



ORIGINAL RESEARCH PAPER

Otorhinolaryngology

RHINOSPORIDIOSIS - AN UNILATERAL NASAL MASS

KEY WORDS:

Rhinosporidiosis, Epistaxis, Polypoidal growth, Biopsy.

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ABSTRACT

Rhinosporidiosis is a rare chronic granulomatous disease caused by *Rhinosporidium seeberi*, which affects both humans and animals. Rhinosporidiosis does not satisfy Koch's postulates as the organism cannot be cultured and transferred from human to animal host. Most of cases reported from India, Pakistan, Srilanka, South America, and Africa. It exists as benign and malignant form of diseases. Most common mode of transmission is water borne and rarely airborne. The disease mostly affects the Nose and Nasopharynx, other sites like oral cavity, conjunctiva, Larynx, Trachea. Clinical presents as pinkish polypoidal mass with complaints of unilateral nasal obstruction, epistaxis, local pruritus. Diagnosis based on clinical presentations and history of water contamination, biopsy with histopathological examination. Here we are going to discuss the various presentation, diagnosis and treatment of Rhinosporidiosis cases.

INTRODUCTION

Rhinosporidiosis¹ is a chronic granulomatous disease caused by *Rhinosporidium seeberi*, which affects both humans and animals.

Rhinosporidiosis does not satisfy Koch's postulates as the organism cannot be cultured and transferred from human to animal host.

History

First described by Guillermo Seeber in 1900 in a patient in Argentina

Ashworth described the life cycle of the organism in 1923.

EPIDEMIOLOGY

- Rhinosporidiosis is a infectious disease with high prevalence in tropical areas like central India, Srilanka, Pakistan, and few cases were reported in South America(Argentina, Brazil),North America, Europe and Canada².
- No case was reported in Australia.
- Estimated Incidence of 1.4% of the pediatric population, in India as well as in Pakistan, Srilanka³.
- Disease is also seen in animals such as cows, bulls, horses, mules and dogs where man and animals share the same infected ponds.
- Male predominance seen⁹.

CLASSIFICATION

It exists as benign and malignant form of diseases. Most common mode of transmission is water borne and rarely airborne. The disease mostly affects the Nose and Nasopharynx, other sites like oral cavity, conjunctiva, Larynx, Trachea.

Benign :

- Nasal :78%
- Nasopharyngeal: 16%
- Mixed : 06%
- Bizzare :conjunctival/ tarsal.

Malignant :

Generalised Rhinosporidiosis .
Malignant Rhinosporidiosis : is described as disseminated form of the disease with systemic involvement .

Aetiologic Agent

- It has long been considered to be a fungus but it has been difficult to classify this organism .

- It has not been cultured so far .
- Some consider it to be a protozoa or a fish parasite belonging to DRIP clade (*Dermocystidium* ,Rosette agent ,*Ichthyophonus* and *Psorospermum* .)

Life Cycle

- Life cycle of the organism has been divided into 3 stages¹¹
1. TROPHIC STAGE
 2. DEVELOPMENT OF SPORANGIUM
 3. PRODUCTION OF ENDOSPORES .

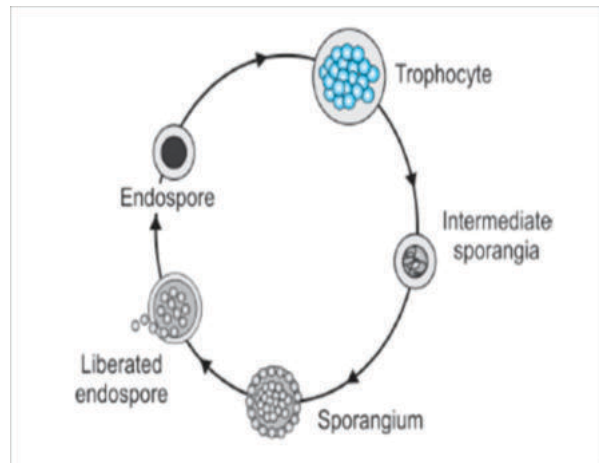


Fig : 1 Lifecycle of Rhinosporidiosis

Trophic Stage

The endospore is oval or rounded , 6-8 micron in size , clear cytoplasm , vesicular nucleus and a covering of chitin . It gradually increases in size , begins to divide cytoplasm and nucleus forming small endospores by several divisions. Trophocyte becomes large filled with young endospores .

