

Rhinosporidiosis – A Clinical Survey

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Abstract

Background: Rhinosporidiosis is a chronic inflammatory granulomatous disease caused by the organism *Rhinosporidium seeberi*. This causal organism was once believed to be a sporozoan, but is now considered to be a fungus. The disease is present all over the world except in Australia. However, it is endemic only in India and Sri Lanka; more than 95% of reported cases are from these two countries. The most common site of manifestation of rhinosporidiosis in man is the nose accounting for about 70% of cases. Surgical excision remains the mainstay of treatment today even though dapsone and ketoconazole have been tried to some extent in preventing recurrence after surgery.

Aim of the Study: The aim of the study was to study the prevalence, distribution, clinical behavior, results of various forms of treatment and to provide a baseline clinical data and to supplement information for ongoing studies in the field of rhinosporidiosis.

Materials and Methods: A total of 20 patients diagnosed as rhinosporidiosis, who attended the ENT Outpatient Department of Medical College Hospital, Calicut, during the period from December 1998 to November 1999. Detailed history was recorded and patients were subjected to thorough otolaryngological examination. Special attention was given to the site of lesions and type of attachment. Details were also collected with particular reference to bathing habits, occupation, contact with animals, and occurrence of similar illness in the family or in the neighborhood. Investigations included regular blood and urine and blood grouping. All the patients underwent surgical excision of the lesions. The diagnosis was confirmed by histopathological examination of specimen obtained postoperatively. 100 mg of dapsone was administered daily (50 mg daily in children), 6 days a week, for a period of 6 months. All patients were reviewed for follow-up at the end of 1 month, 2, 4, and 6 and 9 months and on completion of a year after surgery.

Observations and Results: In this study, the average age of patients suffering from rhinosporidiosis was 30.6 ± 2.80 years and the age varied between 8 and 52 years. The sex incidence was as follows: Males 17 (85%), females 3 (15%). Male predominance was seen in this series and the male to female ratio was 5.66:1. Most of the subjects suffering from rhinosporidiosis were manual laborers 7 (35%) out of 20, of which 2 (10%) were agricultural workers. The other major group was students accounting for 5 (25%) out of 20 cases. The external appearance of the nose was normal in all patients. Partial nasal obstruction was seen in 13 cases (65%), on the left six, on the right five, and bilateral two cases. The total obstruction was seen in 5 cases (25%) – left two, right two, and bilateral one. Both nasal cavities were patent in only two cases. The vestibule showed the presence of mass in four cases (20%).

Conclusions: Rhinosporidiosis is not an uncommon disease encountered in day-to-day ENT practice. The occurrence of the disease does not bear any relation to the occupation of the patient. The maximum incidence of rhinosporidiosis is seen in the age group of 21–30 years and males predominate. Rhinosporidiosis is more common in the rural population. There is a significant association between dip baths in ponds and the occurrence of disease.

Key words: Rhinosporidiosis, Spores, Nasal polyp, Dapsone

INTRODUCTION

In 1896, Guillermo Seeber in Buenos Aires examined a nasal polyp removed from an agricultural worker, a

native of Italy, 19 years of age, but resident for 18 years in Argentina. O’Kinealy (1903) presented a paper on rhinosporidiosis.^[1] Minchin and Fantham (1905) from O’Kinealys mounted sections gave a summary of the development sequence of the organism, which they named as *Rhinosporidium Kinealy*.^[2] Castellani and Chalmers (1913) reported the first rhinosporidial infection from Ceylon.^[3] Tirumurthi (1916) published a summary of 15 cases from Madras.^[4] Ashworth (1922)^[5] presented a paper on rhinosporidiosis from the material received Logan Turner, a nasal polyp removed from an Indian who

