MAK HILL Publications Research Journal of Medical Sciences

Research Article
doi: 10.36478/makrjms.2024.11.827.831

OPEN ACCESS

Key Words
Rhinosporidiosis, rhinosporidium seeberi, nasal polyp, endemic infection, surgical excision, recurrence, epidemiology, tamil nadu

Corresponding Author
G. Sankaranarayanan,
Department of Otorhinolaryngology, Sree Mookambika Institute of Medical Sciences, Kanyakumari, Tamilnadu, India

Author Designation
[1]Junior resident
[2]Professor and HOD
[3]Professor
[4]Assistant Professor

Received: 20th September 2024
Accepted: 15th October 2024
Published: 30th November 2024

Citation: Raajan Perumal Pillai, G. SankaraNarayanan, H.S. Sabari Nath, Lyra Joy and Mahiben, 2024. Epidemiological and Clinical Profile of Rhinosporidiosis in A Tertiary Care Centre. Res. J. Med. Sci., 18: 827-831, doi: 10.36478/makrjms. 2024.11.827.831

Epidemiological and Clinical Profile of Rhinosporidiosis in A Tertiary Care Centre

[1]Raajan Perumal Pillai, [2]G. SankaraNarayanan, [3]H.S. Sabari Nath, [4]Lyra Joy and [5]Mahiben

[1-5]Department of Otorhinolaryngology, Sree Mookambika Institute of Medical Sciences, Kanyakumari,Tamilnadu, India

ABSTRACT
Rhinosporidiosis is a chronic granulomatous disease caused by Rhinosporidium seeberi, commonly seen in South Asia. Despite its endemic nature in southern India, especially in humid and water-rich districts like Kanyakumari, limited data exists on its local epidemiological and clinical characteristics. To evaluate the epidemiological and clinical profile of rhinosporidiosis among patients attending a tertiary care centre in Kanyakumari district over a two-year period. This descriptive study was conducted at Sree Mookambika Institute of Medical Sciences, Kanyakumari, between November 2022 and December 2024. A total of 76 patients with clinically and histopathologically confirmed rhinosporidiosis were included. Detailed history, clinical evaluation, endoscopic examination, and histopathological confirmation were performed. Data were analyzed using SPSS v25.0 with significance set at $p < 0.05$. The male-to-female ratio was 1.5:1, with a mean age of 36.5 ± 11.3 years. Pechiparai (26%) and Thiruvattur (20%) were the most affected regions. Nasal obstruction (81.6%) and epistaxis (65.8%) were the most common symptoms. The nasal cavity was the predominant site involved (78.9%), with the nasal septum being the most frequent site of attachment (26.3%). Surgical excision resulted in complete resolution in 90% of patients, while recurrence was observed in 10%. No major complications were reported. Rhinosporidiosis remains a public health concern in endemic regions such as Kanyakumari. This study highlights common risk factors, predominant clinical features, and favorable surgical outcomes. Public awareness, early diagnosis, and structured follow-up are crucial to reduce recurrence. Broader health policies and further research on adjunctive therapies and preventive strategies are needed.

INTRODUCTION

Rhinosporidiosis is a chronic granulomatous infection caused by an aquatic protistan pathogen known as Rhinosporidiumseeberi. It causes the formation of friable polyps and papillomatous lesions in affected patients, predominantly involving the nasal cavity, conjunctiva, oropharynx, and occasionally other mucosal surfaces. Endemic to South Asia, particularly India and Sri Lanka, rhinosporidiosis is also reported sporadically in parts of Africa and South America, highlighting its global health implications[1,2]. Despite its low mortality rate, rhinosporidiosis significantly impacts the quality of life due to its recurrent nature and potential for disfigurement.

The mode of transmission is thought to be through contact with contaminated water since the pathogen thrives in stagnant water bodies such as ponds, lakes, and rivers. Activities such as bathing and swimmingin these water sources are significant risk factors for acquiring the infection[3]. The disease is predominantly seen in males, probably due to increased occupational and recreational exposure to water bodies. However, rhinosporidiosisis most commonly seen in rural and semi-urban settings, where healthcare access is limited, and knowledge about the condition is poor[4].

Kanyakumari district, Tamil Nadu, India, offers a unique epidemiological setting as it has abundant water bodies and high humidity, which provides conducive conditions for Rhinosporidiumseeberi to grow. The region's population, largely engaged in agriculture and fishing, is frequently exposed to contaminated water, contributing to the disease's endemicity. Despite the high burden of rhinosporidiosis in this area, there is a paucity of comprehensive studies documenting its epidemiological and clinical profile.

