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# AVALIAÇÃO DE CASOS DIAGNOSTICADOS DE RINOSPORIDIOSE OCULAR EM UM HOSPITAL PÚBLICO DO MARANHÃO

São Luís
2018

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Artigo apresentado ao curso de Medicina da Universidade Federal do Maranhão para obtenção do grau de Médico.

Orientador: Prof. Dr. Gyl Eanes Barros Silva.

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**“Sempre busque ser o melhor! Mas não melhor que os outros, apenas o melhor de si!”**

**(Marcílio Flávio Rangel de Farias)**

**SUMÁRIO**

# AVALIAÇÃO DE CASOS DIAGNOSTICADOS DE RINOSPORIDIOSE OCULAR EM UM HOSPITAL PÚBLICO DO MARANHÃO

EVALUATION OF DIAGNOSED CASES OF EYE RHINOSPORIDIOSIS IN A PUBLIC HOSPITAL OF MARANHÃO

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## Resumo

**Introdução**: A oculosporidiose (rinosporidiose ocular) representa 15% dos casos de rinosporidiose, uma doença crônica granulomatosa, endêmica na Índia e Sri Lanka, com casos relatados no Brasil, principalmente no Maranhão. As similaridades climática e hidrográfica do Estado à áreas endêmicas, e a presença de populações ribeirinhas são fatores contribuintes para o aumento da incidência da rinosporidiose na região. **Objetivos:** Identificar casos diagnosticados de oculosporidiose, e descrever as características clínico-epidemiológicas, laboratoriais, histopatológicas e conduta terapêutica. **Métodos:** Estudo descritivo, observacional e transversal de prevalência e características clínico-epidemiológicas da oculosporidiose, através dos registros em prontuários físicos e on-line do HUPD, hospital universitário da região nordeste do Brasil, no período de 1999 a 2017. Trinta pacientes foram diagnosticados com rinosporidiose, 8 destes apresentavam oculosporidiose, e 7 atenderam aos critérios de inclusão. **Resultados:** Dos 7 casos (23,3% do total), 5 (71,4%) eram do sexo masculino, com idade média dos pacientes de 16,4 ± 15,6 anos. Quatro pacientes (57,1%) se declararam brancos, e 3 (42,9%) pardos. São Luís (MA) é a cidade do Estado com mais casos diagnosticados, apresentando uma porcentagem de 28,5% do total. O olho esquerdo foi o local mais acometido, em 6 casos (85,7%), e em todos os pacientes, a conjuntiva foi afetada. A rinosporidiose e papiloma foram as hipóteses diagnósticas predominantes (28,5% e 28,5%), seguidas de esclerite crônica, calázio e granuloma (14,25%, 14,25 e 14,25%). Todos os casos foram tratados com exérese da lesão. Apenas 2 pacientes (28,5%) evolui com recidiva. **Conclusão:** Verificou se predominância do sexo masculino e de apenas um olho como local infectado, não havendo acometimento bilateral. A faixa etária mais jovem (entre a 1ª e 2 década de vida) mostrou se mais suscetível à oculosporidiose, sendo o exame histopatológico necessário para um diagnóstico conclusivo.



**Palavras – chave**: Oculosporidiose, Maranhão, Histopatologia

## Abstract

**Introduction**: Oculosporidiosis (ocular rhinosporidiosis) accounts for 15% of cases of rhinosporidiosis, a chronic granulomatous disease, endemic in India and Sri Lanka, with cases reported in Brazil, especially in Maranhão. The climatic and hydrographic similarities of the State to the endemic areas, and the presence of riverside populations are factors that contribute to the increase of the incidence of rhinosporidiosis in the region. **Objectives**: To identify diagnosed cases of oculosporidiosis, and to describe the clinical-epidemiological, laboratory, histopathological and therapeutic characteristics. **Methods**: Descriptive, observational and cross-sectional study of prevalence and clinical-epidemiological characteristics of oculosporidiosis, through physical and on-line records of the HUPD, a university hospital in the northeast region of Brazil, from 1999 to 2017. Thirty patients were diagnosed with rhinosporidiosis, 8 of them had oculosporidiosis, and 7 met the inclusion criteria. **Results**: Of the 7 cases (23,3% do total), 5 (71.4%) were males, with a mean age of 16,4 ± 15,6 years. Four patients (57,1%) declared themselves white, and 3 (42,9%) were brown. São Luís (MA) is the city of the State with the most diagnosed cases, presenting a percentage of 28,5% of the total. The left eye was the most affected site, in 6 cases (85.7%), and in all patients, the conjunctiva was affected. Rhinosporidiosis and papilloma were the predominant diagnostic hypotheses (28,5% and 28,5%), followed by chronic scleritis, granuloma and calazia (14,25%, 14,25% and 14,25%). All cases were treated with lesion excision. Only 2 patients (28,5%) develops with recurrence. **Conclusion**: It was verified that male predominance and only one eye as an infected site, with no bilateral involvement. The younger age group (between 1 and 2 years of age) was more susceptible to oculosporidiosis, and histopathological examination was necessary for a conclusive diagnosis.



**Keywords**: Oculosporidiosis, Maranhão, Histopathology

## 1. INTRODUÇÃO

Rinosporidiose é uma doença crônica granulomatosa causada pelo *Rhinosporidium seeberi*, microorganismo protista classificado na classe *Mesomycetozoea,* através de análise de DNA ribossomal [1 - 3]. Os locais mais comuns de infecção são nariz e nasofaringe (70%), e olho (15%). Sítios mais raros de envolvimento são: pênis, lábios, pele e úvula [4 - 6].

A doença apresenta índices elevados na Índia e Sri Lanka, e no Brasil, vários casos foram descritos no Estado do Maranhão [7 - 10]. A rinosporidiose acomete principalmente homens, e tem uma predominância entre a segunda e quarta década de vida [6, 11, 12].

O modo de transmissão ocorre a partir de infecção transepitelial através do epitélio traumatizado, que entra em contato com água contaminada [3, 13]. Posteriormente, os pacientes desenvolvem uma massa de característica polipóide, pedunculada, predominantemente no nariz, associada a sangramento, prurido e espirros. [11, 14].

Na região ocular, a conjuntiva e o saco lacrimal são as áreas mais afetadas, representando entre 50% a 77,6%, e 24% a 33% dos casos, respectivamente. Além destes locais, a esclera e pálpebra também são acometidas [1, 10, 15 – 17]. Na conjuntiva, tanto a parte tarsal quanto bulbar podem ser afetadas, havendo predomínio na região tarsal [18]. Clinicamente, a oculosporidiose se apresenta como uma massa polipóide friável, causando sensação de corpo estranho, irritação, lacrimejamento, e segundo relatos de caso isolados, não afeta a acuidade visual [3, 16, 19, 20].

Uma complicação do acometimento conjuntival é o estafiloma, pouco relatado pela baixa prevalência, que pode levar tanto à ruptura e perda do conteúdo intra-ocular, quanto a sua infecção, devido a dissolução dos tecidos esclerais, ocasionada pela sobreposição do *R. seeberi* [21, 22].