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hailed from Kerala, a student of Medicine at Edinburgh. He demonstrated that it was a fungus and not protozoa and gave an account of its life history. He also discussed and established its proper name as *Rhinosporidium Seeberi*. Karunaratne,^[6] in 1934, worked out the detailed histology of the infected tissue and mentioned one case where carcinoma supervened. Cherian and Satyanarayana,^[7] in 1949, published the results of surgical treatment in 72 cases. Mahadevan,^[7] in 1952, reported a case of parotid salivary cyst due to rhinosporidiosis; and Kannan-Kutty and Teh^[8] have shown that the organism produces hyaluronidase, the substance which helps in the spread of spores submucosally. Nair^[9] from Kerala reported the efficiency of dapsone in the treatment of rhinosporidiosis. David^[10] described the predisposing factors of rhinosporidiosis as: (1) Irritation of mucous membrane (by chemicals, gases, smoke, etc.), (2) trauma, (3) impairment of ciliary action, and (4) deviated nasal septum and spurs. Over 90% of patients in endemic areas give a positive history of dip baths in stagnant waters such as ponds.^[7,11-13] The present study was conducted in the present scenario to study the prevalence, distribution, clinical behavior, results of various forms of treatment and to provide baseline clinical data and to supplement information for ongoing studies in the field of rhinosporidiosis.

Type of Study

This was a prospective, cross-sectional analytical study.

Institute of Study

This study was conducted at the Department of ENT, Government Medical College, Kozhikode, Kerala.

Period of Study

This study was from December 1998 to November 1999.

MATERIALS AND METHODS

The materials for this study were collected from the patients who attended the ENT Outpatient Department of Medical College Hospital, Calicut, during the period from December 1998 to November 1999. An ethical committee clearance was obtained before starting the study. AN ethical committee cleared consent form was used for this study. Twenty patients who were clinically diagnosed to be suffering from rhinosporidiosis were included and evaluated for the study.

Inclusion Criteria

1. Patients of all age groups with the diagnosis of rhinosporidiosis were included in the study
2. Patients with the previous history and treatment for rhinosporidiosis were included in the study.

Exclusion Criteria

Patients without bacteriological evidence of rhinosporidiosis were excluded from the study.

Methods

Detailed history was recorded and patients were subjected to thorough otolaryngological examination. Special attention was given to the site of lesions and type of attachment. A careful systemic examination was carried out to detect the presence of extra nasal rhinosporidiosis as well as to rule out any associated diseases. Details were also collected with particular reference to bathing habits, occupation, contact with animals, and occurrence of similar illness in the family or in the neighborhood. Investigations included regular blood and urine and blood grouping.

Treatment

All patients underwent surgical excision of the lesions. The diagnosis was confirmed by histopathological examination of specimen obtained postoperatively. 100 mg of dapsone was administered daily (50 mg daily in children), 6 days a week, for a period of 6 months.

Follow-up

All patients were reviewed for follow-up at the end of 1 month, 2, 4, and 6 and 9 months and on completion of an year after surgery. Enquiries were made regarding post-operative habits such as bathing in ponds and return to old occupation (If it is water related). Regularity of dapsone intake was confirmed and any untoward effects of it were looked for. Detailed clinical examination to detect residual or recurrent lesions was carried out.

Evaluation of Results

The evaluation of results was made keeping in mind the aims of study. Occurrence of rhinosporidiosis in relation to age, sex, occupation, and income of patients was studied. Efficacy of surgical and medical treatment was also evaluated. All the data were analyzed using standard statistical methods.

OBSERVATIONS AND RESULTS

A clinical survey study of rhinosporidiosis was undertaken. Observations were made regarding age and sex predilection, clinical presentation, and management. Age and sex distribution of patients is given in Table 1.

In this study, the average age of patients suffering from rhinosporidiosis was 30.6 ± 2.80 years and the age varied between 8 and 52 years. The sex incidence was as follows: Males 17 (85%), and females 3 (15%). Male predominance was seen in this series and the male to female ratio was 5.66:1.

