



ORIGINAL RESEARCH PAPER

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CLINICO-EPIDEMIOLOGICAL PROFILE OF PATIENTS WITH RHINOSPORIDIOSIS AT TERTIARY CARE CENTRE: AN OBSERVATIONAL STUDY

KEY WORDS:

Rhinosporidiosis, Rhinosporidium seeberi, Socio-economic status

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ABSTRACT

Introduction: Rhinosporidiosis is a rare chronic granulomatous infection of the mucous membranes caused by Rhinosporidium seeberi. It is mostly prevalent in India and Sri Lanka. In India, the disease is endemic to Chhattisgarh, South India (mostly Kerala & Tamil Nadu), West Bengal and Odisha. **Aim:** To observe the clinical presentation and epidemiological factors in Rhinosporidiosis. **Materials and Methods:** We conducted a descriptive, cross-sectional study in 42 clinically diagnosed Rhinosporidiosis cases, who were surgically treated in the department over a period of 1 year, from October 2021 to October 2022 and diagnosis was confirmed by post excision histopathological examination. **Results:** This study involved 42 clinically diagnosed cases of Rhinosporidiosis. Majority (76.2%) of patients were males and 23.8% were females. The male to female ratio was found to be 3.2:1. Most common age group was 11-20 years. All 42 patients had history of pond bathing and 60% cases were from Rural area. 54.8% of cases belonged to lower middle and 40.5% cases belonged to lower socio-economic class. 97.6% cases had mass in Nose and nasopharynx, most common presenting complaint was Nasal obstruction (92.85%). Most common Site of attachment of mass was Inferior meatus (45.23%) and Nasopharynx (38%). O+ was most common blood group seen in 19 cases (45.23%) followed by A+ in 12 (28.57%), B+ in 8 (19%). **Conclusion:** The results of the study showed that the disease was associated with male gender, young and middle age, low socio-economic status, rural population and pond bathing and O+ blood group. Most common site involved was Nose and Nasopharynx and most common attachment of mass was seen in inferior meatus.

INTRODUCTION

Rhinosporidiosis has been known for over 100 years since its first description in Argentina.¹ It is a rare chronic granulomatous disease reported in over 70 countries across the world and is a typical endemic disease mostly found in tropical regions.² It is most prevalent in India, Sri Lanka, and Argentina, but is also found to occur in North America, Africa, Europe, and Asia. In India, the disease is endemic to Chhattisgarh, South India (mostly Kerala & Tamil Nadu), West Bengal and Odisha.³ Rhinosporidiosis is an infection of the mucous membranes and subcutaneous tissue caused by Rhinosporidium seeberi, traditionally thought to be a fungus but actually an aquatic protozoan parasite⁴ and is characterised by reddish polypoidal masses which are hyperplastic, irregular, friable and bleeds on touch. The masses are mostly pedunculated sometimes sessile and commonly found in nose and nasopharynx.⁵ Extra-nasal sites like oropharynx, larynx, trachea, conjunctiva, lacrimal sac may also be affected along with, less commonly, other sites like lips, palate, buccal mucosa, genital mucosa, skin, scalp and even bone.⁶ The mode of infection from the natural aquatic habitat of Rhinosporidium seeberi is through the traumatized epithelium ('transepithelial infection'). Water and soil are believed to be the reservoir of infection.⁸

The initial diagnosis of the disease is mostly clinical and is confirmed by histopathological study of specimen after excision. A detailed history of pond bathing and occupational exposure to stagnant water helps to suspect the clinical diagnosis in a patient presenting with nasal mass and other typical symptoms, aided by careful clinical examination and a systematic investigative profile. The histopathological examination of the excised mass confirms the diagnosis.

AIM

The aim of this study was to observe the clinical presentation

and epidemiological factors in patients with Rhinosporidiosis at a tertiary care centre in Raipur, Chhattisgarh.

MATERIALS AND METHODS

This was a descriptive cross-sectional study involving 42 clinically suspected patients of Rhinosporidiosis were examined in Department of Otorhinolaryngology at a tertiary care centre, Raipur, Chhattisgarh, over a period of 1 year from December 2021 to December 2022, following approval by the Institutional Ethical Committee. A detailed history was taken about the symptoms, duration, demographic details, number of episodes, previous surgeries; followed by thorough ENT examination. Clinical diagnosis of rhinosporidiosis was established. Patients underwent 0 degree diagnostic nasal endoscopy and/or 70 degree video-laryngoscopy to determine clinical extent of involvement. Surgical excision was planned and accordingly all routine blood investigations were done. Patient underwent endoscopic excision-intraoperative findings (extent of disease, attachment of stalk) were also charted. A structured case record form was prepared, and all the epidemiological, clinical, haematological, surgical and histopathological findings of each patient were documented in it. The clinical and epidemiological data was tabulated and observed.