O diagnostico diferencial abrange principalmente papiloma e granuloma piogênico, sendo o tratamento feito com excisão cirúrgica da lesão, e cauterização de sua base [13, 23, 24]. Em associação à cirurgia, a dapsona é utilizada para impedir a maturação dos esporângios e promover fibrose [25, 26]. Através do exame histopatológico é obtido o diagnóstico definitivo, observando se um estroma fibroso com vários esporângios de parede espessa, em diferentes estágios de maturação, contendo

inúmeros endósporos [24, 27, 28].

O Brasil não disponibiliza uma literatura abrangente a respeito da rinosporidiose, apresentando escassas séries de casos**,** tendo em menor número ainda produções científicas sobre sua manifestação ocular. Portanto, propôs se levantar retrospectivamente os casos desta forma de apresentação da doença em um centro de referência especializado, com intuito de fornecer mais informações clínicas e epidemiológicas, além de servir como referência bibliográfica para profissionais que tem pouco conhecimento acerca da oculosporidiose, como também da rinosporidiose em geral.

## 2. MÉTODOS

Trata-se de um estudo descritivo, individuado, observacional e transversal. A pesquisa foi desenvolvida na Unidade de Anatomia Patológica do Hospital Universitário da Universidade Federal do Maranhão (HU-UFMA). Os dados foram coletados a partir de informações contidas em prontuários, além de acesso ao prontuário on-line destes pacientes no software do hospital.

Foram registrados 30 pacientes com diagnóstico de rinosporidiose entre os anos de 1999 a 2017 e, dentre estes, selecionados 8 com acometimento ocular pela doença. Sete pacientes estiveram aptos para inclusão no trabalho. Os casos foram estudados a partir de dados epidemiológicos (idade, sexo, cor, local de residência), aspectos clínicos relacionados à lesão (localização, tempo de evolução, sintomas) exame histopatológico e tratamento.

Os critérios para não inclusão foram: o prontuário não estar disponível para acesso pelo SAME (Serviço de Arquivo Médico), ou precariedade de informações, não permitindo uma análise estatística precisa. Os dados foram avaliados e transferidos para uma planilha no programa Microsoft Excel 2010. Os resultados foram dispostos em formato de tabela.

Este projeto foi submetido à Comissão Científica do Hospital Universitário da Universidade Federal do Maranhão e aprovado com o parecer nº 18/2018. Encontra se sob avaliação do Comitê de Ética e Pesquisa na Plataforma Brasil.

## 3. RESULTADOS

Sete pacientes com oculosporidiose (rinosporidiose ocular) foram avaliados, correspondendo a 23,3% do número de pacientes com rinosporidiose. Cinco eram do sexo masculino (71,4%) e 2 do feminino (28,5%), predominantemente jovens, com idades entre 5 e 51 anos, 3 entre a primeira década de vida (42,9%), 3 na segunda década (42,9%) e 1 na sexta década (14,25%), com média de idade de 16,4 ± 15,6 anos. Em relação à cor, 4 declararam se brancos (57,1%) e 3 pardos (42,9%) (Tabela 1). Quanto à procedência, o norte maranhense é a mesorregião do Estado com mais casos: 4 pacientes (57,1%) (Figura 1).

As lesões foram identificadas no olho esquerdo em 6 casos (85,7%), com apenas 1 acometimento no olho direito. Em todos os casos, a conjuntiva foi o local da lesão e, dentre estes, 6 foram na conjuntiva tarsal (85,7%), e 1 na conjuntiva bulbar (14,25%). O tempo de evolução descrito nos prontuários (início da lesão até atendimento médico) situa entre 3 meses e 3 anos, com uma média de 18,6 ± 13,8 meses, não incluindo episódios de recidiva.

São descritos os seguintes sintomas: episódios de sangramento, irritação e diminuição da acuidade visual, conforme Tabela 2. A complicação observada foi formação de estafiloma, em apenas 1 paciente (14,25%) (Figura 2). Referente às hipóteses diagnósticas, a rinosporidiose foi suspeitada em 2 casos (28,5%) e papiloma em 2 casos (28,5%). Esclerite crônica, calázio e granuloma em 1 caso cada uma (14,25%). Três pacientes (42,9%) possuíam exames laboratoriais nos prontuários, com 2 apresentando alterações nos valores de eosinófilos. O primeiro com 18% e 1.702 $mm^3$ (valores máximos de referência: 5% e 500 $mm^3$), e o segundo com 5,9% e 655,49 $mm^3$ (valores máximos de referência: 5% e 500 $mm^3$).

O tratamento para todos os pacientes foi exérese da lesão. Dois (28,5%) tiveram seguimento clínico regular, com um realizando cirurgia 1 ano e 3 meses após a primeira, para correção de estafiloma, e o outro apresentou 2 recidivas dentro do período de 1 ano e 5 meses, sendo realizada exérese.

Nos laudos histopatológicos, os aspectos macroscópicos de todas as biópsias foram descritos principalmente como rugosos, pardacentos, friáveis e de consistência elástica. As análises microscópicas de 3 pacientes relatam respectivamente: infiltrado mononuclear revestido por epitélio pavimentoso estratificado, com presença de estruturas sugestivas de esporângios do *R. seeberi* (Figura 3); hiperplasia pseudoepiteliomatosa;

hiperplasia reacional dos epitélios escamoso e glandular.

## 4. DISCUSSÃO

Este trabalho, realizado com uma amostra pequena, traz conformidades com artigos científicos, tanto em fatores epidemiológicos quanto clínicos. A região ocular representa em média 15% dos casos de rinosporidiose, e apresentamos uma porcentagem maior em relação aos dados da literatura [22, 29]. Em relação a gênero, houve uma predominância do sexo masculino sobre o feminino, informação semelhante à de outros estudos [7, 29].

A rinosporidiose infecta todas as faixas etárias, com uma maior frequência nas mais jovens, fato também observado no trabalho, que mostrou maior número na 1ª e 2ª década de vida, com uma média de idade de 16 anos [6, 28]. Algumas publicações descrevem que a maior incidência em pacientes do sexo masculino se deve à maior exposição a atividades relacionadas com terra, barro e água parada, fator que pode também estar ligado a indivíduos mais jovens [15, 17].

Quanto à cor, não há informações que comprovem predileção racial pelo *R. seeberi* [14]. Dentre os pacientes analisados, a cor branca foi predominante. No entanto, pardos poderiam estar em maior número, pois o Estado do Maranhão apresenta uma população miscigenada, de maioria parda.

Na região ocular, houve acometimento apenas unilateral. A conjuntiva é o local com maior taxa de infecção, por maior exposição ao *R. seeberi* [17, 18]. Nos nossos casos, todos os pacientes apresentaram a lesão na conjuntiva, majoritariamente na conjuntiva tarsal, que é a localização mais frequentemente afetada pelo patógeno [18]. O tempo de evolução da lesão é variável, entre 3 meses a 1 ano [16, 19, 22, 24, 30] com média de 9 ± 5,09 meses, tempo relativamente próximo ao encontrado na amostra, que teve uma média de evolução dos sintomas em torno de 18,6 meses.