Occupation

Most of the people suffering from rhinosporidiosis were manual laborers 7 (35%) out of 20, of which 2 (10%) were agricultural workers. The other major group was students accounting for 5 (25%) out of 20 cases. Some cases were also found to occur in other groups such as businessmen, semiskilled workers, fishermen, tailor, cook, and driver. Two (10%) patients in the group were unemployed. The occupation of patients is given in Table 2.

Native place of the patients was as follows: Kozhikode District 12 cases 60%, Malappuram district 8 cases 40%, 14 patients (70%) came from rural areas, and 6 (30%) from urban areas. Religion of the 20 patients was as follows:

	n (%)
Hindus	09 (45)
Muslims	11 (55)

Educational Status

None of the patients in this study were illiterate. Many of the patients were students.

Socio-Economic Status of Patients

The majority of the patients 16 out of 20 (80%) belonged to the lower socio-economic class. The remaining four patients (20%) belonged to the middle class. It is seen that all patients had nasal obstruction as the chief complaint. It was unilateral in 14 (70%) cases. The right side was affected in 6 (30%) cases and left side in 8 (40%) cases. Six cases (30%) complained of obstruction on both sides. The next common symptom was nasal mass – in 19 cases (95%). Fourteen cases (70%) complained of unilateral nasal mass; right side in 6 (30%) cases left side in 8 (40%) cases. Four cases (20%) complained of bilateral nasal masses and 1 (05%) of only post-nasal mass. In order of frequency, the next symptom was epistaxis. Eighteen cases (90%) complained of epistaxis. The details are summarized in Table 3.

Bleeding was mild to moderate in severity. No patient complained of severe bleeding. It was spontaneous in 8 (40%) of cases and traumatic in 10 (50%) of cases. Thirteen cases (65%) suffered from mouth breathing and 11 cases (55%) complained of snoring and 11 patients (55%) complained of nasal discharge. Ten patients (50%) complained of change in voice. Eight patients (40%) complained of anosmia and seven patients (35%) gave a history of headache. Epiphora was complained of by 5 (25%) of patients and it was on the side of nasal mass. No patient complained of skin swellings or ulcerations [Table 4].

Past History

Among these 20 patients, only 1 (05%) had a history of trauma to nose. Out of 20 patients, 10 cases (50%) were

Table 1: The age and sex distribution of patients with rhinosporidiosis (n=20)

Age in years	Male	Female	Total	Percentage
1–10	1	0	1	5
11–20	4	1	5	25
21–30	6	1	7	35
31–40	3	1	4	20
41–50	2	0	2	10
51–60	1	0	1	5
	17	3	20	100

Table 2: The incidence of various occupations of the subjects in the study (n=20)

Occupation	n (%)
Manual laborer	7 (Agricultural workers-2) (35)
Students	5 (25)
Others	6 (30)
Unemployed	2 (10)

Table 3: The analysis of chief symptoms in the study (n=20)

Symptoms	Number of cases	%
Nasal obstruction	20	100
Nasal mass	19	95
Epistaxis	18	90
Mouth breathing	13	65
Snoring	11	55
Nasal discharge	11	55
Change in voice	10	50
Anosmia	8	40
Headache	7	35
Epiphora	5	25
Dysphagia	2	10
Ear discharge	1	5
Ocular mass	0	0
Skin nodule	0	0

Table 4: The incidence of complaints in the study group (n=20)

Epistaxis	Number of cases	%
Anterior nasal bleeding	12	60
Post-nasal bleeding	2	10
Both anterior and postnasal	4	20
Unilateral	15	75
Bilateral	3	15

reported to have recurrences. They had undergone surgical procedures in the past, the number of times varying from 1 to 6. 5 out of these all were treated with dapsone but only three patients took dapsone regularly. One (05%) patient gave a history of treatment for pulmonary tuberculosis. There was no significant illness in the remaining patients. Nine (45%) patients were smokers and three patients (15%) consumed alcohol regularly. One patient (05%) was addicted to pan chewing.