Development Of Sporangium

- The mature trophocyte then develops into sporangium .
- A sporangium is 200-250 micron in diameter , contains 12000-16000 endospores .
- It has a thick wall consisting of two layers : outer chitinous layer and inner cellulose layer .
- Endospores mature with the formation of mucoid and chitinous wall .
- Sporangium filled with thousands of endospores develops a germinal pore ready to burst and liberate the endospores .

Production Of Endospores

- Sporangium filled with endospores develop high internal pressure and ruptures liberating endospores into the surrounding tissue .
- If internal pressure is not high , spores are liberated one by one without breaking the wall .
- After liberation endospores start their life as trophic stage .
- Endospores are carried by lymphatic channels to the blood stream to cause disseminated form of disease .

Pathology

Bleeding polypoidal masses with :

1. Vascular fibromatous structure consisting of sporangia in various stages from trophocytes to mature sporangia .
2. Mature sporangium is about 100-300 micron in size and contain numerous spores of size 1.5 – 3 microns.
3. Sporangium has a thick chitinous wall with an apical pore .

Pathogenesis

- In normal individuals nasal pH is 5.5 – 6.5 except during the humid monsoon periods when it becomes alkaline – 7.1 -8⁴.
- In Rhinosporidiasis the pH of the nasal cavity is same through out the year ,predisposing to infection .
- The histamine content of the rhinosporidiasis polyp , when compared to benign nasal polyp appears to be elevated .
- Histamine production favours the growth of the tissue and the blood vessels supplying it to remain dilated .

Mode Of Transmission

- Water borne : This is the commonest route of transmission¹⁰ . It is common in farmers and country dwellers and was thought to be due to bathing in infected ponds used to bath animals like cattle , horse ,etc . The spores get deposited in the traumatized part of the nasal cavity or other areas and continues its Life cycle and produces sporangia .
- Air borne :Rare .

Clinical Features

- Clinical presents as pinkish polypoidal mass with complaints of unilateral nasal obstruction, epistaxis, local pruritis. The disease mostly affects nose and nasopharynx; other sites such as lip , palate , conjunctiva, epiglottis , larynx , trachea , bronchi , skin , vulva and vagina may also be affected⁴⁻⁸ .
- The disease is acquired through contaminated water of ponds also frequented by animals .
 - In the nose the disease presents as a leafy polypoidal mass pink to purple in color and attached to nasal septum or lateral wall .
 - Sometimes it extends into the nasopharynx and may hang behind the soft palate . The mass is very vascular and easily bleeds on touch .
 - Its surface is studded with white dots(strawberry appearance) representing the sporangia of fungus .
 - In early stages, the patient may complain of nasal discharge which is often blood tinged and nasal stuffiness .
 - Sometimes, frank epistaxis is the only presenting complaint .



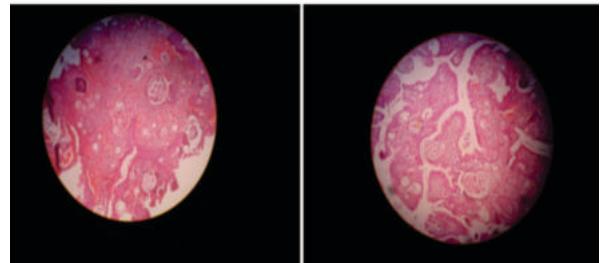
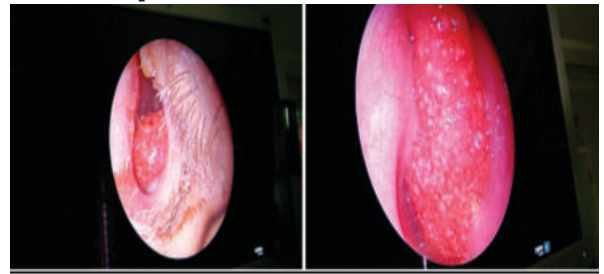
Fig 2: Clinical presentation

Diagnosis

- Diagnosis based on clinical presentations
- History of water contamination

- Biopsy with histopathological examination as several sporangia, oval or round in shape and filled with spores which may be seen bursting through its chitinous wall.

It has not been possible to culture the organism or transfer the disease to experimental animals .



Stains

- Haematoxylin and Eosin stains .
- Hatchkess Machnann's stain : Best procedure for studying the parasite .
- Bromophenol Blue to show spherules .
- Sudan Black stains the wall of spherule deeply and the body of the spherule lightly .
- Toluidine Blue and Bismarck Brown .
- Methyl Green stains the centre of the spherule deeply .

Treatment

- Complete excision of the mass with diathermy knife and cauterisation of its base .
- Recurrence may occur after surgical excision .
- Not many drugs are effective against the disease .
- Dapsone has been tried with some success .



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