

## Rhinosporidiosis - A study of 12 cases with etiological review

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### Abstract

**Background:** Rhinosporidiosis is a fungal infection caused by *Rhinosporidium seeberi*. It is usually seen in south India and Sri Lanka and very rare in other parts of the world. Histopathology is used to confirm the clinical diagnosis.

**Aim:** To study the morphological features and distribution pattern of Rhinosporidiosis.

**Objectives:** To study the histopathological features of Rhinosporidiosis and their pattern of involvement according to age, sex and organ affected with review on its etiology.

**Materials and methods:** This study was carried out in the department of pathology for a period of three years. Specimens obtained with relevant clinical data were formalin fixed and processed with standard procedures. Sections were stained with routine Hematoxylin and eosin stain.

**Results:** During the period of study we got 12 histopathological specimens (biopsies) with clinically suspected Rhinosporidiosis accounting for 0.12% of total histopathological specimens. The most common site of infection was nasal cavity. There was wide variation in age distribution and all patients were males.

**Conclusion:** There are few areas where people use stagnant waters for bath and swimming in this geographical region. Further studies are required using molecular methods in this geographic area to know the nature of this organism but we do not have such facility for molecular studies in our institute. However Clinical and histologic findings of our study on Rhinosporidiosis are consistent with previous literature.

**Key words:** histopathology, Rhinosporidiosis.

### Introduction

Rhinosporidiosis is a benign fungal condition which occurs most commonly in the nose. The condition has often been described in India and Ceylon [1]. Histopathologic examination remains one of the major diagnostic tools in mycology because it permits rapid, pre-sumptive identification of fungal infections. Histopathology is the only method for etiologic diagnosis of some organisms like Rhinosporidiosis, Lobomycosis and Pneumocystis [2,3,4]. This study reports rhinosporidiosis cases and their distribution according to age, sex and organ wise in histopathological specimens received in our department in this institution with etiological review.

### Materials and methods

This study was carried out in the department of pathology for a period of three years from September 2009 to August 2012. Specimens obtained with relevant clinical data were formalin fixed and processed with standard procedures. Sections were stained with routine Hematoxylin and eosin stain and special stains like Periodic acid Schiff used wherever required. All histopathological specimens received during study period both clinically suspected cases and unsuspected were included in this study. Again all the medical records were reviewed and clinical details including age, sex and predisposing conditions were obtained. Range of age incidence between 10 to 60 years. No cases were seen between 41-50 years age group [Table.1].

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**Results**

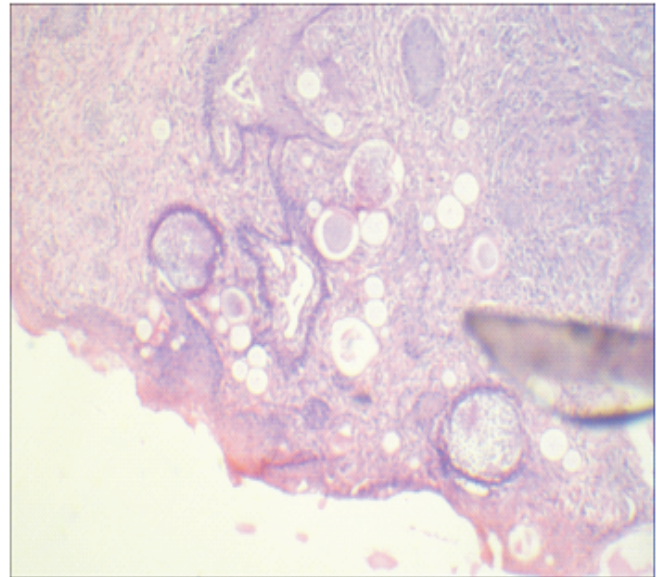
During the period of study we got 12 histopathological specimens with Rhinosporidiosis out of 9757 total histopathology specimens received accounting for 0.12% of total histopathological specimens. All were male and no female cases encountered with Rhinosporidiosis. They showed wide range of age incidence between 10 to 60 years. No cases were seen between 41-50years age group [Table.1].

