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RHINOSPORIDIOSIS EXTENSION BEYOND NOSE- A CASE REPORT

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ABSTRACT
Rhinosporidiosis is a chronic granulomatous infection caused by Rhinosporidium seeberi, an aquatic protist that primarily affects the mucous membranes of the nasal cavity and nasopharynx. It is endemic in tropical regions such as India and is commonly associated with exposure to stagnant water bodies. Patients typically present with nasal obstruction, epistaxis, and a friable polypoidal mass. Extra-nasal involvement is uncommon but may occur through contiguous spread or autoinoculation. We report a rare case of rhinosporidiosis with extension into the nasolacrimal duct in an 11-year-old boy who presented with progressive unilateral nasal obstruction and intermittent blood-stained nasal discharge for two months. Clinical examination revealed a fleshy, granular polypoidal mass occupying the left nasal cavity with a characteristic strawberry-like appearance, without significant oropharyngeal involvement. Computed tomography of the paranasal sinuses demonstrated an enhancing soft tissue mass extending into the nasopharynx and abutting the nasolacrimal duct. The patient underwent complete endoscopic excision with cauterization of the base and removal of the involved nasolacrimal duct. Histopathology confirmed rhinosporidiosis. Postoperative recovery was uneventful, and adjunct dapsone therapy was initiated. This case highlights the importance of early diagnosis, imaging, and complete surgical excision in preventing recurrence.

KEYWORDS: Rhinosporidiosis, Nasal mass, Nasolacrimal duct involvement, Endoscopic excision, Granulomatous infection.

INTRODUCTION

Rhinosporidiosis is a chronic granulomatous infection caused by Rhinosporidium seeberi, an aquatic protist belonging to the class Mesomycetozoea. The disease has been recognized for more than a century and continues to pose diagnostic and therapeutic challenges due to its unusual biology and varied clinical presentation. Historically, the organism was classified as a fungus; however, molecular studies have placed it within a group of aquatic protists that infect both humans and animals. The disease primarily affects mucous membranes, particularly those of the nasal cavity and nasopharynx, where it produces characteristic polypoidal masses with a granular surface [1].

Rhinosporidiosis is considered endemic in tropical and subtropical regions, with the highest number of cases reported from India and Sri Lanka. More than 90% of documented cases originate from these regions, especially from rural populations with frequent exposure to stagnant water bodies such as ponds, lakes, and rivers [2]. The organism is believed to enter the host through traumatized epithelium during activities like bathing in contaminated water, which facilitates implantation of endospores into the mucosal lining [3]. Socioeconomic factors, poor sanitation, and traditional bathing practices have been identified as major contributors to disease transmission in endemic areas [4].

Clinically, rhinosporidiosis most commonly involves the nasal cavity and nasopharynx, accounting for nearly three-quarters of all reported cases. Patients typically present with progressive nasal obstruction, epistaxis, and a friable polypoidal mass that bleeds easily on manipulation [5]. The lesions often appear as reddish, pedunculated masses with multiple white dots on the surface, representing mature sporangia containing endospores, giving the classical “strawberry” or “mulberry” appearance [6]. Although the disease primarily affects the nasal mucosa, several extra-nasal sites have been documented, including the conjunctiva, lacrimal sac, skin, oral cavity, larynx, trachea, and genital mucosa [7].

Extra-nasal involvement is relatively uncommon but clinically significant because it may mimic other inflammatory or neoplastic conditions, leading to diagnostic difficulty. Involvement of structures such as the nasolacrimal duct or lacrimal sac can result in atypical symptoms including epiphora, dacryocystitis, or orbital complications. Such presentations highlight the importance of radiological imaging to determine the extent of disease and involvement of adjacent structures before surgical intervention [8].

Histopathological examination remains the gold standard for diagnosis, demonstrating thick-walled sporangia at different stages of development containing numerous endospores within a granulomatous inflammatory background [9]. Treatment primarily involves complete surgical excision of the lesion with cauterization of the base to prevent spillage of endospores and reduce recurrence. Despite adequate surgical removal, recurrence is relatively common due to autoinoculation or incomplete excision. Adjunctive medical therapy with dapsone has been reported to inhibit maturation of sporangia and decrease recurrence rates [10].

Given its endemic nature in India and the potential for unusual presentations involving adjacent anatomical structures, rhinosporidiosis remains an important differential diagnosis in patients presenting with nasal masses. Reporting atypical or extra-nasal cases contributes to improved understanding of disease behavior and helps clinicians recognize rare extensions of this infection.