São raros os relatos de perda visual na oculosporidiose, como queixa clínica ou verificado no exame oftalmológico. Da literatura levantada, 1 caso de 5 que avaliam acuidade visual, apresenta perda visual ao exame oftalmológico [1, 3, 16, 20, 21, 29]. Dois pacientes do nosso estudo referem esta queixa, associada à irritação. A ocorrência de estafiloma é mínima, tendo pequena frequência mesmo em regiões endêmicas [20]. Apenas 1 paciente (14,25%) evoluiu com esta complicação, realizando 2 cirurgias para sua correção .

Por se tratar de uma doença rara, a taxa de suspeição da rinosporidiose é baixa, como em nosso trabalho [2]. A suspeição se torna alta em países onde adquire caráter endêmico, e os médicos estão familiarizados com a doença [12, 15]. Referente à oculosporidiose, esta foi tida como hipótese diagnóstica em 28,5% dos nossos casos, porcentagem semelhante à hipótese de papiloma, um dos principais diagnósticos diferenciais.

Alterações laboratoriais não são citadas em muitos trabalhos. Em um relato de caso de rinosporidiose disseminada, o paciente apresentou uma eosinofilia de 40%. Em outro trabalho, 10 pacientes de um total de 63 tinham eosinofilia, não sendo citados valores [4, 31]. Em nossa amostra, de 3 pacientes com exames laboratoriais, 2 revelaram eosinofilia, com 1 mostrando aumento elevado em relação ao limite superior. Entretanto, não se deve descartar precocemente situações com este mesmo achado laboratorial, como uma parasitose, por exemplo.

A remoção cirúrgica é o tratamento de escolha para a oculosporidiose, recomendando se uso de Dapsona de forma adjuvante, impedindo a maturação dos esporângios e promovendo fibrose do estroma [6, 13, 17]. As recidivas oculares em geral são raras, com taxas de 1% referente à conjuntiva, e entre 2% - 40% com relação ao saco lacrimal [26, 27, 32]. As causas são: exérese incompleta da lesão, e endósporos se espalharem em sítios adjacentes durante o ato cirúrgico [14, 33]. Uma cauterização da base da lesão ineficaz, aliado a não utilização de Dapsona no pós-operatório, pode tornar a lesão mais suscetível a recidivas.

No exame histopatológico, observa se o *R. seeberi* em todos os estágios de desenvolvimento, não sendo possível correlacionar alguma forma específica de estágio evolutivo com apresentação clínica [34]. A literatura descreve achados histológicos associados à infecção, citando metaplasia escamosa, hiperplasia epitelial [9, 19, 25]. Nossas descrições do exame citam hiperplasia epitelial. Também é relatado um infiltrado mononuclear revestido por epitélio pavimentoso estratificado, relacionado às alterações anátomo - patológicas.

## 5. CONCLUSÃO

Nos nossos casos de oculosporidiose, o sexo masculino e as faixas etárias mais jovens foram predominantes. A lesão apresenta caráter unilateral, acometendo apenas um olho, inclusive no episódio de recidiva. Observa se também que pode haver comprometimento da visão.

Em áreas endêmicas, quando um paciente apresenta no olho massa polipóide, friável, e vive próximo a rios e lagoas, devemos pensar em oculosporidiose. O diagnóstico clínico da rinosporidiose não é fácil (principalmente na forma ocular), portanto deve ser solicitado o exame histopatológico. A eosinofilia observada no hemograma pode ser um fator que auxilie no diagnóstico. O tratamento da doença é simples, e seu prognóstico é bom.

Este estudo desenvolvido visa fornecer mais informações clínicas e epidemiológicas, complementando o escasso referencial teórico existente, para que profissionais de saúde tenham maior conhecimento a respeito desta afecção existente na região, e suas formas de apresentação.

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# APÊNDICE

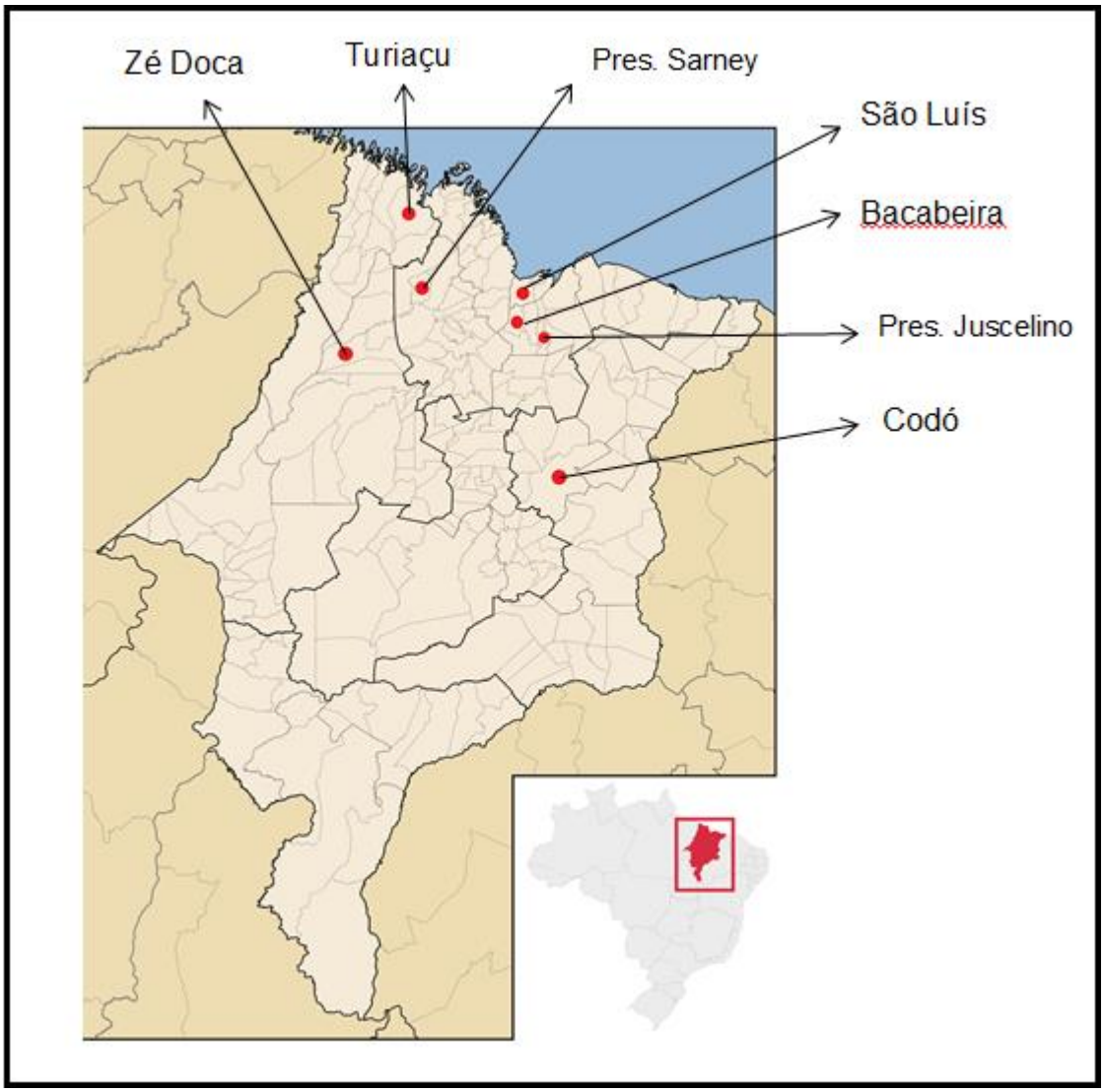
Tabela 1: Características clínico-epidemiológicas de pacientes com oculosporidiose no HUPD. São Luís – MA, 1999 – 2017.