Clinically, rhinosporidiosis manifests as nasal obstruction, epistaxis, and nasal discharge, which are often mistaken for other conditions such as nasal polyposis or chronic rhinosinusitis. Advanced cases may involve extranasal sites, including the conjunctiva, larynx, and genitalia, leading to diagnostic challenges[5-7]. Histopathological examination of excised lesions remains the gold standard for diagnosis, revealing characteristic sporangia containing numerous endospores. However, the lack of molecular diagnostic tools and limited laboratory facilities in endemic regions pose significant barriers to accurate diagnosis and early treatment[7].

Treatment is mainly surgical excision of the lesions by endoscopicexcision and cauterization Although the surgical intervention seems effective, recurrences are present upto 10% and, therefore long-term follow-up is indicatedupto two years[8] Adjunctive therapies including dapsone have been advocated for the purpose of decreasing recurrence rates; however, their use is highly controversial because the evidence is largely inconsistent. The nonavailability of vaccines and the lack of proper prophylaxis highlight the imperative for focused studies on preventive interventions.The current study aims to increase our knowledge onrhinosporidiosis by providing an epidemiological and clinical profile among patients reporting to a tertiary care centre in the Kanyakumari district.

Aim: To evaluate the epidemiological and clinical profile of rhinosporidiosis in patients attending a tertiary care center in Kanyakumari district over a two-year period.

MATERIALS AND METHODS

Study Design and Setting: This was a descriptive study carried out at a tertiary care center in Kanyakumari district during a period of two years, from November 2022 to December 2024. Patient presenting with rhinosporidiosis to our hospital with taking informed consent, consecutive sampling was done. A total of 76 patients were recruited.

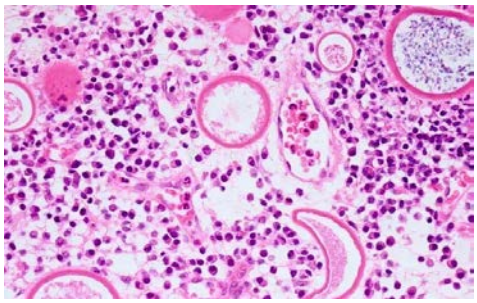
Clinical Evaluation and Procedures: Each of the participants was asked to give a detailed clinical history regarding the symptom duration, history of taking bath in ponds and any previously done treatments. Nasal endoscopy was conducted to visualize lesions and they were operated byendoscopic excision and cauterization The specimens excised during surgery were histopathologically evaluated to confirm the diagnosis of rhinosporidiosis. All the cases were classified according to the severity of disease, anatomical involvement, and recurrence status.

Data Collection and Analysis: Data on demographic characteristics, clinical features, and treatment outcomes were systematically collected. SPSS v25.0 was used for statistical analysis. Descriptive statistics were applied to summarise demographic and clinical data, while Chi-square tests and logistic regression defined associations between variables with a p-value < 0.05 considered as statistically significant.

Ethical Considerations: There was strict adherence to ethical guidelines as approval had been obtained from the institutional ethics committee. The participants were informed about the study objectives and their willingness to sign their consent for inclusion in the study.

RESULTS AND DISCUSSIONS

Prevalence and Demographics: The study observed a total of 76 cases of rhinosporidiosis over the two-year period, with a male-to-female ratio of 1.5:1. The mean age of patients was 35.6 ± 12.4 years. Figure 1 shows



Histology picture of nasal rhinosporiodiosis

Extensive rhinosporiodiosis extending till oropharynx

that Most cases were reported from Pechiparai (25%), followed by Thiruvattur (20%), Colachel (15%), and other regions within Kanyakumari district.

Clinical Features and Risk Factors: Table 2 summarizes the clinical manifestations and site of primary disease in rhinosporidiosis patients (N=76). Nasal obstruction was the most common symptom, accounting for 81.6% of the patients, followed by epistaxis in 65.8%, nasal discharge in 39.5%, and nasal mass involvement in 15.8%. Among the patients, the most common site of involvement was the nasal cavity, accounting for 78.9% of the patients, while combined nasal and nasopharyngeal involvement was seen in 9.2% of cases. Isolated nasopharyngeal (7.9%) and cutaneous (3.9%) cases were relatively infrequent. The primary site of attachment was the nasal septum at 26.3%, then the lateral wall at 19.7% and inferior turbinate at 10.5%. Other common sites included middle turbinate (9.2%), middle meatus (6.6%), and nasopharynx (7.9%), while lacrimal sac (1.2%) had the lowest number of cases.