CASE PRESENTATION

An 11-year-old boy presented with complaints of progressive left-sided nasal obstruction for two months. The obstruction was insidious in onset, gradually progressive, and persistent throughout the day. It was associated with disturbed sleep, snoring, and mouth breathing. The child also reported intermittent episodes of blood-stained mucopurulent nasal discharge from the left nostril. The discharge was non-foul smelling and occasionally relieved with medications. There was a history of frequent bathing in ponds used for cattle, suggesting exposure to contaminated stagnant water, a known risk factor for rhinosporidial infection. There was no history of trauma, fever, cough, ear discharge, ear pain, hearing loss, or anosmia. There were no complaints of epiphora or visual disturbances. Developmental milestones were appropriate for age, and immunization status was up to date. There was no significant past medical or surgical history and no known drug allergies.

On general physical examination, the child was conscious, moderately built, and moderately nourished. Vital signs were stable with a pulse rate of 74 beats per minute and blood pressure of 120/80 mmHg. There were no signs of pallor, icterus, cyanosis, clubbing, edema, or lymphadenopathy. Systemic examination of the cardiovascular, respiratory, central nervous, and abdominal systems was unremarkable.

Local examination of the nose revealed a friable, fleshy, polypoidal mass occupying the left nasal cavity. The mass had a granular surface with multiple whitish dots and was associated with congested surrounding mucosa. The left inferior turbinate appeared thinned and laterally displaced due to mass effect, while the left middle turbinate was normal. The right nasal cavity showed mild inferior turbinate hypertrophy. Cold spatula test demonstrated decreased fogging on the left side, indicating reduced airflow. Posterior rhinoscopy revealed a solitary mass extending from the left nasal cavity into the choana. The lesion exhibited a characteristic “strawberry-like” appearance, suggestive of rhinosporidiosis.

Examination of the ears revealed normal findings bilaterally with intact tympanic membranes and no mastoid or tragal tenderness. Examination of the oral cavity revealed no abnormality. The anterior pillars and posterior pharyngeal wall appeared normal, with no evidence of congestion, mass, or ulceration.

Routine laboratory investigations were within normal limits. Hemoglobin was 12.9 g/dL, with normal total leukocyte count, platelet count, and renal function parameters. Coagulation profile was normal. Serological tests for HIV, hepatitis B, and hepatitis C were negative. Chest radiograph and electrocardiogram showed no abnormalities.

Computed tomography of the paranasal sinuses revealed an enhancing soft tissue mass in the left nasal cavity extending posteriorly into the nasopharynx, measuring approximately 60 × 15 × 16 mm. The lesion was closely related to the left inferior turbinate, with rarefaction of adjacent bone and mild sclerosis. It extended medial and inferior to the inferior turbinate, causing superior displacement. The mass was seen abutting the ostium of the nasolacrimal duct beneath the inferior turbinate, with mild widening of the ductal foramen and suspected extension into the nasolacrimal duct. Associated sinusitis was noted in the left maxillary, anterior ethmoid, and frontal sinuses. A mild deviation of the nasal septum towards the right side was also observed.

The patient underwent surgical management under general anesthesia. Endoscopic excision of the nasal mass was performed with cauterization of the base to prevent recurrence. The procedure also included removal of the left inferior turbinate, excision of the involved nasolacrimal duct along with surrounding mucosa and bone, endoscopic dacryocystorhinostomy, and clearance of a left maxillary sinus cyst through removal of the bone of the inferior meatus. Intraoperatively, a solitary fleshy mass with a granular surface was noted occupying the region between the inferior meatus and inferior turbinate, extending towards the nasal septum and involving the lower part of the nasolacrimal duct.

Histopathological examination revealed multiple thick-walled sporangia at various stages of development containing numerous endospores within a granulomatous inflammatory background, confirming the diagnosis of rhinosporidiosis.

The postoperative period was uneventful, with marked symptomatic improvement. The patient was started on adjunctive dapsone therapy at a dose of 50 mg daily for six months to reduce the risk of recurrence. He was discharged in stable condition with advice regarding nasal hygiene and regular follow-up. This case highlights an uncommon presentation of rhinosporidiosis with extension into the nasolacrimal duct, emphasizing the importance of thorough clinical evaluation, imaging, and complete surgical excision for optimal outcomes.