| Variáveis | N | % |
|---|---|---|
| Sexo | | |
| Masculino | 5 | 71,4 |
| Feminino | 2 | 28,5 |
| Faixa etária | | |
| 1-10 | 3 | 42,9 |
| 11-20 | 3 | 42,9 |
| 51-60 | 1 | 14,25 |
| Cor | | |
| Branca | 4 | 57,1 |
| Parda | 3 | 42,9 |
| Residência | | |
| São Luís | 1 | 14,25 |
| Outras cidades | 6 | 85,7 |
| Local da lesão | | |
| Olho esquerdo | 6 | 85,7 |
| Olho direito | 1 | 14,25 |
| Hipótese diagnóstica | | |
| Oculosporidiose | 2 | 28,5 |
| Papiloma | 2 | 28,5 |
| Esclerite crônica | 1 | 14,25 |
| Calázio | 1 | 14,25 |
| Granuloma | 1 | 14,25 |

Tabela 2: Sinais e sintomas clínicos de pacientes com oculosporidiose no HUPD. São Luís – MA, 1999 – 2017.

| Variáveis | N | % |
|---|---|---|
| Sangramento | 2 | 28,5 |
| Irritação | 2 | 28,5 |
| Perda de visão | 2 | 28,5 |

Figura 1: Distribuição geográfica dos casos de oculosporidiose entre 1999 - 2017 no Estado do Maranhão, Brasil.

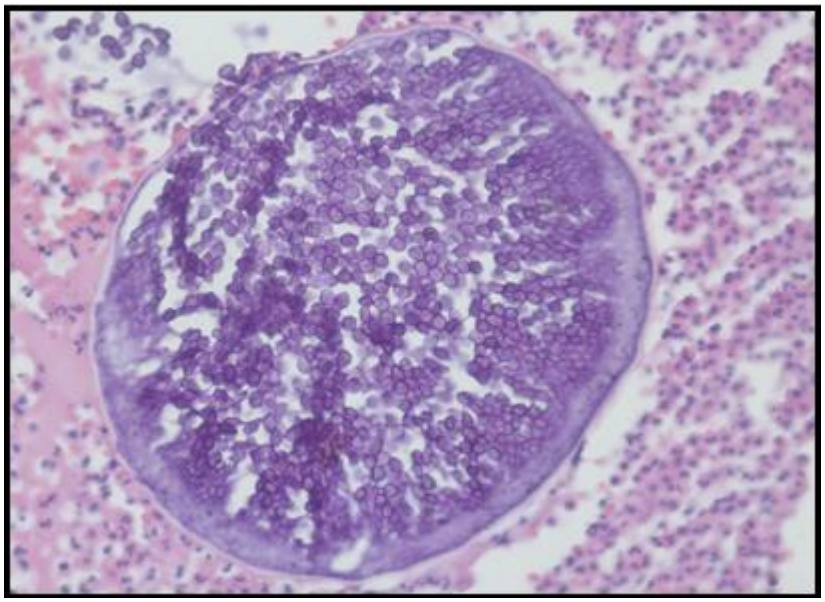



Fonte: https://pt.wikipedia.org/wiki/Maranh%C3%A3o#/media/File:Maranhao_MesoMicroMunicip.svg

Figura 2: Oculosporidiose conjuntival com estafiloma em olho esquerdo.

Imagem cedida pela Profa. Elaine
de Paula Fiod Costa (UFMA).

Figura 3: Esporângio contendo vários endósporos, cercado por infiltrado inflamatório.



Paciente diagnosticado com oculosporidiose no HUPD.

# ANEXO

# ANEXO A: PARECER DE AUTORIZAÇÃO DO COMIC - HUUFMA

EBSERH

**UNIVERSIDADE FEDERAL DO MARANHÃO**
**HOSPITAL UNIVERSITÁRIO**
**GERÊNCIA DE ENSINO E PESQUISA**
**COMISSÃO CIENTÍFICA – COMIC – HU-UFMA**

## PARECER DE AUTORIZAÇÃO

| Financiamento | Finalidade do projeto | |
|---|---|---|
| (x ) Recurso Próprio<br>( ) Fomento Público Nacional<br>( ) Fomento Público Internacional<br>( ) Fomento Privado Nacional / Ind. Farmacêutica<br>( ) Fomento Privado Internacional / Ind. Farmacêutica | ( x ) Graduação<br>( ) Especialização<br>( ) Residência Multiprofissional<br>( ) Residência Médica<br>( ) Residência Buco Maxilo<br>( ) Iniciação Científica<br>( ) Dep. Acadêmico<br>( ) Mestrado<br>( ) Doutorado<br>( ) Serviço/HU-UFMA<br>( ) Outros/ Multicêntrico | **Nº do Protocolo: 23523.007623/2017-66**<br>**Data de Entrada: 18/12/2017**<br>**Nº do Parecer: 18/2018**<br>**Parecer:** APROVADO |

**I - IDENTIFICAÇÃO:**

| | | |
|---|---|---|
| **Título:** ASPECTOS CLÍNICO - MORFOLÓGICOS DE RINOSPORIDIOSE NO ESTADO DO MARANHÃO | | |
| **Pesquisador Responsável:** GYL EANES BARROS SILVA<br>**Maior Titulação:** DOUTOR | | |
| **Equipe Executora:** FRANCÍLIO ARAÚJO ALMEIDA | | |
| **Unidade onde será realizado:** ( X ) HUPD ( ) HUMI ( ) CEPEC ( ) Biobanco ( ) Anexos | | |
| **Setor de realização:** UNIDADE DE ANATOMIA PATOLÓGICA | | |
| **Cooperação estrangeira:** ( ) | **Multicêntrico:** ( ) | **Coparticipante** ( ) |

**II - OBJETIVOS**

**- Geral:** Identificar e avaliar os casos diagnosticados de rinosporidiose no Hospital Universitário Presidente Dutra (HU – UFMA) e Instituto Maranhense de Oncologia Aldenora Bello (IMOAB).

