Original Research Article

# Nasal Rhinosporidiosis - An epidemiological case study in tertiary care centre

R Uma

Senior Assistant Professor, Department of Pathology, Government Thiruvarur Medical College, Thiruvarur,Tamilnadu, INDIA.
**Email:** umamdpath@gmail.com

**Abstract**

Rhinosporidiosis is a chronic granulomatous inflammation caused by Rhinosporidium seeberi which is endemic in India but also reported in other parts of the world. A study was done at Department of Pathology, Government Thiruvarur Medical College, Thiruvarur district from Jan 2018 to Dec 2018. The case study included 65 cases of nasal mass. of these 65 cases, 25 cases were reported as rhinosporidiosis by HandE stained section. Special stains like GMS and PAS were done.

**Key Word:** Rhinosporidiosis, nasal mass, special stain, Thiruvarur district.

**Address for Correspondence:**
Dr. R Uma, Senior Assistant Professor, Department of Pathology, Government Thiruvarur Medical College, Thiruvarur, Tamil Nadu, INDIA.
**Email:** umamdpath@gmail.com
Received Date: 19/01/2019 Revised Date: 02/03/2019 Accepted Date: 26/04/2019
DOI: https://doi.org/10.26611/203031

Access this article online

Quick Response Code:

Website: www.medpulse.in

Accessed Date: 28 April 2019

## INTRODUCTION

Rhinosporidiosis is a chronic granulomatous inflammation commonly affecting the mucous membrane of nose, nasopharynx and eye[1] .other rare sites include lips, palate, uvula, conjunctiva, skin, larynx, trachea, penis, vagina and bone[2].The causative organism is Rhinosporidium seeberi, first described in 1900 by Guillermo seeberi[3].Majority of cases are reported in India and srilanka[4].Mode of spread is from dust and stagnant water sources like wells, ponds and tanks in endemic areas1.Most cases presented as nasal obstruction and epistaxis due to the friable polypoid mass in the nasal cavity[5].In our country certain parts like Thanjavur, Madurai, Kanyakumari of Tamil nadu, Allepey, Kottayam, Trivandrum districts of kerala are endemic to rhinosporidiosis. Here we are presenting the incidence of rhinosporidiosis in Thiruvarur district.

## MATERIALS AND METHODS

A retrspective study was done for one year from Jan 2018 to Dec 2018 in the Department of Pathology, Government Thiruvarur Medical College, Thiruvarur district. The biopsy samples were received from the department of surgery and ENT of the Government thiruvarur medical college. A histopathological study of 65 cases with nasal masses were done. of these 65 cases,25 cases were diagnosed as rhinosporidiosis. The cases were diagnosed on HandE stained section. special stains like GMS and PAS were also done. Relevant clinical details and laboratory investigations were collected from the hospitals.

## RESULTS

During the one year of study, rhinosporidiosis accounted for 38.5 % of all nasal masses in our institution. All cases were confirmed histopathologically. Patients presented with symptoms of nasal obstruction. Age of the patients included in this study ranged from 4yrs to 60yrs. The disease presented commonly in 2nd decade 32% followed by 1st and 3rd decade with 16% each. There were 14 males 56% and 11 females 44% with M:F ratio of 1.3:1 having male preponderance.

How to cite this article: R Uma. Nasal Rhinosporidiosis - An epidemiological case study in tertiary care centre. *International Journal of Recent Trends in Science and Technology*. February to April 2019; 30(3): 05-08. http://www.statperson.com

**Table 1:** nasal masses

| S No | Nasal masses | No of cases | Percentage |
|---|---|---|---|
| 1. | Allergic nasal polyp | 28 | 43.08% |
| 2. | Rhinosporidiosis | 25 | 38.5% |
| 3. | Aspergillus infection | 2 | 3.08% |
| 4. | Mucor | 1 | 1.53% |
| 5. | Lobular capillary hemangioma | 1 | 1.53% |
| 6. | Rhinoscleroma | 4 | 6.155 |
| 7. | Hemangiopericytoma | 1 | 1.53% |
| 8. | Inverted papilloma | 2 | 3.08% |
| 9. | Squamous cell carcinoma | 1 | 1.53% |

**Table 2: Sex Distribution**

| Male | female |
|---|---|
| 14 [56%] | 11[44%] |

**Table 3: Agewise distribution in decades**

| Decades | No of cases | Percentage |
|---|---|---|
| 1ST | 4 | 16% |
| 2ND | 8 | 32% |
| 3RD | 4 | 16% |
| 4TH | 3 | 12% |
| 5TH | 3 | 12% |
| 6TH | 3 | 12% |