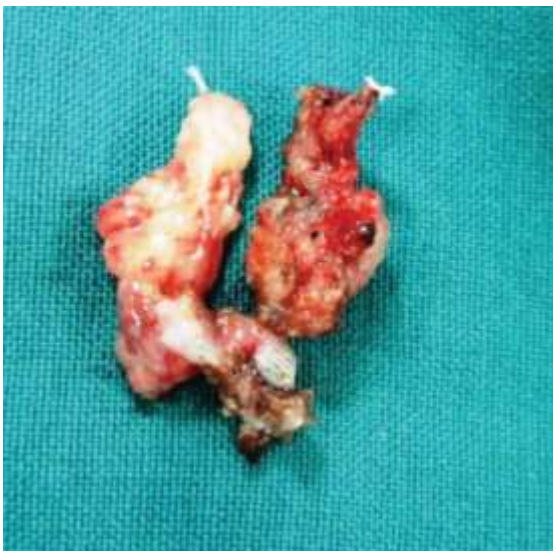

Figure 1: Gross specimen of excised nasal mass showing irregular, fleshy polypoidal tissue with a granular surface and characteristic whitish dots representing mature sporangia, consistent with rhinosporidiosis

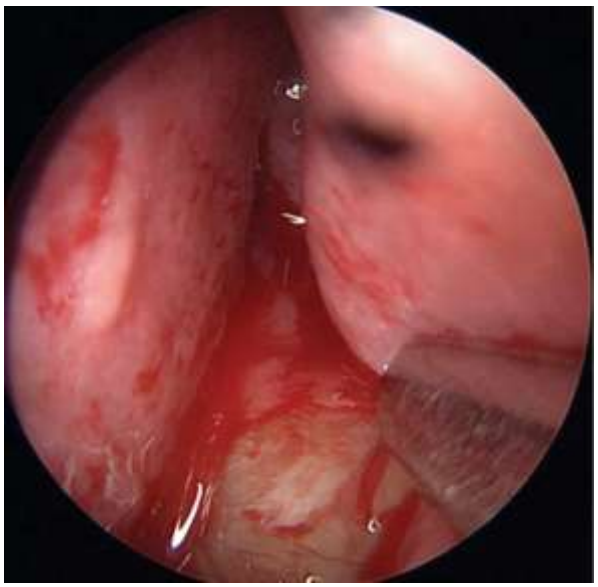

Figure 2: Endoscopic view of the left nasal cavity showing a friable vascular polypoidal mass arising from the inferior meatus region with surrounding congested mucosa, suggestive of rhinosporidiosis.

Figure 3: Clinical photograph showing a reddish, polypoidal mass protruding from the left nasal cavity with a lobulated surface, characteristic of nasal rhinosporidiosis.

DISCUSSION

Rhinosporidiosis is a chronic granulomatous infection caused by Rhinosporidium seeberi, an aquatic protistan parasite that predominantly affects the mucous membranes of the nasal cavity and nasopharynx. The disease is endemic in tropical regions such as India and Sri Lanka and is strongly associated with exposure to stagnant water bodies like ponds and lakes used for bathing. Infection occurs through transepithelial invasion of traumatized mucosa after contact with

contaminated water, which explains the frequent history of pond bathing in affected individuals (Swain, 2020); (Arias Sánchez et al., 2020) [11,12]. The present case demonstrates several classical epidemiological features of rhinosporidiosis, including rural background, young age, and a clear history of bathing in ponds used for cattle.

The nose remains the most common site of involvement, accounting for the majority of cases, while ocular and other extranasal sites occur less frequently (Gupta et al., 2019); (Guru & Pradhan, 2014) [13,14]. Clinically, patients typically present with unilateral nasal obstruction, epistaxis, and a friable polypoidal mass with characteristic white dots on its surface representing mature sporangia. These features were also observed in our patient, whose lesion exhibited the classical "strawberry-like" appearance described in earlier studies (Rohila et al., 2023) [15].

Although the nasal cavity is the primary site, rhinosporidiosis may extend to adjacent structures, leading to unusual clinical presentations. Involvement of the lacrimal drainage system, particularly the nasolacrimal duct and lacrimal sac, is uncommon but well documented. Studies suggest that infection can spread retrogradely from the nasal cavity into the lacrimal sac via the nasolacrimal duct, explaining cases where sinonasal disease coexists with lacrimal involvement (Raju & Sandeep, 2018) [16]. Similarly, imaging studies in rare cases have demonstrated extension of rhinosporidial masses into the nasolacrimal duct causing orbital or lacrimal symptoms (Dey et al., 2016) [8]. In our case, computed tomography revealed extension of the nasal mass towards the nasolacrimal duct with widening of the ductal foramen, suggesting possible invasion of the lacrimal drainage system. This highlights the importance of radiological evaluation to determine the full extent of disease before surgical intervention.