**- Específicos:**

- Pesquisar dados referentes a aspectos epidemiológicos, tais como: sexo, idade, profissão, procedência;
- Pesquisar dados sobre a manifestação da doença, como transmissão, local de acometimento da doença, sintomas, diagnóstico, tratamento e presença de recidivas;
- Acerca do diagnóstico da doença, pesquisar métodos diagnósticos utilizados, seja de imagens ou laboratoriais, sua eficácia e como podem influenciar no tratamento;
- Pesquisar e comparar diagnósticos diferenciais com a rinosporidiose, avaliando sintomas específicos, métodos diagnósticos utilizados para cada doença, achados característicos e compará-los, e terapêutica para cada patogenia;
- Analisar lâminas e biópsias, pesquisando marcadores específicos nas amostras, e correlaciona-los com sua manifestação no paciente;
- Construir um banco de dados sobre rinosporidiose com os pacientes dos hospitais;

**III – CRONOGRAMA: Início da coleta:** Março/2018 **Final do estudo:** Maio/2018

**IV - NÚMERO ESTIMADO DA AMOSTRA:** 70

**V - RESUMO DO PROJETO: Introdução:** Rinosporidiose é uma doença crônica de aspecto granulomatoso, causada pelo patógeno *Rhinosporidiumseeberi*, protista da classe*Mesomycetozoea*

Clinicamente, se desenvolvem lesões unilaterais de formato polipóide que acometem predominantemente o nariz, promovendo epistaxe por serem friáveis, sensação de corpo estranho e prurido. O modo de transmissão é devido infecção transepitelial. Através de uma anamnese detalhada, e exame histopatológico, o diagnóstico é estabelecido. O alto número de rios e lagos, a forte presença de população ribeirinha no Estado do Maranhão, são fatores contribuintes para o aumento da incidência de rinosporidiose. **Objetivos:** identificar e avaliar casos diagnosticados de rinosporidiose, analisando características epidemiológicas, anátomo-patológicas, diagnóstico e tratamento. **Métodos:** Um estudo retrospectivo descritivo será realizado no Hospital Universitário Presidente Dutra (HU – UFMA), através da análise de prontuários dos pacientes diagnosticados com rinosporidiose. Recursos próprios.

**VI – PARECER: APROVADO**

A aprovação representa a autorização para a coleta de dados no âmbito do HU-UFMA, fundamentado na Resolução 001/CAHU/UFMA De 03 de agosto de 2007, entretanto **o início da coleta de dados** está condicionado à aprovação pelo Comitê de Ética em Pesquisa CEP/HU-UFMA **em atendimento à Resolução CNS nº 466/12** e suas complementares, considerando que os aspectos éticos não são avaliados pela COMIC.

Após o término da pesquisa, o pesquisador deverá encaminhar o relatório final (resumo, cópia em CD) à Gerência de Ensino e Pesquisa (GEP-HU-UFMA).

São Luís, 16 de fevereiro de 2018.

**Profa. Dra. Rita da Graça Carvalhal Frazão Corrêa**
Gerente de Ensino e Pesquisa-GEP/HU-UFMA
Matrícula SIAPE: 407790

## ANEXO B: ARTIGO PRODUZIDOS PELO AUTOR E ORIENTADOR

**RHINOSPORIDIOSIS: THE LARGEST CASE SERIES IN BRAZIL**

(Artigo publicado na Revista da Sociedade Brasileira de Medicina Tropical – Julho / Agosto, 2016; Qualis A2)

**CLINICAL AND MORPHOLOGICAL FEATURES OF RHINOSPORIDIOSIS IN AN ENDEMIC AREA OF BRAZIL**

(Artigo aceito na Revista da Sociedade Brasileira de Medicina Tropical; Qualis A2)

*Rev Soc Bras Med Trop* 49(4):473-476, July-August, 2016
doi:10.1590/0037-8682-0193-2016

Major Article

# Rhinosporidiosis: the largest case series in Brazil

***Francílio Araújo Almeida*[1],[2], *Laisson de Moura Feitoza*[1],[2], *Jaqueline Diniz Pinho*[1],[2], *George Castro Figueira de Mello*[2],[3], *Joyce Santos Lages*[1],[2], *Fábio França Silva*[1],[2], *Raimunda Ribeiro da Silva*[2],[4] *and Gyl Eanes Barros Silva*[2],[4],[5]**

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## Abstract

**Introduction:** Rhinosporidiosis is a chronic infection of the mucous membrane and is caused by *Rhinosporidium seeberi*, an aquatic mesomycetozoan. The mode of infection is probably transepithelial penetration. The large number of rivers and lakes and the strong presence of riparian populations in the State of Maranhão are strong predisposing factors for rhinosporidiosis. **Methods:** A 5-year retrospective study was conducted in a tertiary medical center situated in Maranhão, Northeast Brazil. Twenty-five Maranhense patients diagnosed with rhinosporidiosis were analyzed. **Results:** Most of the patients were children, adolescents and young adults (age range: 7-24 years, mean age: 14 years). The majority of the participants were male (84%), brown (76%), and students (92%). All lesions involved the entire nasal cavity and presented with a vascular polypoid mass. All patients were treated by surgical excision of the lesions. **Conclusions:** Rhinosporidiosis affects younger age groups, especially students from the countryside and the outskirts of urban areas. This study will aid and guide physicians in diagnosing and treating this infection in endemic areas.

**Keywords:** Rhinosporidiosis. Mesomycetozoea. Nasal obstruction. Endemic disease.

## INTRODUCTION

Rhinosporidiosis has been known for over a 100 years; however, its epidemiology in some countries is poorly characterized. Tropical and subtropical regions are considered endemic areas. The largest number of rhinosporidiosis cases was noted in India and Sri Lanka (88% of total cases), followed by South American and African countries[1] [2] [3] [4]. In Europe and the United States, rhinosporidiosis is rarely seen in humans[5] [6] [7].

Rhinosporidiosis is a chronic infection of the mucous membrane that is caused by the mesomycetozoan *Rhinosporidium seeberi*[8]. The lesions present as a polypoid or vascular mass, sometimes pedunculated, in the nose (70%), eye (15%), throat, ear, respiratory tract, skin, and even genitalia in both sexes. The most common sites of occurrence include mucosa of the nasal septum, inferior turbinate, and nasal floor[9] [10] [11]. The natural habitat of *R. seeberi* is water and the infection probably occurs through transepithelial penetration[4] [8].

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**Accepted** 21 July 2016

The first case of rhinosporidiosis in Brazil was described in 1933[12]. However, no detailed study with a considerable number of cases has been reported since then. Therefore, this infection is often overlooked, despite *R. seeberi* being endemic to Brazil. The clinical diagnosis is usually not obvious, and it is even less likely to be diagnosed if a physician is not acquainted with the disease. This results in an overall underdiagnosis of rhinosporidiosis.

The State of Maranhão, located in a tropical region, is the most rural State of Brazil and its geography has a wide diversity of ecosystems. Therefore, the large number of river and lakes and the high presence of riparian populations are strong predisposing factors for rhinosporidiosis. Due to negligence in the diagnosis of rhinosporidiosis and the lack of literature, we propose the need to map this infection in Maranhão and describe the demographical and clinical features of the affected population.