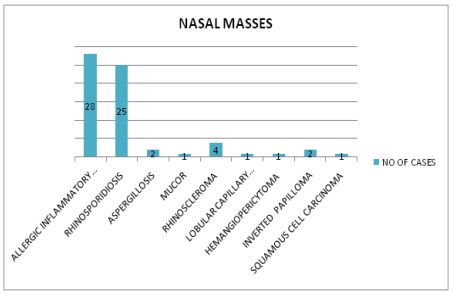


**Figure 1:** Nasal masses

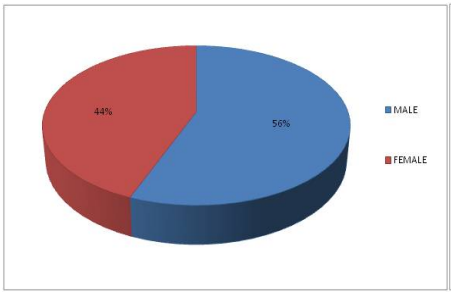


**Figure 2:** Sex Distribution

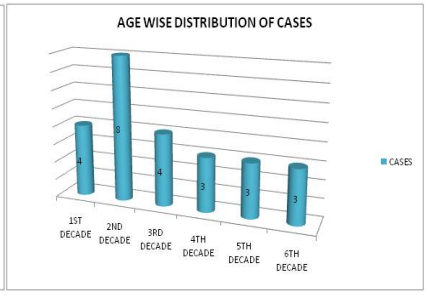


**Figure 3:** Age Wise Distribution of Cases

**TABLE 4[12]**

| Continent | Cases |
|---|---|
| Africa | 12 |
| America | 50 |
| Europe | 3 |
| Asia | 377 |
| India | 233 |
| Total | 422 |

**Table 5:** [13,14,15,16,17,1]

| Author | Total cases | Duration of study in years |
|---|---|---|
| Kutty *et al*(Kozhikode)(1963) | 52 | 10 |
| David SS(Tirunelveli)(1969) | 100 | 2 |
| Dube and Veliath(Mangalore)(1964) | 27 | 7 |
| Das *et al*(West bengal)(1964) | 57 | 12 |
| Makannavar *et al*(Karnataka)(1998) | 34 | 11.5 |
| Ahmed *et al* (Malappuram)(2012) | 54 | 3.5 |
| Our study (Thiruvarur )(2016) | 25 | 1 |

**Table 6:** Age wise distribution of cases

| Authors | (0 -10) yrs | (11 -20) yrs | (21 -30) yrs | (31-50) yrs | Above 50 yrs | total |
|---|---|---|---|---|---|---|
| Ahmed *et al* | - | 12 | 24 | 14 | 4 | 54 |
| Ranjan kumar guru *et al* | 10 | 81 | 91 | 53 | 7 | 242 |
| Our study | 4 | 8 | 4 | 6 | 3 | 25 |

**Table 7:**

| Authors | Male | female | Total |
|---|---|---|---|
| Ranjan kumar guru *et al* | 168 | 74 | 242 |
| Ahmed *et al* | 39 | 15 | 54 |
| Our study | 14 | 11 | 25 |