Histopathological examination remains the gold standard for diagnosis, demonstrating thick-walled sporangia containing numerous endospores within a granulomatous inflammatory background. These characteristic structures allow definitive differentiation from other nasal masses such as inflammatory polyps or papillomas (Arias Sánchez et al., 2020) [12]. Cytological techniques such as fine-needle aspiration may assist in preoperative diagnosis, particularly in extranasal lesions, though histopathology remains essential for confirmation (Pal et al., 2014) [17].

Surgical excision remains the cornerstone of treatment for rhinosporidiosis. Complete removal of the lesion with cauterization of the base is recommended to prevent spillage of spores and minimize recurrence (Swain, 2020); (Doddawad et al., 2022) [11,18]. In cases involving the lacrimal system, procedures such as endoscopic dacryocystorhinostomy or dacryocystectomy with excision of the nasolacrimal duct are often required to achieve complete disease clearance (Raju & Sandeep, 2018) [16]. The surgical approach adopted in our patient, which included endoscopic excision of the nasal mass along with removal of the inferior turbinate and nasolacrimal duct with endoscopic dacryocystorhinostomy, aligns with recommendations in previous reports addressing similar anatomical involvement.

Recurrence is a well-recognized challenge in rhinosporidiosis due to autoinoculation of endospores during surgery or incomplete removal of the lesion. Reported recurrence rates vary widely depending on the completeness of excision and extent of disease (Gupta et al., 2019) [13]. Adjunct medical therapy with dapsone is commonly used after surgery because it is believed to inhibit maturation of sporangia and promote stromal fibrosis, thereby reducing the risk of recurrence (Tong et al., 2023) [19]. Postoperative administration of dapsone for several months has therefore been recommended in many case reports and clinical studies (Paneru et al., 2025) [20].

In comparison with previously reported cases, the present case is notable for sinonasal rhinosporidiosis with extension to the nasolacrimal duct in a pediatric patient. Early recognition of such atypical spread is crucial because incomplete treatment may lead to persistent disease or recurrence. Comprehensive evaluation using nasal endoscopy and imaging, followed by meticulous surgical excision with cauterization and adjunct medical therapy, remains essential for successful management and long-term disease control.

CONCLUSION

Rhinosporidiosis remains an important cause of nasal masses in endemic regions, particularly in individuals with exposure to contaminated water sources. Although the disease most commonly affects the nasal cavity and nasopharynx, extension to adjacent structures such as the nasolacrimal duct is rare and may lead to diagnostic challenges. Early recognition through clinical examination, imaging studies, and histopathological confirmation is essential for accurate diagnosis. Complete surgical excision of the lesion with cauterization of the base remains the mainstay of treatment to minimize recurrence. Adjunctive therapy with dapsone may further reduce the risk of recurrence by inhibiting sporangial maturation. This case highlights the need for awareness of unusual extensions of rhinosporidiosis and emphasizes the importance of thorough evaluation and appropriate surgical management for optimal patient outcomes.

REFERENCES

1. Babu D, Joy L, Sebastian A, Chethan Kumar G, Noorjihan BK, Rajadurai VD. Etiology, Clinical Profile and Factors Predicting Disease Recurrence of Rhinosporidiosis in a Tertiary Care Centre in Kanyakumari District. Indian J Otolaryngol Head Neck Surg. 2024 Dec;76(6):5104-5107. doi: 10.1007/s12070-024-04822-5. Epub 2024 Aug 9. PMID: 39559075; PMCID: PMC11569376.
2. Arias AF, Romero SD, Garcés CG. Case Report: Rhinosporidiosis Literature Review. Am J Trop Med Hyg. 2020 Dec 7;104(2):708-711. doi: 10.4269/ajtmh.20-0291. PMID: 33289469; PMCID: PMC7866367.
3. Chandran M, Mehta R, Nagarkar NM, Bhargava A, Mohapatra E, Pati SK. Rhinosporidiosis- Epidemiological, Clinicoradiological, Immunological Profile. Iran J Otorhinolaryngol. 2023 Sep;35(130):255-262. doi: 10.22038/IJORL.2023.68378.3331. PMID: 38090617; PMCID: PMC10712551.
4. Banjara H, Satyapal K, Ravi AK, Kaur J, Rohilla S, Dhaulakhandi DB. Rhinosporidiosis: A report of 104 cases from Raipur, Chhattisgarh (India). Trop Parasitol. 2025 Jan-Jun;15(1):12-20. doi: 10.4103/tp.tp_3_24. Epub 2025 Apr 5. PMID: 40433648; PMCID: PMC12105778.

