

Research Article

Rhinosporidiosis: a clinicopathological study from a Rural Tertiary Health Care Centre, Bihar, India

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ABSTRACT

Background: Rhinosporidiosis is a chronic granulomatous infection characterized by a bleeding polypoidal mass which commonly affects the nose and nasopharynx. The disease is caused by *Rhinosporidium seeberi*. It grows in stagnant water and is thought to be transmitted to human by infected soil and water by gaining entry through traumatized epithelium and mucosa of nose and nasopharynx. It has a high incidence of occurrence among rural population. Surgical excision is the treatment of choice.

Methods: Totally, 26 patients of histologically proven cases of rhinosporidiosis were included in this clinicopathological study. The mode of presentation in all these patients was polypoidal nasal mass causing recurrent bleeding and nasal obstruction. The period of study was from May 2010 to April 2014. All patients treated surgically were followed-up from 6 months to 1 year.

Results: There were 26 patients of histologically proven rhinosporidiosis of nose and nasopharynx. Of total 26 cases, there were 19 males and 9 female patients in our study with a male to female ratio of 2.7:1. The age of presentation varied from 14 years to 67 years, most patients presenting in the second to sixth decade of life with maximum patients in the third and fourth decade of life and were from rural and poor socio-economic background. Recurrent cases were given dapson.

Conclusion: Rhinosporidiosis which was previously thought to be a fungus is now considered as a protozoa parasite, which involves fish and other amphibians, a fungus like protozoa of the class mesomycetozoea.

Keywords: Rhinosporidiosis, Granulomatous infection, Protozoa, Mesomycetozoea, Endoscopic cauterization

INTRODUCTION

Rhinosporidiosis is a chronic granulomatous infection characterized by a bleeding reddish pink mulberry like polypoidal mass which commonly affects the nose and nasopharynx. The disease is caused by *Rhinosporidium seeberi* a fungus like protozoa parasite of the class mesomycetozoea. The disease occurs frequently in pond bathers and is endemic in Sri Lanka and parts of Indian subcontinent especially in coastal South India, Chhattisgarh, and Odisha. Here, we present a case study of 26 cases of

rhinosporidiosis that presented to MGM Medical College and LSK Hospital Kishanganj with a review of literature.

METHODS

This study consists of 26 patients of histologically proved cases of rhinosporidiosis that presented to M.G.M Medical College and L.S.K Hospital, Kishanganj, Bihar in the eastern part of India. All patients presented with recurrent nasal bleeding and obstructive nasal polypoidal mass between May 2010 and April 2014.

RESULTS

Observation and Results

There were 26 patients of histologically proven rhinosporidiosis of nose and nasopharynx. Of total 26 cases, there were 19 males and 9 female patients in our study with a male to female ratio of 2.7:1. The age of presentation varied from 14 years to 67 years, most patients presenting in the second to sixth decade of life with maximum patients in the third and fourth decade of life. All patients were from rural background with occupational background primarily consisting agricultural and outdoor manual labor work. The socio-cultural background involved low education standards, community practice of pond bathing, overcrowding, poor sanitation, and poor hygiene.

Clinical features consisted of recurrent nasal bleeds, nasal obstruction, and mulberry like polypoidal mass in the nose which was the presenting feature in all patients. The duration of symptoms ranged from 4 months to 2 years. Other symptoms were muco-purulent nasal discharge, hyposmia, headache, and snoring and sleep apnea symptoms. About 23% patients presented with recurrent disease and more than one surgery. Anterior rhinoscopy showed primary attachment on the inferior turbinate (23%), septum (15.3%), middle turbinate (7.6%), middle meatus (11.5%), and inferior meatus (11.5%). 11.5% patients had multiple nasal attachments. 7% patients had both nasal and nasopharyngeal attachments and one patient had primary nasopharyngeal attachment. The multiple attachments were confirmed during surgical resection of masses. Patients with multiple attachments were of long standing duration (more than 1 year) and in recurrent cases.

Surgical excision (conventional or endoscopic) with cauterization of the pedicle was the treatment of choice for all patients. Patients with multiple and broad-based pedicles (sessile masses) were followed-up endoscopically at 4 weeks, 8 weeks and 12 weeks intervals to see for residual disease and cauterized again to ensure total clearance of disease. Blood transfusion was not required in any of our cases. None of the patients needed tracheostomy. Anterior packing sufficed for all cases except four cases of combined nasal and nasopharyngeal rhinosporidiosis and one case of primary nasopharyngeal rhinosporidiosis which needed additional post nasal packing.

Clinical diagnosis was certain in all except the primary nasopharyngeal rhinosporidiosis which was confirmed by endoscopy. Patients who had large nasal masses with near total obstruction of anterior nares were operated conventionally with endoscopic assistance. Large nasal masses with near total obstruction of anterior nares were removed piecemeal to make room for identifying the nasal cavity landmarks then with endoscopic assistance the stalk was identified and cauterized. Patients with available anterior nasal space were approached endoscopically. Primary endoscopic surgical technique was found to be superior to conventional technique, with minimal blood loss, minimal collateral tissue damage, and superior in terms of precise identification of stalk of

nasal mass and its cauterization at the base as compared to conventional surgery which was more bloody and of longer duration and led to inaccurate identification of the pedicle attachment which led to wider area of cauterization of base and more post-operative synechia. Post-operative hospital stay was for a minimum period of 2 days and maximum period of 5 days depending upon the extent of disease. Routine post-operative douching was done for routine nasal care to prevent synechia formation. Patients were given routine antibiotics, antihistamines, and analgesics. Recurrent cases were given dapsone therapy for 6 weeks.