Epidemiological Data

All patients gave a history of daily bathing. Nineteen patients (95%) gave a history of dip bath in ponds. The duration of exposure varied from a few weeks to regular bathing for 26 years. In the case of 8 patients (40%), animals were bathed in the ponds in which they took bath. Three patients (15%) gave a history of similar illness in their family, six patients (30%) also gave a history of similar illness in their family, and nine patients (45%) also gave a history of similar illness in the neighborhood. All these people were sharing the same pond as that used by the patients. History of contact with domestic animals was stained only in three patients (15%).

Clinical Examination Findings

The external appearance of the nose was normal in all patients. The cold spatula test showed partial obstruction in 13 cases (65%) left six, right five, and bilateral two cases. The total obstruction was seen in five cases (25%) – left two, right two, and bilateral one. Both nasal cavities were patent in only two cases. The vestibule showed the presence of mass in 4 cases (20%) [Figure 1a-c] and was normal in the remaining cases. The nasal septum was central in 11 (55%) cases. It was deviated to the right in seven cases (35%) and to the left in two cases (10%).

Nasal Mass

The details of nasal rhinosporidial mass are given in Table 5. Out of the above masses, the sessile ones and those having multiple attachments were seen in recurrent cases.

Nasal Discharge

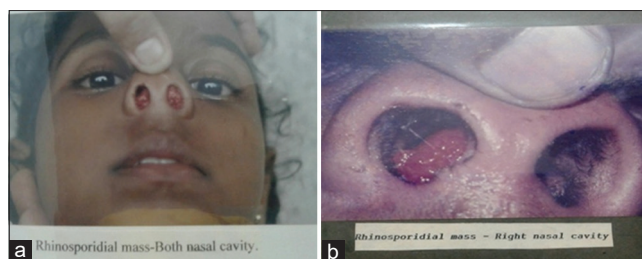
The nasal discharge was present in 11 patients (55%). Nasopharyngeal and Oropharyngeal masses: Nasopharyngeal masses were seen in 9 cases (45%). They can be divided into three types: (1) Extending from the nasal cavity without attachment to nasopharynx 5 cases (25%), (2) attached to nasopharynx three cases (15%), and (3) attached both to nose and nasopharynx one case (5%).

Oropharyngeal Masses

Oropharyngeal masses were seen in three cases (15%). They were of two types: (1) Extending from nasal cavity vianasopharynx 2 cases (10%) and (2) attached to oropharynx tonsillar pillars one case (5%). Paranasal sinus tenderness is seen in two cases (16%). Two patients had cervical node enlargement 10%; others did not show any lymph node involvement.

Blood Group

The majority of patients belonged to O group eight (40%); four belonged to A+ (20%), three belonged to B+ (15%), two belonged to AB+ (10%), three belonged to A-ve (15%). Thirteen patients (65%) were operated under general anesthesia (65%) and seven under local anesthesia (35%).



Figures 1: (a and b) The rhinosporidiosis mass lesion seen through the nose

Table 5: The incidence of different signs in the study group (n=20)

Nasal mass	n (19)	%
Side		
Unilateral	14	70
Left	8	40
Right	6	30
Bilateral	4	20
Site of attachment		
Inferior meatus	9	45
Septum	7	35
Inferior turbinate	1	5
Multiple sites	2	10
Mass		
Single	14	70
Multiple	5	25
Type of attachment		
Pedunculated	16	80
Sessile	3	15

There were no significant post-operative complications. All patients were given dapsone 100 mg daily, 6 days a week for 6 months postoperatively; in children 50 mg daily.

Follow-up

Three patients were lost from follow-up. The rest of the patients attended the outpatient department regularly for follow-up. They were taking dapsone regularly for 6 months until this paper was reported. Two (10%) patients showed residual lesions from 1st month onward. Three patients (15%) developed recurrence, of which two (10%) were detected after 6 months and at the end of 9 months. All the patients who were found to have residual masses were recurrence cases having masses with multiple attachments. Four patients (20%) developed synechia formation in the nasal cavity postoperatively.

