followed by nasal bleeding (Figure 1). The child and her parents denied a history of trauma or foreign bodies. In a detailed evaluation, the reddish fleshy mass was pedunculated and appeared to be arising from the inferior turbinate. On probing, the mass was prone to bleeding, and tenderness was present. Contrast-enhanced

CT of the nasal and paranasal sinus region was advised with a possible differential diagnosis of inflammatory polyp or inverted papilloma. Radiological evaluation revealed a nasal mass centered at the left inferior turbinate. After contrast administration, the polypoidal mass appeared less dense in the central part than in the periphery (Figure 2A & 2B). These radiology findings led to the suspicion of rhinosporidiosis. On further history, the parents reported that the child has the habit of playing in a pond near their residence 2-3 times per week.

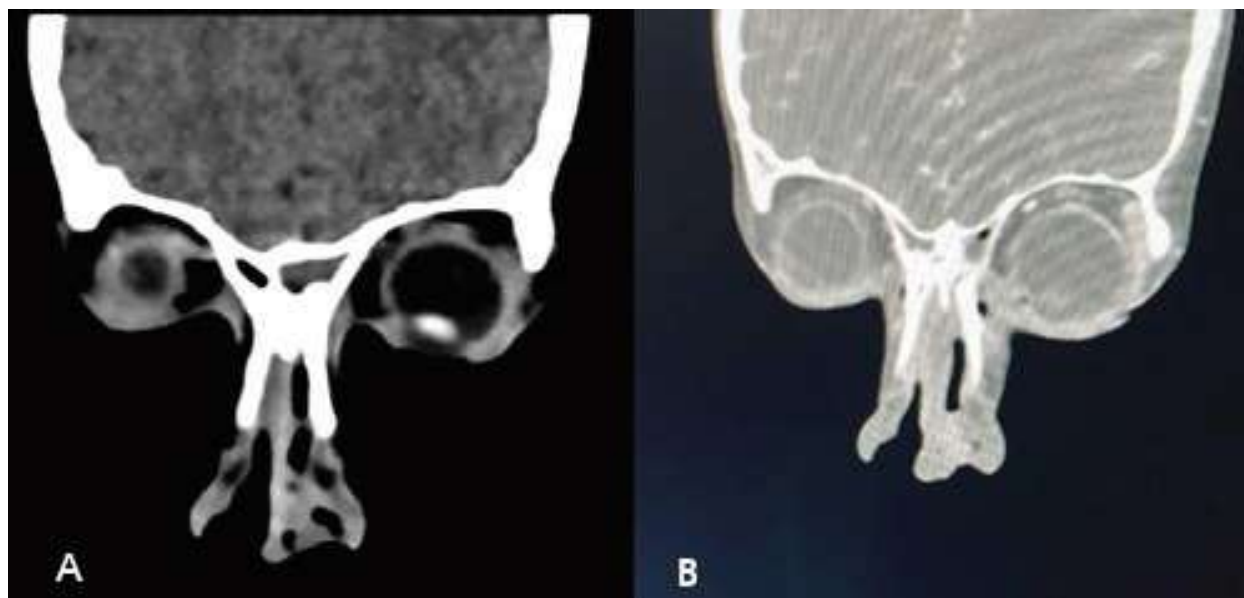


Figure 2A: A plain CT coronal view of the nose reveals a soft tissue lesion in the left nasal cavity, **Figure 2B:** An arterial contrast-enhanced CT scan of the nasal cavity, in a coronal section, demonstrates that the lesion enhances after contrast administration