## METHODS

This 5-year retrospective study was conducted at *Instituto Maranhense de Oncologia Aldenora Bello*, a tertiary medical center situated in Maranhão, Northeast Brazil. We included all patients with a clinically suspicious lesion and standard histopathological confirmation of rhinosporidiosis between 2000 and 2005. We excluded patients who did not return after surgical excision or who had incomplete medical records.

The following demographic features were described: age, sex, occupation, birthplace, probable location of infection, and current residence. We also reported the following clinical aspects: involvement site, size and number of lesions, presence of bleeding, nasal obstruction, pain, itchiness, lymphadenopathy, involvement of other organs, histopathological report, and treatment.

Quantitative and qualitative variables were collected and tabulated using Microsoft Excel 2013. The data are shown in tables and/or graphs by absolute (n) and relative frequencies (%). The variable age was categorized by intervals and its mean was calculated.

The study was conducted in accordance with the ethical standards of the local ethical committee, and in keeping with the Helsinki Declaration of 1964, as revised in 1975, 1983, 1989, 1996, and 2000.

## RESULTS

Of the 32 patients examined, 25 met the inclusion criteria. Most of the patients were children, adolescents and young adults (age range: 7-24 years, mean age: 14 years). The majority of the participants were male (84%), brown (76%), and students (92%). Most (68%) of the patients lived in the interior regions of Maranhão State. All patients in São Luis, the state capital, came from the periphery of the city (**Figure 1**).

All lesions involved the entire nasal cavity and presented with a vascular polypoid mass. In most (64%) cases, the left nostril was affected, and 2 (8%) cases showed disseminated lesions in the nasopharynx. In 3 cases, the maxillary sinus was involved. The progression of the disease was not mentioned in most medical records, but in 3 cases, this interval ranged from 8 months to 1 year. Demographics, clinical findings, and location of the lesions are represented in **Table 1**.

All patients presented with nasal obstruction (80%), bleeding (68%), or both. No complaints of pain or itching were noted. Only 3 (12%) cases exhibited a secondary infection. On physical examination, we did not find any enlarged lymph nodes in any of the patients, even in those who had developed an infection (**Table 2**).

In most cases, the macroscopic aspect of the lesion was rugous, greyish, and friable. The various stages of evolution (spores and juvenile, intermediate, and mature sporangia) of *R. seeberi* was observed histopathologically (**Figure 2**). The majority of cases involved either respiratory or squamous epithelial lining with evidence of hyperplasia and erosion areas. Other histopathological changes were mucoid degeneration, vascular ectasia, mild fibrosis, and chronic inflammation (sometimes granulomatous). The number of vascular elements (vessels and cords) in the tissue sections was greatly reduced when compared to the amount of fungal elements.

All patients were treated by surgical excision of the lesions. Clinical treatment was restricted to antibiotics and symptomatic agents for cases presenting with secondary infection. Relapse occurred in 2 cases: one case of relapse occurred 3 years after the initial surgical treatment and the other after 8 years. Both relapsed cases presented lesions at the same area. In such cases, the treatment was a new surgical excision with electrocoagulation.

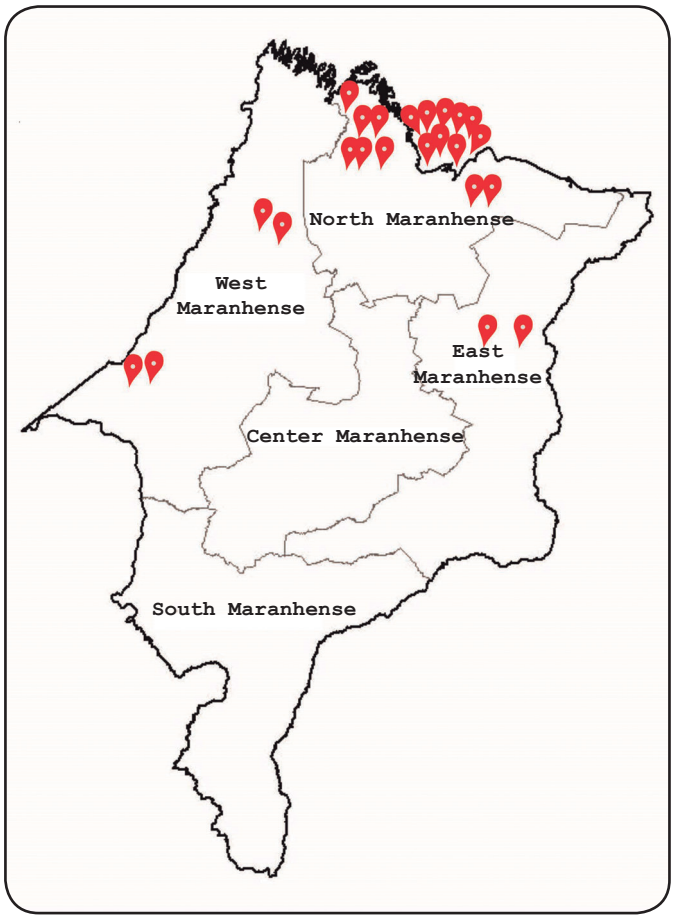


**FIGURE 1.** Distribution of rhinosporidiosis cases by regions in the State of Maranhão, Brazil.

**TABLE 1**

Demographic features and location of the lesion in 25 cases of rhinosporidiosis from the State of Maranhão.

| Variables | Number | Percentage |
|---|---|---|
| Sex | | |
| male | 21 | 84.0 |
| female | 4 | 16.0 |
| Race | | |
| white | 6 | 24.0 |
| brown | 19 | 76.0 |
| Place of residence | | |
| São Luis | 8 | 32.0 |
| other cities | 17 | 68.0 |
| Location of the lesion | | |
| left nostril | 16 | 64.0 |
| light nostril | 7 | 28.0 |
| nasopharynx | 2 | 8.0 |

**TABLE 2**

Clinical manifestations of patients with rhinosporidiosis.

| Findings | Number | Percentage |
|---|---|---|
| Nasal obstruction | 8 | 32.0 |
| Epistaxis | 5 | 20.0 |
| Obstruction and epistaxis | 12 | 48.0 |
| Secondary infection | 3 | 12.0 |

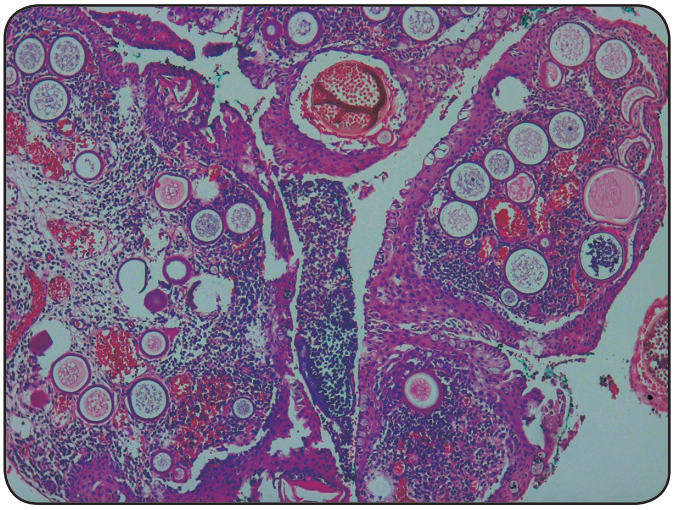

**FIGURE 2.** Photomicrograph showing numerous sporangia in different phases of maturation with important lymphocyte infiltration.