5. Sinha A, Phukan JP, Bandyopadhyay G, Sengupta S, Bose K, Mondal RK, Choudhuri MK. Clinicopathological study of rhinosporidiosis with special reference to cytodiagnosis. J Cytol. 2012 Oct;29(4):246-9. doi: 10.4103/0970-9371.103943. PMID: 23326028; PMCID: PMC3543593.
6. Raja K, Thangavel S, Kushwaha A, Srinivas BH, Kar R, Alexander A, Penubarthi LK, Saxena SK. Management of Disseminated Rhinosporidiosis: Experience From a Single Tertiary Institution. Turk Arch Otorhinolaryngol. 2024 Oct 23;62(2):66-71. doi: 10.4274/tao.2023.2022-9-5. PMID: 39463121; PMCID: PMC11572339.
7. Mathew S, Arora RD, Prabha N, Kamble P, Satpute SS, Nagarkar NM. Retroanalytical Study of Epidemiological Factors of Rhinosporidiosis. Int Arch Otorhinolaryngol. 2020 Nov 30;25(4):e504-e508. doi: 10.1055/s-0040-1718526. PMID: 34737820; PMCID: PMC8558948.
8. Dey AK, Sharma R, Mittal K, Kumar P, Murumkar V, Mitkar S, Hira P. Rhinosporidiosis: A Rare Cause of Proptosis and an Imaging Dilemma for Sinonasal Masses. Case Rep Otolaryngol. 2016;2016:3573512. doi: 10.1155/2016/3573512. Epub 2016 Nov 30. PMID: 28042489; PMCID: PMC5155101.
9. Hussein MR, Rashad UM. Rhinosporidiosis in Egypt: a case report and review of literature. Mycopathologia. 2005 Feb;159(2):205-7.
10. Khan I, Gogia S, Agarwal A, Swaroop A. Recurrent rhinosporidiosis: coblation assisted surgical resection-a novel approach in management. Case Rep Otolaryngol. 2014;2014:609784. doi: 10.1155/2014/609784. Epub 2014 Dec 10. PMID: 25574413; PMCID: PMC4276699.
11. Swain S. Human rhinosporidiosis: still an elusive disease. Int J Otorhinolaryngol Head Neck Surg. 2020;6:1747–1752.
12. Arias Sánchez Á, Romero Arias SD, Garcés Samudio CG. Case report: rhinosporidiosis, case report and literature review. Am J Trop Med Hyg. 2020.
13. Gupta N, Singla P, Pradhan B, Gurung U. Lacrimal sac rhinosporidiosis: case report and review of literature with a new grading system to optimize treatment. Saudi J Ophthalmol. 2019;33:283–290.
14. Guru R, Pradhan D. Rhinosporidiosis with special reference to extra nasal presentation. J Evol Med Dent Sci. 2014;3:6189–6199.
15. Rohila V, Soni S, Bansal A, Gupta A. Notorious case of rhinosporidiosis presenting as sinonasal polyposis. Acta Sci Otolaryngol. 2023;5.
16. Raju GR, Sandeep S. Lacrimal sac rhinosporidiosis and surgical management by transnasal endoscopic excision: a case series. Laryngoscope. 2018;128:2693–2696.
17. Pal S, Chakrabarti S, Biswas BK, Sinha R, Rakshit A, Das P. Cytodiagnosis of extra-nasal rhinosporidiosis: a study of 16 cases from an endemic area. J Lab Physicians. 2014;6:80–83.
18. Doddawad V, Singh R, S S. A new technique to resolve nasal rhinosporidiosis: a case report with review of literature. Int J Surg Case Rep. 2022;92.
19. Tong TK, Ismail I, Mohammad NMY, Yusoff S, Sahri AM. Recurrent rhinosporidiosis: a case report from Malaysia and review of literature. Proc Singapore Healthc. 2023;32.
20. Paneru M, Yadav D, Yadav D. Lacrimal sac rhinosporidiosis presented as nasal obstruction symptoms without ocular manifestations: a case report. Ann Med Surg. 2025;87:1010–1012.