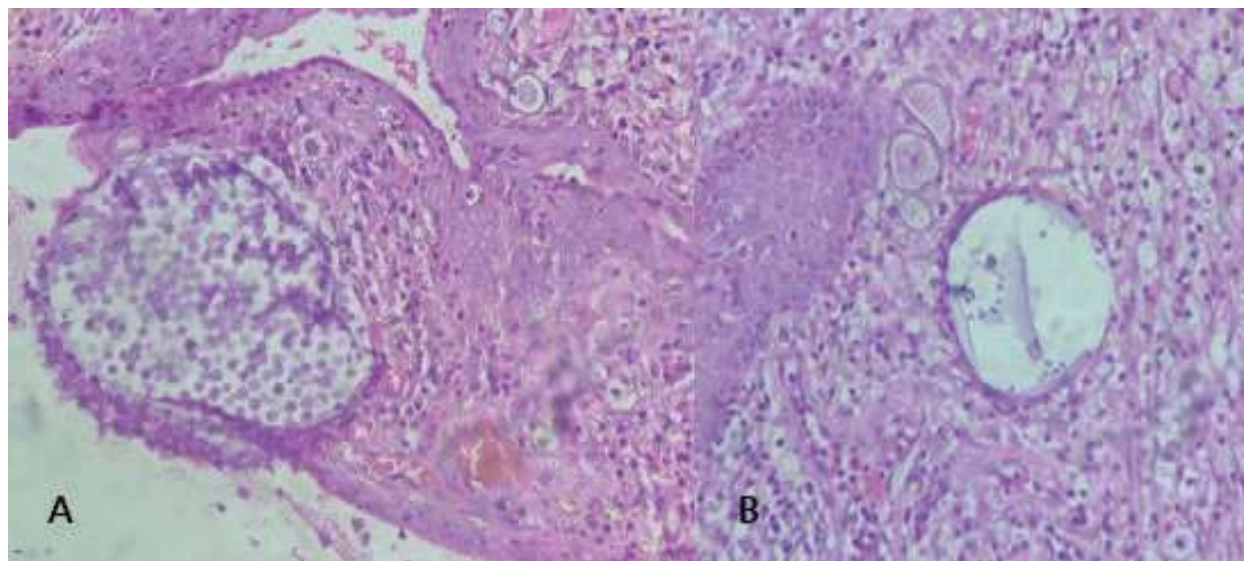


Figure 3A: Haematoxylin and Eosin-stained microscopic image (10x) showing mature sporangia with numerous endospores within the spore sac. **Figure 3B:** Haematoxylin and Eosin-stained microscopic image (10x) showing immature sporangia.

The patient underwent endoscopic nasal polypectomy. The base of the stalk was cauterised intraoperatively as rhinosporidiosis was one of the differential diagnoses, a practice documented in the literature to prevent recurrence of the same. The rest of the ipsilateral and contralateral nasal cavity were carefully inspected, and no other lesions were observed.

Histopathological examination of the specimen revealed polypoidal fragments of nasal mucosa lined by the respiratory epithelium with squamous metaplasia. Large thick-walled sporangia filled with endospores were seen admixed with inflammatory infiltrates favouring a diagnosis of rhinosporidiosis (Figure 3A and 3B). The patient started dapsone 50mg twice daily and is on regular follow up.

The study is done in accordance with the Declaration of Helsinki (2013 amendment) and STROBE checklist for reporting clinical cases. Written informed consent was obtained from the patient and her parents in a language known to them for publication in this journal.

DISCUSSION

Rhinosporidiosis caused by *Rhinosporidium seeberi* primarily affects the nasal and nasopharyngeal mucosa, although rare cases involving the larynx, eyes, and skin have also been reported.^{1,5-7}

Clinically, the condition is characterised by nasal obstruction, spontaneous or recurrent painless epistaxis, and presence of a distinctive strawberry-like polypoidal mass. The life cycle of the pathogen involves the formation of large sporangia filled with numerous endospores. Upon rupture, these endospores, considered the infective form, are released into surrounding tissues, facilitating local spread.⁸

Transmission occurs when traumatised mucosal surfaces are exposed to spore-contaminated water, typically from stagnant sources such as ponds or lakes. Importantly, there is no evidence of human-to-human transmission.⁹

The treatment of choice is complete surgical excision of the lesion followed by cauterisation of the base to minimise recurrence.¹⁰ Recent advancements have advocated the use of energy-based devices, such as radiofrequency

ablation and coblation, as potential alternatives to traditional methods.¹¹ Adjunctive therapy with dapsone has been proposed because of its purported ability to inhibit sporangial maturation, although supporting evidence remains limited.¹²

While most reported cases occur in individuals from lower socioeconomic backgrounds, the present case, involving a child from a middle-class family, highlights that the disease can affect a broader demographic, particularly in settings where environmental exposure remains unchanged. The child's continued practice of bathing in a village pond, despite access to improved resources, underscores how ingrained cultural habits can perpetuate risks.

Although rhinosporidiosis remains endemic in certain regions, it is an under-recognised condition and not listed as a notifiable disease. This contributes to its continued public health relevance in specific geographic pockets. A general lack of awareness among both community and healthcare providers often leads to delayed diagnosis and treatment. In many endemic areas, symptoms such as sudden nasal bleeding or nasal masses are frequently overlooked, reflecting a gap in the surveillance and exclusion of the disease from routine health programs, ultimately resulting in underreporting and minimal public health intervention.

Preventive strategies should focus on education, behavioural changes, and environmental sanitation. Currently, there is no consensus or evidence supporting the use of sporocidal agents for disinfection of contaminated water bodies. Community outreach programs should aim to discourage bathing in ponds and to promote hygiene practices. More broadly, establishing safe and accessible infrastructure for bathing, recreation, and drinking, along with integrated communication between ENT specialists, general physicians, paediatricians, and public health authorities, can improve case detection, enable cluster monitoring, and reduce the long-term disease burden. Designating rhinosporidiosis as a notifiable disease could further enhance community health outcomes through structured surveillance and intervention efforts.

CONCLUSION

This case highlights rhinosporidiosis as a preventable yet underrecognized condition that can affect children from middle-socioeconomic backgrounds due to continued environmental exposure. Early clinical suspicion, imaging, and surgical management with histopathological confirmation are the key to effective management. Public health efforts should focus on increasing awareness, promoting hygiene practices and designating rhinosporidiosis as a notifiable disease that could enhance surveillance and targeted intervention in endemic areas.

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