Statistical Analysis

Data coding and recording was done in MS Excel spread sheet program. Descriptive statistics were elaborated in the form of frequencies and percentages for categorical variables. Data were presented in a graphical manner wherever appropriate for data visualization using histograms/column charts for continuous data and bar charts/pie charts for categorical data.

RESULTS

This study involved 42 clinically suspected cases of Rhinosporidiosis over a period of one year. Of these 42 cases,

32(76.2%) were male and 10 (23.8%) were females. The male to female ratio was found to be 3.2:1.

Most cases were found to fall within the age group of 11-20 years (38.09%) with a mean age of 27.16 years. The youngest patient in this series was 8 years old and the oldest was 70 years.

An analysis of possible aetiological factors was conducted including occupation, demographic profile, socioeconomic status and bathing history. The patients in our study were mainly school going children and adolescents (50%) with a few daily wage labourers (19%) and farmers (14.28%).

The majority of patients lived in rural areas (59.52%), while the remaining lived in urban areas. Most of patients were from Raipur district (30.95%) followed by Balodabazar (16.66%) and Janjgir (11.9%).

Socio-economic class of patients were obtained using Modified Prasads classification. Majority of the patients were found to be of Lower-middle class (54.8%) and lower class (40.5%) which shows that occurrence of disease is more common in lower socio-economic population.

Almost all patients gave a history of bathing in ponds. 13 patients (30.95%) were using multiple water sources. Out of 13, 10 were using pond and tap water and 3 were using pond and river water for bathing.

The history of pre disposing factors like previous history of surgery for Rhinosporidiosis was found in 10 patients (23.8%), Nose picking in 9 patients (21.4%) and nasal trauma in 3 patients (7.14%). Out of 42, 10 patients were Recurrent cases and remaining 32 were primary cases.

[Table/Fig – 1 aetiologic characteristics]

Aetiology		No.	%
Occupation	Student	21	50
	Farmer	6	14.28
	Daily wage labourer	8	19
	Housewife	3	7.14
Residential status	Rural	25	59.52
	Urban	17	40.48
Bathing history	Pond	42	100
	Rivers	3	7.14
	Tap water	10	23.8
Socioeconomic status	Lower class	17	40.5
	Lower middle class	23	54.8
	Middle class	2	4.76
Pre disposing factors	surgery for nasal mass	10	23.8
	Nose picking	9	21.4
	Nasal trauma	3	7.14

In majority 41 patients (97.6%), location of Rhinosporidial mass was found in nose and nasopharynx. Along with nasal cavity, 4 patients had oropharyngeal and 1 patient had lacrimal sac involvement. Only one of the patient had disseminated disease without involvement of nose and nasopharynx.

The symptoms with which the patients presented to our out patient department included nasal obstruction, nasal mass and epistaxis. Of these, nasal obstruction (92.85%) and nasal mass (78.57%) were the most common presenting complaints among patients with rhinosporidiosis.

On examination, the majority of patients were found to have pedunculated masses (78.57%) and the primary site of attachment was found to be the inferior meatus (45.23%), nasopharynx (38%) and nasal septum (33.3%).

Most of the patients were found to be O + blood group

(45.23%) followed by A + (28.57%) and B + (19%).

[Table/Fig – 2 clinical features]

Feature		No.	%
Symptoms	Nasal obstruction	39	92.85
	Nasal mass	33	78.57
	Epistaxis	32	76.19
	Nasal discharge	3	7.14
Gross characteristics	Pedunculated	33	78.57
	Sessile	9	21.43
Site of involvement	Nose and nasopharynx	41	97.62
	Lacrimal sac	1	2.38
	Oropharynx	4	9.52
	Larynx	1	2.38
Site of primary attachment	Inferior meatus	19	45.23
	Nasopharynx	16	38.1
	Septum	14	33.33
	Inferior turbinate	10	23.8



[Table/Fig – 3 showing rhinosporidial mass hanging into oropharynx]



[Table/Fig – 4 showing rhinosporidial mass over right lacrimal sac]

DISCUSSION

In our study, the most common age group of patients was 11-20 years (38.09%) with a mean age of 27.16 years. The majority of the patients (38.09%) in our study were school-going children and adolescents (age group 11-20 years) as they are the most exposed groups to outdoor bathing in common village pond where animals also bath. A similar result was obtained by **Sirshak Dutta et al.**⁹ in their cross sectional study, which showed the maximum frequency of disease was in the age group of 10-20 years. In our study, 76.2% of patients were males and 23.8% were females. The male to female ratio was found to be 3.2:1, incidence of disease is more common in males than females. A male preponderance was noted. **Mathew et al.**¹⁰ in their retrospective record-based study on the epidemiology of rhinosporidiosis found that the disease had a male preponderance (87%) with a higher male: female ratio of 7.25:1. Hence, from our study substantiated by various others in the literature, we can conclude that rhinosporidiosis mostly affects the younger to middle age groups and male gender, and is less common in older people.