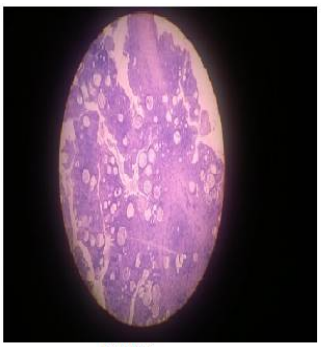
Figure 4

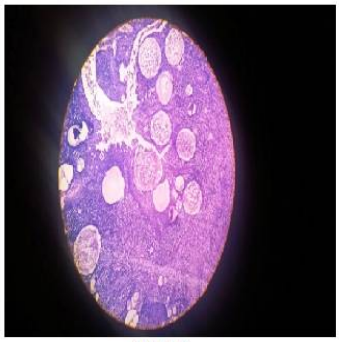
Figure 5

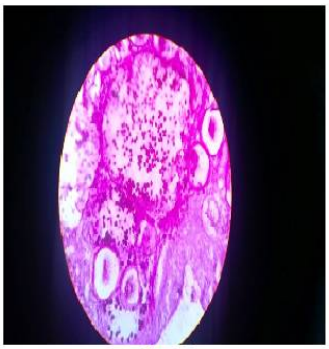
Figure 6

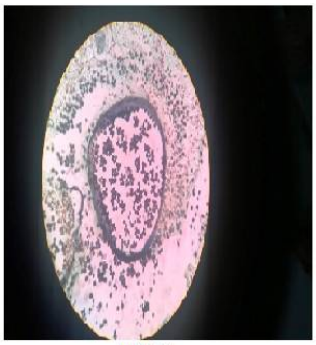
Figure 7

**Figure 4:** scanner view (5x) of Rhinosporidiosis showing sporangium in the epithelium; **Figure 5:** low power view(10x) of Rhinosporidiosis sporangium **; Figure 6:** Rhinosporidiosis sporangium stained by PAS (PERIODIC ACID SCHIFF) stain.; **Figure 7:** Rhinosporidiosis sporangium stained by GMS (GOMORI'S METHANAMINE SILVER ) stain

## DISCUSSION

Rhinosporidiosis seeberi is a member of the phycomycetes class of fungi2. It was first reported by Malbran 1892 described as a protozoan by Guellermo seeberi in Argentina1900 and as phycomycetes by Ashworth 1923.[6,7] Finally it was placed in mesomycetozoa(group related to fish pathogen) by Heer *et al* in 1999. [8]reconfirmed by Friedericks *et al* in 2000.[9] In India the highest incidence is seen in costal areas especially Tamilnadu and also West Bengal.[10,11]in this study ,among 65 nasal masses, 25 cases (38.5%) were rhinosporodiosis. Global distribution of rhinosporidiosis in different continents was published in 1949is is in table4. Comparision done between total cases and duration of study from various authors in table 5. Of which our study is for 1 year and the cases include 25 nos. David *et al* reported 100 cases in 2 years study,Makannavar *et al* reported 34 cases in 11.5 years. In our study the common age group involved is between 11 to 20 yrs. Ahmed *et al* and Ranjan kumar guru *et al* reported cases between 21 to 30 years of age group. In this study, slight male preponderance is seen. Ahmed *et al* and Ranjan kumar guru *et al* also reported male preponderance. comparision between sex preponderance in various studies done in table 7.Thus the sex ratio is 1.3:1 in this study. Nazia *et al* reported 2.6:1, chitravel *et al*[18] reported 4:1 to 9:1.The fact that females have less chance of animal contact,less frequent pond baths leads to lesser female prevalence.some authors thought that effect of estrogen in female provides protection from the disease.[1] Rhinosporidiosis is limited to surface epithelium of nasal mucosa but rarely wide dissemination with cutaneous or visceral involvement can occur.[19,20] The common symptom is nasal mass and nasal obstruction. The nasal lesion usually starts as a small papule that grows into a polypoidal mass causing obstruction of the nose. cutaneous lesion often start as a friable papilloma that become pedunculated.[21]Histopathologically many round thick walled cysts (sporangia) upto 0-5mm in dia with endospores(6-7µ in dia) in different stages of maturation is present. The surrounding tissue has inflammatory reaction. These spores are positive for PAS (Periodic acid Schiff) and GMS (Gomoris methanamine silver) stain. In cytology 10% KOH and pap stains are used.[22] in our study PAS and GMS stains are used to stain the spores.Several modes of spread have been postulated for cutaneous rhinosporidiosis like direct inoculation or auto innoculation through traumatized epithelium and subsequent hematolymphoid spread. [23]Disseminated cutaneous rhinosporidiosis with nasopharyngeal involvement has been reported by some authors.[19,20,23,24] Inspite of recognition ,rhinosporidiosis remains high risk of recurrence and occasional widespread with fatal complications.[25]surgical removal and electrodessication

remain the cornerstone of therapy.[23,26]Dapsone has been found to have antirhinosporidial effect by arresting the maturation of the sporangia and promoting fibrosis in the stroma.[27]

## CONCLUSION

The case study is presented to highlight the higher incidence and endemicity of rhinosporidiosis among nasal masses in Thiruvarur district and health awareness among common people for prevention, early diagnosis, treatment and decreasing recurrence rate after surgery of this disease.