**Table1.Age and sex distribution of Rhinosporidiosis**

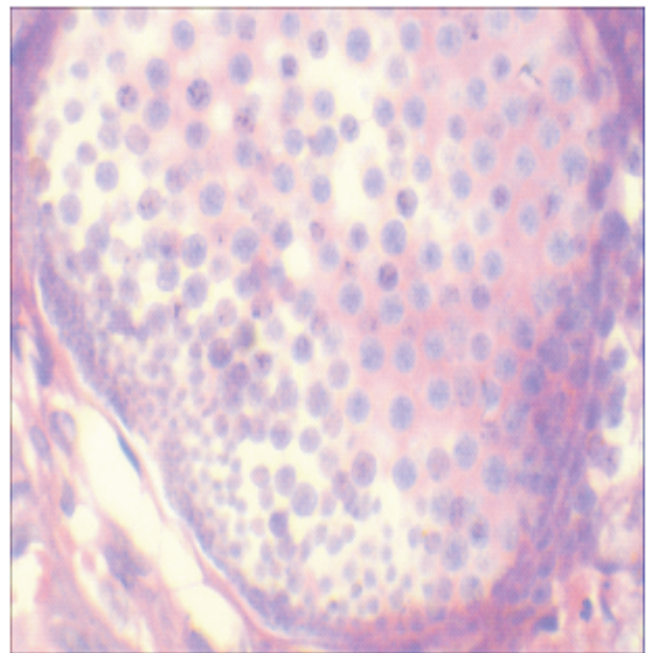
Age	Male	Female
11-20	5	0
21-30	2	0
31-40	2	0
41-50	0	0
51-60	3	0

Most common site of infection was nasal cavity (10) followed by one in maxillary sinus and one in eye. Rhinosporidiosis is quit common in this geographical area. Almost all cases involved nasal cavity except one which was seen as conjunctival growth an one in maxillary sinus. In one case it involved lacrimal sac along with nasal cavity. They usually presented with history of nasal obstruction or nasal mass. Few of them had epistaxis. In all cases clinically suspected cases of rhinosporidiosis were confirmed histologically. It showed all the stages of life cycle in histological sections with chronic inflammatory cell reaction consisting predominantly of lymphocytes and few plasma cells and macrophages within stroma as a common accompaniment [Figure.1,2,3,4]. Few showed neutrophilic and eosinophilic inflammatory cell reaction. One case showed foreign body granulomatous reaction. some of the cases showed squamous metaplasia of epithelium surrounding the mass. Other histologic features noted were

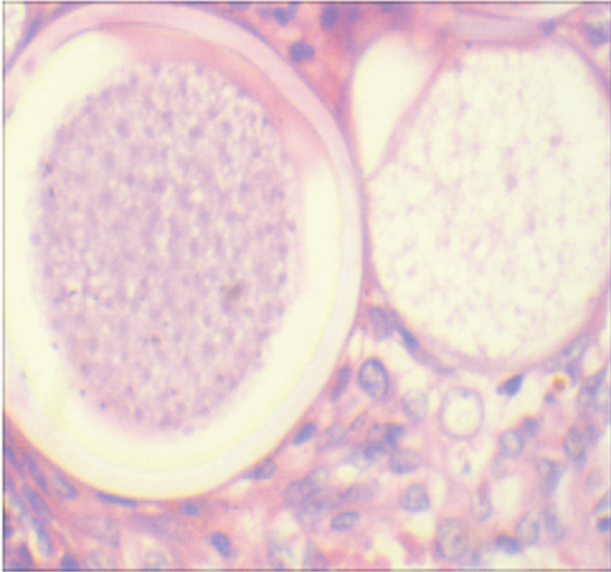
intraepithelial sporangia, intraepithelial abscess and necrosis in few cases.