DISCUSSION

Rhinosporidiosis is one of the common otolaryngological diseases in this part of the world. Although the disease is thought to be waterborne, nobody has succeeded in isolating the causative organism or any intermediate host from water. Moreover, no definite associated factors

have been identified. Attempts at culture studies and animal inoculation have not met with success. Only when the causative organism is isolated from water and its mode of transmission proved, we can hope to control rhinosporidiosis. Incidence of rhinosporidiosis in relation to age, sex, occupation, and locality was analyzed and tabulated. The comparison of age and sex incidence of rhinosporidiosis in various studies is as follows [Table 6].

The male predominance as seen in other series observed in this study also. Like most other studies, the most common age group affected was 20–30 years. Rajam *et al.*^[11] were of the opinion that rhinosporidiosis was common in agricultural workers. Satyanarayana^[14] also had a similar opinion. Jain and Sahai (1967)^[15] studied 26 patients and they varied in occupation from agricultural laborer to gold smith and shopkeeper. In the series of Das^[16] farmers were in the majority followed by students and housewives. David^[10] reported that the highest incidence was in agricultural laborers followed by unemployed people and others. In this study, most of the patients were manual laborers – seven patients (35%) and out of these two (10%) were agricultural by workers. The other major group was constituted of students – five cases (25%). Five cases (25%) were also found to occur in others such as fisherman, cooks, and drivers. The predominance of the disease in agricultural workers as mentioned in the above studies was not seen in this study. Kameswaran^[17] has also opined

that rhinosporidiosis has not significant relationship with agricultural work. Rajam *et al.*^[11] were of the opinion that rhinosporidiosis was predominantly a disease of persons living in rural areas. Jain and Sahai (1967),^[15] David,^[10] Das (1967),^[16] and Iqbal and Dani^[12] were also having similar opinion. In this study, 14 cases (70%) were from rural areas and six (30%) from urban areas. This higher incidence may be due to easy accessibility to ponds in rural areas. Kurup (1931)^[18] suggested that Muslims are more prone to the disease. Das^[16] has reported 31 cases and all of them were Hindus. In this study, 11 cases (55%) were Muslims and the remaining nine (45%) were Hindus. A comparison was made in regard with the symptomatology of rhinosporidiosis of this study with other studies. The comparison of symptoms in various studies is given in Table 7. In this study, nasal obstruction, nasal masses, and epistaxis were found to be the most common symptoms as seen in other studies also. Satyanarayana^[14] has opined that the rhinosporidial masses bleed profusely. Das^[16] has noted that 6.5% of his cases presented with epistaxis and were admitted as urgent cases. In all patients, in this study who complained of epistaxis, its severity was mild to moderate. The duration of symptoms is indefinite, varying from 4 weeks to 30 years. In the series of Satyanarayana^[14] and David^[10] observed that the duration of disease ranged from 1 month to 6 years. According to the study of Das^[16] duration varied from 15 days to 2 years, the average being from 3 to 5 months. In this study, the duration of symptoms varied from 1 month to 11 years

Table 6: The comparative study of age and sex incidence of rhinosporidiosis

Author	Youngest patient's age (years)	Oldest patient's age	Most common age group (years)	Male: female ratio
Satyanarayana (255 cases) ^[14]	4	61	21–30	4:1
Jain and Sahai (1967) (26 cases) ^[15]	24	45	31–40	All males
Das (31 cases) ^[16]	5	75	11–20	6.75:1
David (100 cases) ^[10]	6	61	11–20	3:1
Iqbal and Dani (110 cases) ^[12]	3	60	11–20	5.8:1
Present study (20 cases)	8	52	20–30	5.7:1

Table 7: The symptomatology in the case study (n= 20)