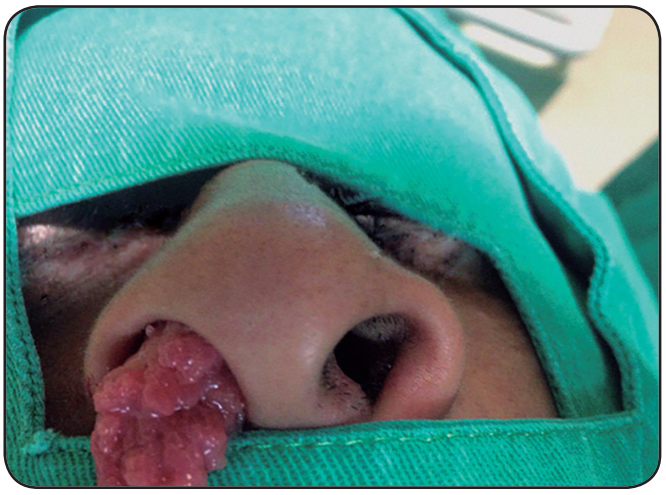

**FIGURE 3.** Vascular/polypoid mass hanging from the right nostril of a patient with rhinosporidiosis.

## DISCUSSION

In this study, patients affected by rhinosporidiosis in Maranhão were found to be younger in age, with a mean age of 14 years, and predominantly male. Similarly, in the literature, males were found to be affected more frequently, especially between the second and fourth decade of life[13] [14] [15] [16].

The majority of our patients were from rural areas, suggesting that the pathogenesis of the disease is related to contact with water or soil for transmission[4] [17] [18]. In our case, Baixada Maranhense, the marshland area in the State of Maranhão, was the most affected, reinforcing the hypothesis of the relationship between the basins and the local population performing daily activities in ponds, rivers, and lakes.

Although the first case of rhinosporidiosis in Brazil was reported in 1933[12], few publications focus on this issue in the country; most papers report isolated cases[19] [20]. The two largest case series in Brazil have only 11[21] and 10[22] cases, and majority patients in both studies were from the State of Maranhão. More recently, a case of cutaneous rhinosporidiosis in a patient from Maranhão has been reported[20]; thus, strengthening the endemic nature of the state.

In all our patients, the site of infection was the nose. No concomitant infection was observed at other sites (the eye, lower respiratory tract, vaginal mucosa, skin, or internal organs). This observation is in agreement with the literature, since nasal mucosa is the most commonly area affected globally. A study performed by Sudarshan et al.[15] showed that 81.1% of cases included nasal and nasopharyngeal involvement. Makannavar and Chavan[16] also reported a similar percentage for nasal involvement (85%)[15] [16]. Interestingly, in our study, in 64% cases, infection was found in the left nostril. A review of the relevant literature was performed to assess whether the right or the left nostril is preferentially involved, and no related data were found. The lesions are usually unilateral, single, polypoid, sometimes pedunculated, with typical macroscopic appearance and symptoms (**Figure 3**)[16]. The predominant clinical findings, nasal obstruction, and epistaxis coincide with what is reported in previous studies[11] [18] [23].

Surgical excision was performed in all our patients. In 2 cases, the infection recurred at the same site, indicating a relapse and not a new infection. This could be explained by a failure to cauterize the base of the lesion[16]. The ablation technique (cold ablation) may be a promising new tool in the surgical resection of recurrent rhinosporidiosis. This technique reduces the chance of contamination of the surrounding areas and prevents autoinoculation[24]. Recently, the antibiotic, dapsone, has shown positive results that complement the treatment, preventing relapses in several infection sites and in cases of inadequate surgical resection[25] [26] [27].

The medicamentous treatment shows limited efficacy probably because the microscopy reveals a large presence of fungal elements when compared with the number of vascular components, and these fungal elements are larger than the phagocytic cells of immune response[25]. Furthermore, the impenetrability of the sporangial wall has been implicated for failure of medicamentous treatment and immune response[28].

This study has some limitations such as incomplete medical records, lack of follow-up of some cases, and the low socioeconomic status of the population more vulnerable to

diseases, which results in low quality of information provided by the patients.

In conclusion, this study reports the largest number of rhinosporidiosis cases in Brazil. This infection affects younger age groups, especially students from the countryside and the outskirts of urban areas. In this study, nasal cavity involvement was present in all patients, and surgical treatment was an effective way to cure the disease. Specifically, in an endemic area like Brazil, any oral or oropharyngeal mass must be considered suspicious for rhinosporidiosis. Because this infection is relatively rare, we hope this study will serve as an aid and guide to the medical community of our country with regard to the diagnosis and treatment of this infection.

**Acknowledgments**

We would like to thank Erison Lamar Nunes Junior for his help with the survey research.

**Financial support**

This study did not receive any financial support.

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# Clinical and morphological features of rhinosporidiosis in an endemic area of Brazil

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## Abstract

**Introduction:** Rhinosporidiosis is a rare chronic disease caused by *Rhinosporidium seeberi*, mainly affecting the nasal and conjunctival mucosa. Endemic in the Indian subcontinent and with few cases described in Brazil, the diagnosis is made through histopathological examination.

**Methods:** To identify the clinical, histopathological, and immune response characteristics, a retrospective study was carried out on 21 patients diagnosed with rhinosporidiosis at the Presidente Dutra University Hospital within 10 years.

**Results:** Majority of the patients were men (80%), aged between the first and second decade of life, and with an infection in the nasal cavity (85.71%). Their main complaints were nonspecific, such as foreign body sensation, nasal obstruction, and epistaxis, decreasing clinical suspicion (14.28%). Hemograms showed a high eosinophil count (14.01%, ±13.73). The main morphological alterations found in relation to the autopsies collected were squamous metaplasia, mucosal hyperplasia, vascular ectasia, and inflammatory infiltration.

**Conclusion**: In our country, little is known about the pathogenesis of rhinosporidiosis, and it is easily confused with other pathologies. However, our cases have shown striking eosinophilia, which may help in the diagnosis. In addition, the disease presents a series of morphological alterations that are poorly described in the literature.