All specimens were subjected to routine histopathological examination. Clinical diagnosis was established in all cases which were confirmed by histopathology. H and E staining of specimens showed sporangia in various stages of development. Rhinosporidiosis is characterized by the absence of Splendore-Hoeppli reaction (which shows well-developed eosinophilic infiltration in the infected tissue that is typical of invasive mycoses) and tissue infiltrate is almost devoid of eosinophils.¹ Coccidiomycotic lesions can cause confusion with rhinosporidiosis during cytological as well as histopathological evaluation, as the former has similar mature stages represented by large, thick-walled spherical structures containing endospores. But distinction can also be made by H and E stain as intra-sporangial endospores of *R. seeberi* are larger and more numerous in comparison to those of *Coccidioides immitis*.² All patients are disease free and are on regular follow-up for past 6 months. There were five cases (19.2%) of recurrent rhinosporidiosis in this study which gave history of previous surgical operation.

DISCUSSION

Rhinosporidiosis which was previously thought to be a fungus (as first described by Guillermo Seeber from Buenos Aires in 1900),³ is now considered as a protozoan parasite, which involves fish and other amphibians, a fungus like protozoa of the class mesomycetozoa as classified by Herr et al.⁴ Moreover, unlike invasive mycoses, histologically rhinosporidiosis lacks Splendore-Hoeppli reaction.¹ On H and E staining, intra-sporangial endospores of *R. seeberi* are larger and more numerous in comparison to those of *C. immitis*.² It grows in stagnant water and is thought to be transmitted to human by infected soil and water by gaining entry through traumatized epithelium and mucosa of nose and nasopharynx. It has a high incidence of occurrence among rural population who are outdoor bathers and field workers. The disease is endemic in Sri Lanka and coastal parts of India. Other areas having endemicity involve the hot and humid areas of Odisha, adjoining areas of Bankura district of Bengal and Chhattisgarh. The rural populace coming from low socio economic background is frequently affected who have a practice of pond bathing and who are outdoor workers in the fields and are exposed to contamination. The nasal mucosa is the most common site of implantation by the parasite which gains entry through inflamed traumatized mucosa of nose and nasopharynx in patients with low standards of sanitation and hygiene.



Figure 1: Rhinosporidiosis in right nasal.



Figure 3: Rhinosporidiosis in a 63-years-old lady.



Figure 2: Rhinosporidiosis extending cavity through nasopharynx to oropharynx.



Figure 4: Excision of rhinosporidiosis.

Table 1: Gender distribution.

Male	Female	Total
19	7	26

Disease once established in the nose tends to grow and satellite implantation occurs by finger contamination to adjoining areas as well as spread by continuity and contiguity to deeper areas.

Das⁵ reported an incidence of 70% affecting nasal mucosa, 15% involvement of conjunctiva and 3% involvement of urethral mucosa and only one patient in their series had disseminated disease with previous history of nine operations in their series of 96 patients reported from Bankura district of West Bengal, India. The

Table 2: Age distribution.

Age group	Total number
0-10	0
11-20	4
21-30	7
31-40	6
41-50	4
51-60	4
61-70	1

incidence of disseminated rhinosporidiosis is extremely rare Bandyopadhyay et al.⁶ Das⁵ reported 31 cases of

Table 3: Number of cases according to their site of distribution.

Site of distribution of lesion	Number
Nasal	
Septum	4
Inferior turbinate	6
Inferior meatus	3
Middle turbinate	2
Middle meatus	3
Multiple areas	3
Naso-pharyngeal	1
Nasal+Naso-pharyngeal	4

rhinosporidiosis from Bankura district of West Bengal which shows a pocket of endemicity. The disease is rampant in Chhattisgarh state of India which shows high endemicity as reported by Gupta et al.,⁷ Sudarshan et al.,⁸ and Mukherjee et al.⁹

The disease is reported throughout the year as reported by Baliga and Naik¹⁰ and Bandyopadhyay et al.⁶ and does not show any seasonal variation as reported by Paul et al.¹¹ from Jammu. In our series, the peak age of incidence was in the second to fourth decade of life which is the active working age group which Baliga and Naik.¹⁰ There is a male predominance in our series of 2.7:1 which is similar to the report by Bandyopadhyay et al.⁶ Recurrence is reported to be high by earlier authors because of previous practice of conventional surgery which lacked the precision of endoscopic localization of the rhinosporidiosis stalk at primary surgery, hence the problem of leaving behind residual disease which leads to post-operative seeding which can be eliminated by present technique of endoscopic assisted surgery and meticulous cauterization of pedicle at its attachment to the nasal mucosa and also ensures through removal of primary disease which along with regular endoscopic follow-up is the only surety for preventing long term recurrences. Treatment of rhinosporidial lesions is mainly surgical. Total excision of the polyp, preferably electrocautery, is the recommended method of therapy. Previously, anti-fungal treatment which was routinely given is no more effective as reported by Job et al.¹² Recurrence may occur due to spillage of endospores in the surrounding mucosa during removal. Dapsone was routinely given for all recurrent and extensive cases for a period of 6 weeks, as this is the only drug used for adjuvant therapy. Recurrence according to us is more often due to incomplete eradication of disease due to failure to identify left over disease in a bloody field. All patients should be followed-up rigorously for 2 years by diagnostic endoscopy and patients must be educated for

routine follow-up. Patient education is also needed to improve hygiene levels and outdoor bathing should be strictly discouraged in these population to prevent disease.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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