Jain and Sahai (1967) (26 cases) ^[15]	Das (31 cases) ^[16]	David (100 cases) ^[10]	Iqbal and Dani (110 cases) ^[12]	Present study (20 cases)
Nasal discharge (Blood stained) (100%)	Nasal obstruction (74%)	Epistaxis	Nasal obstruction (48%)	Nasal obstruction (100%)
Nasal obstruction (4%)	Epistaxis (58%) Nasal discharge (32%)	Nasal obstruction Dysphagia (If growth in oropharynx)	Nasal mass (32%) Mass in oral cavity (5.5%)	Nasal mass (95%) Epistaxis (90%)
	Headache (9.6%)		Swelling naso-optic sulcus (3.6%) Dysphagia (3.6%) Epistaxis (2.7%)	Mouth breathing (65%) Snoring (65%) Nasal discharge (55%) Change in voice (50%) Anosmia (40%) Headache (35%) Epiphora (20%)

Table 8: The comparison of sites of attachment of nasal masses in different studies (n=20)

Jain and Sahai (1967) (26 cases) ^[15]	Das (31 cases) ^[16]	David (100 cases) ^[10]	Iqbal and Dani (110 cases) ^[12]	Present study (20 cases)
Middle turbinate (92%)	Floor of lateral wall (41.9%)	Septum (31.8%)	Septum (52.8%)	Inferior meatus (45%)
Floor (4%)	Septum (29%)	Inferior turbinate (27.5%)	Floor	Septum (35%)
Inferior turbinate (4%)	Middle turbinate and meatus (12%)	Nasal floor (23.28%)	Inferior turbinate	Inferior turbinate (5%)
	Inferior turbinate (9%)	Inferior meatus (6.8%)	Multiple attachment (9.6%)	Multiple attachment (15%)

with an arithmetic mean of 2.5 ± 1.45 years. Thus, we may infer that duration of the disease varies greatly from patient to patient. Trauma to the nose as a predisposing factor for infection by *Rhinosporidium Seeberti* was suggested by Satyanarayana^[14] and David.^[10] However, Kameswaran^[17] was of the opinion that trauma as necessary prerequisite cannot be established beyond doubt. In this study, only one patient gave a history of major accidental trauma to the nose. This shows that trauma as predisposing factor for the development of rhinosporidiosis does not have much significance. According to David,^[10] 15% of cases were recurrent. One of his patients complained that they underwent operation 7 times previously for the removal of his nasal growth and another mentioned that his nasal disease recurred after a symptom free period of 9 years. In this study, ten patients (50%) gave a history of operation for rhinosporidiosis. The high rate of recurrence cases in this study may be due to the resumption of bathing in ponds following completion of treatment [Table 7].

Satyanarayana^[14] reported that 92% of his patients had nasal mass. Karunaratne (1964)^[6] stated that 70% of his cases exhibited nasal rhinosporidiosis. Jain and Sahai (1967)^[15] noted that in all of his cases, the nose was affected. Kameswaran^[17] was of the opinion that nasal lesions account for 78% of the cases of rhinosporidiosis. Iqbal and Dani^[12] found that 85% of the cases had nasal involvement. The sites of attachment of nasal masses of rhinosporidiosis in various studies are compared in Table 8. Contrary to the findings obtained by other studies, this study shows that the most common site of attachment of nasal mass is the inferior meatus. The reason for this may be the fact that the inferior meatus most frequently comes into contact with pond water during dip baths. Another possibility is the organism first entering the eyes and then reaching the inferior meatus through a patent nasolacrimal duct. The type of attachment of masses from David's^[10] study shows that it was pedunculated in 87% (101/116) and sessile in 13% cases (15/116). Das^[16] found that the lesions appeared polypoidal or pedunculated in 18 cases out of 31 (58%) and sessile in 13 cases (42%). The findings in this study also agree with the above finding in that pedunculated lesions are much more common as compared to sessile lesions [Table 8].

Satyanarayana^[14] found that after the nose, nasopharynx was the most common site of involvement (12%).