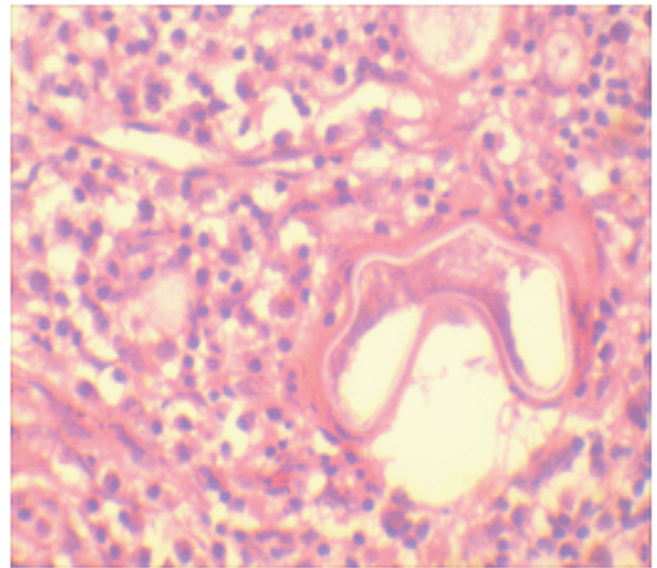
**Figure1. Rhinosporidiosis. sporangia in different stages. 10x(H&E)**



**Figure 2.Rhinosporidiosis 40x (H&E)**



**Figure 3. Rhinosporidiosis (chitinous wall) 40x (H&E)**



**Figure 4. Collapsed wall 10x (H&E)**

### Discussion and Conclusion

Rhinosporidiosis was first reported by Guillermo Seeber in 1900 and the fungus was demonstrated by Ashworth' in 1923. The lesions may be papillomatous, polypoid, sessile or, on the conjunctivae, flattened plaques and they most commonly occur in the nose. They may also occur anywhere in the respiratory or genito-urinary tracts, the conjunctiva or, rarely, the skin. Rhinosporidial polyps of the nose may ulcerate and bleed, and are easily mistaken for the so called bleeding septal polyp, which is usually an angiomatous malformation. The symptoms are those of nasal obstruction or epistaxis [1,2,3,4].

The histological features are fairly typical and the fungus may be seen in all stages of growth. In the actively growing phase the fungus shows spores, sporangia and trophozoites, while in the degenerative phase it has few viable elements in chitinous shells. The tissue response during the active phase is mainly mononuclear with some polymorphonuclear leucocytes in a vascular stroma and occasional eosinophils. In the degenerative phase there is a non-granular cell reaction with the formation of giant cells of the foreign body and Langhans types [1]. Our histologic findings are in consistent with previous literature.

It has been observed that most cases are associated with working or bathing in stagnant fresh water. This has led to the conclusion that *R. seeberi* is an aquatic fungus, though its natural reservoir and life cycle remain mysteries. In the 1990s, investigators began pursuing 2 lines of research using molecular techniques to determine the nature of causative organism. Their results question the classification of this organism as a fungus. Some authors recently postulated that the aetiological agent of the disease was not a fungus but a prokaryotic cyanobacterium called *Microcystis aeruginosa*. This hypothesis was based on the finding of this bacterium in rivers and ponds where patients with rhinosporidiosis used to bath, and supported by laser-scanning confocal, light, electron microscopy and molecular findings . Nevertheless, this observation can not provide a compelling evidence. Moreover, some authors found no evidence of a relationship between this microorganism and *Rhinosporidium seeberi* whereas others went to the conclusion that the responsible agent is an aquatic protistan parasite belonging to a novel group of fish parasites (Mesomycetozoa), located phylogenetically between the fungal and animal divergence [5,6,7]. It has not been possible to demonstrate fungal proteins in *Rhinosporidium* even after performing sensitive tests like Polymerase chain reactions.

Rhinosporidiosis is common in south India and Shrilanka but uncommon in other parts of the world. Our population findings about Rhinosporidiosis are in consistent with south Indian and shrilankan sstudeis. There are few areas where people use stagnant waters for bath and swimming in this geographical region. Further studies are required using molecular methods in this geographic area to know the nature of this organism but we do not have such facility for molecular studies in our institute. However Clinical and histologic findings of our study are in consistent with previous literature[1,2,3,4].

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**Conflict of interest -** None declared

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