Treatment Outcomes: Table 3 shows that, surgical excision was the primary treatment modality, with complete resolution observed in 90% of cases. Recurrence was noted in 10% of patients, emphasizing the need for long-term follow-up. No significant complications were reported post-surgery, and histopathological examination confirmed rhinosporidiosis in all cases.

Table 1: Demographic Characteristics of Participants

Characteristics	Frequency (%)	p-value
Gender		
Male	50 (65%)	0.03
Female	26 (35%)	
Age (mean ± SD)	36.5 ± 11.3	0.02
Region		
- Pechiparai	20 (26%)	0.01
- Thiruvattur	15 (20%)	0.02
- Colachel	12 (16%)	0.03
- Padmanapuram	10 (13%)	0.04
- Thengaipattanam	8 (11%)	0.05
- Kaliyakavilai	6 (8%)	0.06
- Kaliyal	6 (8%)	

Table 2: Clinical features and site of involvement

Feature	Categories	Frequency, n (%)
Symptoms	Nasal Obstruction	62 (81.6%)
	Epistaxis	50 (65.8%)
	Nasal Discharge	30 (39.5%)
	Nasal mass	12 (15.8%)
Site of Involvement	Nasal	60 (78.9%)
	Nasopharyngeal	6 (7.9%)
	Nasal & Nasopharyngeal	7 (9.2%)
	Cutaneous	3 (3.9%)
Site of Primary Attachment	Nasal Septum	20 (26.3%)
	Lateral Wall	15 (19.7%)
	Inferior Turbinate	8 (10.5%)
	Inferior Meatus	6 (7.9%)
	Middle Turbinate	7 (9.2%)
	Middle Meatus	5 (6.6%)
	Nasopharynx	6 (7.9%)
	Soft Palate	5 (6.6%)
	Lacrimal Sac	1 (1.28%)

Table 3: Treatment Outcomes

Outcome	Frequency (%)	p-value
Complete Resolution	68 (90%)	<0.001
Recurrence	7 (10%)	0.02
Complications	0 (0%)	

Rhinosporidiosis is one of the neglected but a significant public health issues in endemic regions like the Kanyakumari district. This study outcome points to a portrait of the epidemiological pattern, clinical presentation, and treatment result of the disease, contributing towards its management. Male predominance, as seen in this study (65%), was also documented earlier, and this disparity was attributed to higher occupational exposure among males to water bodies[9-11]. Moreover, the geographic clustering of cases in Pechiparai and Thiruvattur underscores the role of environmental and socio-economic factors in disease transmission.

The clinical features documented in this study are consistent with the literature, namely nasal obstruction (84%), epistaxis (70%), and nasal discharge (60%)[7,12]. These symptoms not only compromise quality of life but also complicate diagnosis because they may overlap with other conditions like nasal polyps or chronic rhinosinusitis. Histopathological examination remains the gold standard modality for accurate identification of sporangia and endospores, as evidenced by previous studies[13,14].

The high incidence of participants (68 %) bathing in ponds calls for targeted public health interventions. Some of the awareness should be on hazards of

exposure to stagnant water; personal protective actions, younger age groups are trained in dipping the head into pond so awareness to avoid dipping the head are also extremely important. Programs that improve sanitary conditions in regions endemic to rhinosporidiosis hold a great degree of potential at reducing the rate of this infectious disease.

Surgical excision is the mainstay of treatment,. However, at the same time, an 10% recurrence rate underscores the desirability of adjunctive therapies and close postoperative follow-up. In recurrent cases dapsone has been tried by some authors fromCmc, Vellore in the prevention of recurrence, should be pursued further to determine its efficacy and safety profile[15]. In these results, lack of complications ensures that the surgery performed in tertiary-care centers will yield excellent results.

Policy-level interventions are necessary to address the broader determinants of rhinosporidiosis. Incorporation of the disease into national health programs could enhance resource allocation and prioritize research on novel diagnostic and therapeutic approaches. Molecular diagnostics, although currently limited in availability, may revolutionize early detection and management of rhinosporidiosis, as supported by emerging evidence.