## REFERENCES


1. Nazia Aziz Ahmed RHINOSPORIDIOSIS: AN EPIDEMIOLOGICAL STUDY, Journal of Evolution of Medical and Dental Sciences/ Volume 2/ Issue 38/ September 23, 2013
2. Ranjan Kumar Guru, RHINOSPORIDIOSIS WITH SPECIAL REFERENCE TO EXTRA NASAL PRESENTATION, J of Evolution of Med and Dent Sci/ eISSN- 2278-4802, pISSN- 2278-4748/ Vol. 3/ Issue 22/June 02, 2014
3. Human biology 103,Parasites and Pestilence,May 17,2002
4. LEVER'S histopathology of skin, tenth edition,page no: 615
5. Godwins ,Nasal rhinosporidiosis,Journal of the National medical association,vol 100no.6,June 2008
6. Palash Kumar Mandal, Disseminated Cutaneous Rhinosporidiosis: a Tumor like Lesion with Therapeutic Challenge , a case report, IRANIAN JOURNAL OF PATHOLOGY, Vol.9 No.4, Fall 2014
7. Ashworth JH. On *Rhinosporidium seeberi* with special reference to its sporulation and affinities. Trans Royal Soc Edinb 1923;53: 301-42.
8. Herr RA, Anjello L, Taylor, Arsecularatne SN,Mendoza L. Phylogenetic analysis of *Rhinosporidium Seeberi*'s18S small-subunit ribosomal DNA groups this pathogen among members of this proctistan Mesomycetezoa clade. J Clin Microbiol 1999; 37(9):2750-4.
9. Fredericks DN, Jolley JA, Lepp PW, Kosek JC, Relman DA. *Rhinosporidium seeberi*: A human pathogen from a novel group of aquatic protistan parasites. Emerg Infect Dis 2000; 6 3):273-82.
10. Moses JS, Shanmugham A, Kingsly N, Vijayan JC, Balachandran C, Venkateswaren, *et al*.Epidemiological survey of rhinosporidiosis in Kanyakumari district of Tamil Nadu. Mycopathologia 1988;101(3):177-9.
11. Saha SN, Mondal AR, Bera SP, Das S, Banerjee AR. Rhinosporidial infection in West Bengal: a Calcutta based hospital study. Indian J Otolaryngol Head Nec Surg 2001; 53 (2)100-4.
12. De Mello MT. Rhinosporidiosis. Mycopath. 1949; 4: 342-348.
13. Kannan Kutty M, Sreedharah T, Mathew KT. Some observations on rhinosporidiosis. Am J Med sci. 1963; 246:695-701.
14. David SS. Nasal Rhinosporidiosis. J Indian Med Assoc. 1969; 62:301- 306.
15. Dube, Veliath GD. Rhinosporidiosis in Mangalore. J Indian Med Assoc .1964; 42:58-63.
16. Das BC. Rhinosporidiosis. Indian J Otol. 1964; 26: 79-84.
17. Makannavar JH, Satheesh Chavan S. Rhinosporidiosis- A clinicopathological study of 34 cases. Indian J Pathol Micrbiol.2001; 44(1):17-21.
18. Chritravel V, Sundaran BM, Subramanian S, Kumaresan M, Kunjithapatham K, Mycopatholgia.1990;109:11-12
19. Thappa DM, Venkatesan S, Sirka CS, Jaishankar TJ,Gopalkrishnan, Ratnakar C. Disseminated cutaneous rhinosporidiosis. J Dermatol 1998; 25 (8):527-32Hay RJ, Ajello L. Topley and Wilson's Microbiology and Microbial infection. Medical Mycology. 9 th ed.London: Hodder Arnold; 1998
20. Elder D, Elenitsas R, Jaworsky C, Johnson B. Lever's Histopathology of the skin. 8th ed. Philadelphia: Lippincott Williams and Wilkins; 1997.
21. 10. Nayak S, Acharjya B, Devi B, Sahoo A, Singh N. Disseminated cutaneous rhinosporidiosis. Indian J DermatolVenereolLeprol2007; 73 (3):185-7.
22. Tolat SN, Gokhale NR, Belgaumkar VA, Pradhan SN,Birud NR. Disseminated cutaneous rhinosporidiosis in an immunocompetent male. Indian J Dermatol Venerol Leprol2007; 73 (5):343-5.
23. Rajam RV, Viswanathan GC. Rhinosporidiosis: A study with a report of a fatal case with systemic dissemination. Indian J Surg 1955; 17:269-98.
24. Kumari R, Nath AK, Rajalaxmi R, Adityan B, Thappa DM. Disseminated cutaneous rhinosporodiosis: varied morphological appearances on the skin. Indian J Dermatol Venerol Leprol 2009; 75 (1):68-71
25. Job A, Venkateswaran S, Mathan M, Krisnaswami H, Raman R. Medical therapy of rhinosporidiosis with dapsone. J Laryngol Otol 1993; 107 (9):809-12.


Source of Support: None Declared
Conflict of Interest: None Declared