Out of these, 6% were associated with nasal rhinosporidiosis and the remaining 6% were nasopharyngeal lesions alone. Karunaratne (1964)^[6] was of the opinion that eye came second to nose in the frequency of involvement. Kameswaran^[17] found out nasopharyngeal involvement in 16% cases. In the study, Das^[16] lesions were seen in the nasopharynx only in two cases (6%). Mohammed Iqbal et al. (1993),^[12] in his series, found that nasopharyngeal mass occurred in 6/110 cases (5.4%). In this study, the nasopharyngeal mass was present in nine patients 45% and out of these, the mass was extending from nasal cavity to nasopharynx in 5 (25%), [Figure 1a and b], three patients (15%) had masses attached to the nasopharyngeal wall. Three patients had only nasopharyngeal masses. In the series reported by Satyanarayana, oropharyngeal involvement was noted in 2.4% of cases. Similarly, Kameswaran (1974)^[17] also noted a 3% incidence of oropharyngeal rhinosporidiosis. Iqbal and Dani^[12] found that oropharynx was involved in 4.5% cases. In this study, three patients (15%) showed masses in the oropharynx out of which two (10%) were extending from the nasal cavity through nasopharynx. Only one patient had an oropharyngeal mass attached to the tonsillar pillar. Kameswaran (1974)^[17] noted that the highest incidence of rhinosporidiosis was seen in individuals belonging to the O+ve blood group. He also found that the next highest incidence is seen in the blood Group AB+. David^[10] noted a predominance of B group (46%) and O group (33%). Blood Groups A and AB groups accounted for 10% of patients each. As observed by Kameswaran,^[17] the most common blood group of patients in this study also is O+ (40%), followed by A+ve (20%). Satyanarayana^[14] found that 10.5% of cases developed recurrence of infection after surgical removal. Of these, 6.2% were single recurrences and 4.3% were multiple recurrences. Das^[16] found that recurrence of growth after excision occurred in 9.6% cases. In this study, three patients developed recurrence after surgical excision of mass and administration of dapsone postoperatively. Two patients (10%) showed residual lesions. They were all old rhinosporidiosis patients with masses having multiple attachments. The cause for the incomplete removal could be the multiplicity of attachments and the poor

visualization due to hemorrhage during surgery. Out of the patients who developed recurrence, 77% were those who had been operated in the past and had masses with multiple attachments. This may indicate that prognosis is poor following surgery on such patients as compared to those who have a mass with a single pedunculated attachment. This may be because, in such cases, the pedicle can be visualized, the mass removed in entirety and then the pedicle cauterized. Nair^[9] reported the results of dapsone therapy on operated cases of rhinosporidiosis. He found out that the recurrence rate in these cases was 29.6%, of which 10.7% developed recurrence in 6 months and the rest at the end of 1 year. In those patients who underwent surgery but were not treated with Dapsone, the recurrence rate was 65.5% at the end of the year. Out of these 35.5% developed recurrence in the first 6 months. None of the patients on dapsone needed operation later. In this series, three patients (15%) developed recurrence. In two patients, (10%) it was detected in 6 months and in one after 9 months, even though they are taking dapsone. Considering these factors, it may be fair to assume that dapsone is not fully effective in checking the recurrences of rhinosporidiosis. Iqbal and Dani (1933) have expressed a similar opinion regarding the inefficacy of dapsone.

CONCLUSION

Rhinosporidiosis is not an uncommon disease encountered in day-to-day ENT practice. The occurrence of the disease does not bear any relation to the occupation of the patient. The maximum incidence of rhinosporidiosis is seen in the age group of 21–30 years and males predominate. Rhinosporidiosis is more common in the rural population. There is a significant association between dip baths in ponds and the occurrence of disease. The major symptoms are nasal obstruction, nasal mass, and epistaxis and the duration of symptoms varies widely. The most common

site of attachment of nasal mass in rhinosporidiosis is the inferior meatus. Surgical management carries a good prognosis in pedunculated masses which can be removed with the pedicle. Prognosis is poor in masses with multiple attachments. Dapsone chemotherapy is not fully effective in preventing recurrences.

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