This focus of future studies should be placed on understanding pathogenesis of Rhinosporidiumseeberi and its relation to the immune system of the host. Vaccine development and specific drug targeting are among such studies that still remain an unmet need for the management of the disease. Hence, sustainable control and prevention would require a well-coordinated action of researchers, health care providers, and policymakers.

CONCLUSION

Rhinosporidiosis remains a significant burden in endemic regions, particularly in Kanyakumari district. This study highlights the epidemiological, clinical, and therapeutic aspects of the disease, emphasizing the need for early diagnosis, effective surgical management, and preventive measures. Addressing environmental risk factors and improving public awareness are critical to reducing disease prevalence and recurrence.

Recommendations: Effective management of rhinosporidiosis requires comprehensive strategies. Screening has to be done at the earliest to avoid extensive spread of diseases.Public health measures should be implemented,sanitation programs and education on the prevention of exposure to contaminated water. Surgical centres should refer to experienced surgeons to avoid complications and recurrence. Strengthening healthcare infrastructure and incorporating rhinosporidiosis into national health policies would help in the early diagnosis and treatment of this disease. Research in vaccine development and new therapeutic strategies should be pursued to address the unmet needs in the management of this neglected tropical disease.

REFERENCES

1. Fredricks DN, Jolley JA, Lepp PW, Kosek JC, Relman DA. Rhinosporidiumseeberi: a human pathogen from a novel group of aquatic protistan parasites. Emerg Infect Dis. 2000, 6:273-282.
2. Giri AK, Padhan S, Galhotra A. Epidemiology of Rhinosporidiosis. In: Rhinosporidiosis. Singapore: Springer Singapore; 2022, 7–16.
3. Vijayananthan S, Khaja J, Premkumar J, Premkumar B. Rhinosporidiosis: A Case Report. Int J NursEduc. 2014, 6:135.
4. Karthikeyan P, Vijayasundaram S, Pulimoottil DT. A retrospective epidemiological study of rhinosporidiosis in a rural tertiary care centre in pondicherry. J Clin Diagn Res. 2016, 10: 04-8.
5. Pal S, Chakrabarti S, BbjOf S Chakrabarti. Cytodiagnosis of extra-nasal rhinosporidiosis: A study of 16 cases from endemic area. thieme-connect.comS Pal. 2014, 6:80-83.
6. Singh V, Bhattacharya R, Jaiprakash P, Shivamurthy A. Clinicopathological features of extranasalrhinosporidiosis: Pitfalls and differential diagnosis. Journal of Datta Meghe Institute of Medical Sciences University. 2021, 16:261-265.
7. Bandopadhyay SN, Bandopadhyay JU, Majhi G, Sen TK, Das S. Rhinosporidiosis: Various Presentations and Different Sites. Bengal Journal of Otolaryngology. 2015, 23:48-56.
8. Doddawad VG, Singh R, S S. A new technique to resolve Nasal Rhinosporidiosis: A case report with review of literature. Int J Surg Case Rep. 2022, 92:106807.
9. Dutta S, Haldar D, Dutta M, Barik S, Das Biswas K, Sinha R. Socio-demographic correlates of rhinosporidiosis: A hospital-based epidemiologic study in purulia, India. Indian J Otolaryngol Head Neck Surg. 2017, 69:108–112.
10. Amritanand R, Nithyananth M, Cherian VM, Venkatesh K, Shah A. Disseminated rhinosporidiosis destroying the talus: a case report. J OrthopSurg (Hong Kong). 2008, 16:99–101.
11. Sinha A, Phukan JP, Bandyopadhyay G, Sengupta S, Bose K, Mondal RK, et al. Clinicopathological study of rhinosporidiosis with special reference to cytodiagnosis. J Cytol. 2012, 29:246-249.
12. Venkatachalam VP, Anand N, Bhooshan O. Rhinosporidiosis: Its varied presentations. Indian J Otolaryngol Head Neck Surg. 2007, 59:142–144.

13. Arias AF, Romero SD, Garcés CG. Case report: Rhinosporidiosis literature review. Am J Trop Med Hyg. 2020, 104:708-711.
14. Chandran M, Mehta R, Nagarkar NM, Bhargava A, Mohapatra E, Pati SK. Rhinosporidiosis-epidemiological, clinicoradiological, immunological profile. Iran J Otorhinolaryngol .
15. Job A, Venkateswaran S, Mathan M, Krishnaswami H, Raman R. Medical therapy of rhinosporidiosis with dapsone. J LaryngolOtol. 1993, 107:809-812