In our study majority of the cases reported from the district of

Raipur (30.95%) followed by Balodabazar (16.66%), Durg and Janjgir (11.9% each). **Dr Arvind Neralwar et al.** conducted a study on Rhinosporidiosis and observed that Rhinosporidiosis is quite common in Raipur, Durg, Bilaspur and Dhamtari districts of Chhattisgarh.

In our study, 8 (19%) of participants were Daily wage labourers and 6 (14.28%) of them were farmers while other had varied professions. 25 (59.25%) of participants were from Rural areas. 23 (54.76%) of participants were from lower-middle class and 17 (40.5%) were from lower class. **P. Karthikeyan et al.**¹¹ also found similar results in their study and observed that 75% of patients were from low socioeconomic status as compared to 25% of patients who were of middle socioeconomic status and majority of cases lived in rural areas (59.38%) while the remaining in semi-urban (21.88%) and urban (18.75%) areas. Hence, it can be concluded that exposure to pond-water and rural residential status are important risk factor associated with Rhinosporidiosis and also the disease is more common in agricultural population and low socioeconomic status.

In our study, 97.6% of participants had mass in nasal cavity. 9.52% of participants had mass in oropharynx in addition to nasal mass and 2.38% of participants had mass over lacrimal sac in addition to nasal mass. 1 participant had isolated mass in larynx and generalised skin involvement. Similar findings were observed by **Singh R et al.** 2021 conducted an epidemiological study on rhinosporidiosis on 32 patients, that 59.38% of patients had mass in nasal cavity followed by 21.88% had nasopharyngeal involvement. 15.63% of patients were having mass involving both nose and nasopharynx. Hence, it can be concluded that Rhinosporidiosis is primarily a disease of nose and nasopharynx.

The most common symptom in our study was unilateral or bilateral nasal block/obstruction which was present in 92.85% of cases. Visible Mass or mass protruding from the nasal cavity was noticed in 33 patients (78.57%) making nasal mass as 2nd most common complaint. **P. Karthikeyan et al.**¹¹ in their retrospective study also found that nasal obstruction (40.63%) and epistaxis (28.13%) were the most common presenting complaints among the patients with rhinosporidiosis.

In our study, 78.57% of patients had pedunculated masses while 21.43% had sessile masses. This was in contrast to the study by **P. Karthikeyan et al.**¹¹, found that majority of patients had sessile masses (65.63%).

In our study, maximum involvement was found in the inferior meatus, nasopharynx, and septum. In 45.23% of the patients, the lesion was found to be attached to the inferior meatus of the nasal cavity. 38.1% of the participants had lesions detected in the nasopharynx and 33.3% of participants had lesion in septum. In study conducted by **Sabu A. N.**¹² in a tertiary care centre in Ernakulam district of Kerala, found attachments in the nasal cavity, the most common sites were the inferior meatus and floor of the nasal cavity, followed by the nasal septum and the inferior turbinate.

Maximum patients in our study belonged to O+ blood group (45.23%) followed by A+ (28.57 %) and B+ (19%). Only 7.14% had AB+ blood group. There was no negative group in the study group. Similar results were obtained by **Mathew et al.**¹⁰ with a majority of their study patients (49.09%) belonging to O+ blood group. A+ was found in 18.18%, B+ in 16.36% and AB+ in 16.36%. Rh-negative blood group was not present in any of their subjects.

CONCLUSION

Rhinosporidiosis is strongly associated with male gender, young and middle aged adults, agricultural occupations, rural residential status, a history of bathing in ponds and rivers and

a low socioeconomic status. The disease most commonly affects nasal cavity, in which inferior meatus and nasopharynx are the most common primary sites of attachment. Nasal obstruction, nasal mass and epistaxis are the most common presenting complaints. The incidence of disease is more common in O+ blood group. No correlation has been found between age, gender, blood group and bathing habits with primary site of attachment. This study will help to reduce the incidence of disease by effective public health education, particularly in districts where incidence is high, thereby reducing the morbidity and recurrence rate.

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