**Keywords:** rhinosporidiosis, *R.seeberi*, morphology, histopathology.

## Introduction

Rhinosporidiosis is a chronic granulomatous disease caused by *Rhinosporidium seeberi*, a microorganism recently classified into a new clade named *Mesomycetozoea* through analysis of the ribosomal DNA, by Herr et al.[1-5] Rhinosporidiosis commonly affects the nasal mucosa and nasopharynx (70%). However, ocular involvement can also occur (10%–15%).[1,6]

This disease has high prevalences in India and Sri Lanka,[1,4,7-8] and in Brazil the vast majority of cases were described in the state of Maranhão.[9] Rhinosporidiosis is most common in the second and fourth decades[6,10,11] and usually occurs in men.[6,10-12]

The presumed mode of spread is through the traumatized epithelium (transepithelial infection) and is acquired by contact with contaminated water.[2,3,13] This agrees with the highest incidence of cases reported among river-sand workers in the Indian subcontinent, through abrasion possibly caused by sand particles.[2,7] Posteriorly, patients present a history of gradual nasal growth, occasional epistaxis, nasal itching, sneezing, and at times post-nasal dripping.[7,14]

Differential diagnosis includes papilloma, hemangioma, and pyogenic granuloma, and the definitive diagnosis is made by histopathology. The treatment of rhinosporidiosis is surgical excision with cauterization of the lesion's base.[7,13,15,16]As adjunct to surgery, dapsone arrests the maturation of sporangia and promotes fibrosis.[13,16]

As only a few morphological studies were conducted and the laboratory tests and imaging studies were not clearly defined in the literature, we proposed to conduct a retrospective survey of Brazilian patients with rhinosporidiosis admitted in a reference center located in areas with the highest number of cases.

## Methods

### Study participants

Patients with rhinosporidiosis who were admitted at the Presidente Dutra University Hospital from 1999 to 2009 were selected. The control group consisted of nasal and/or conjunctival mucosa samples from six autopsies with a negative history of disease in these anatomical sites (rhinitis, sinusitis, among others), immunosuppression, neoplasias, or smoking at the Legal Medical Institute of São Luís - MA.

Patients with unequivocal histological diagnosis of *R. seeberi* with a satisfactory tissue sample (presence of >5 fields of medium increase/100×) and those with available clinical, demographic, and laboratory information in their medical records were included in the analysis. In contrast, patients without medical records and without necessary information were excluded.

### Histopathological analysis

In the local Pathology Service, all biopsy specimens were routinely processed, fixed in formalin, paraffin embedded, sectioned at 5 μm thickness, and stained with hematoxylin-eosin, periodic acid-Schiff, and Masson's trichome. The following variables were investigated: squamous metaplasia, mucosal hyperplasia, epithelial desquamation, mucoid degeneration, vascular ectasia, sample inflammation, adjacent tissue fibrosis, granuloma, lymphoid follicle formation, necrosis, stages of the life cycle of *R. seeberi*, and amount of cysts and free spores of *R. seeberi*. Vascular ectasia, inflammation, fibrosis, and the number of free cysts and spores were also semiquantitatively scored from 0 to 3 (0 = absent, 1 = mild, 2 = moderate, and 3 = intense).

**Statistical analysis**

We performed a frequency analysis of the non-numerical parameters obtained and the means of the numerical parameters. Nonparametric numerical data were transformed into logarithm (log) before analysis when necessary. For comparison with the control group, a Student t-test was performed. A correlation analysis was performed to compare the difference between the histopathological elements of the analyzed biopsies and the clinical data obtained through the applied forms.

Fisher's exact test was performed to analyze the categorical values. The significance level adopted was $p < 0.05$. All data analyses were performed using SPSS version 13.0 (SPSS, Chicago, Illinois, United States). This study was approved by our local ethics committee (protocol number: 2526/10).

**Results**

Between 1999 and 2009, 29 patients with rhinosporidiosis were diagnosed. Eight patients were excluded from the study as they failed to present medical records with relevant information, while 21 were included in the study.

In our study, men were more predominant than women (4:1). The highest incidences were found in the first and second decades (23.80% (5 cases) and 42.85% (9 cases), respectively), with the average age of the population being $16.8 \pm 9.85$ years.

The main location of the lesion was the nasal cavity (85.71%), which was observed in 18 patients. Of these patients, 11 had lesions in the right nasal cavity and experienced the following signs and symptoms: foreign body sensation (100% of cases) as well as nasal obstruction and epistaxis (61.90% (13) of cases) (Table 1). Three cases had conjunctival involvement (14.29% of the total number of cases).

| Variables | N | % |
|---|---|---|
| Signs and symptoms | | |
| Foreign body | 21 | 100 |
| Nasal obstruction | 13 | 61,90 |
| Epistaxis | 13 | 61,90 |
| Rhinorrhea | 2 | 9,52 |
| Nasal voice | 2 | 9,52 |
| Pruritus | 2 | 9,52 |
| Pain | 2 | 9,52 |
| Sneezing | 1 | 4,76 |
| Dyspnea | 1 | 4,76 |

Of the 21 cases, eight presented imaging tests in their medical records, such as face and chest scans, chest X-rayscans, and video endoscopy. Their results were non-specific, such as expansive lesions and mucosa veins. Regarding the diagnostic hypotheses and therapeutic strategies, the lesions were investigated mainly with the clinical and surgical impression of papillomas in six cases (28.57%). The diagnosis of rhinosporidiosis was suspected in only three cases (14.28%) (Table 2).

The hemograms of 15 patients were evaluated, with 8 patients presented eosinophilia, with a 7.9% - 40.8%, increase in the absolute value of eosinophils. The average value of eosinophils of the evaluated patients was 14.01% ± 13.73%.

Fourteen (66.6%) patients underwent surgical excision, one with drug treatment and one with cauterization; the remaining cases were not described in terms of treatment. After treatment was carried out, only five patients had a medical record on the clinical follow-up of the lesion, of which three had recurrence, two underwent surgical excision, and one underwent cauterization.

Table 2. Diagnostic hypothesis in patients with rhinosporidiosis.

| Variables | N | % |
|---|---|---|
| Diagnostic hypothesis | | |
| Papilloma | 6 | 28,57 |
| Rhinosporidiosis | 3 | 14,28 |
| Polyp | 3 | 14,28 |
| Neoplasia | 3 | 14,28 |
| Granuloma | 1 | 4,76 |
| No description | 5 | 23,80 |

After comparing the control group with those diagnosed with rhinosporidiosis, results showed that some morphological changes were markedly present in the second group, such as squamous metaplasia, mucosal hyperplasia, vascular ectasia, and other alterations (Table 3). Different from the control group, patients with rhinosporidiosis also presented moderate to severe vascular ectasia, inflammation, and fibrosis.

Table 3. Comparison of frequency of histological changes between patients with rhinosporidiosis compared and control cases.

| Variables | Control group | Rhinosporidiosis |
|---|---|---|
| Squamous metaplasia [a] | 50 | 100 * |
| Vascular ectasia [a] | 0 | 94,4 * |
| Mucosal hyperplasia [a] | 0 | 72,2 * |
| Epithelium Desquamation [a] | 0 | 33,3 * |
| Lymphoid follicle formation [a] | 0 | 22,2 * |
| Mucoid degeneration [a] | 0 | 5,6 * |
| Necrosis [a] | 0 | 0 |
| Degree of sample inflammation [b] | 1 ± 0 | 4 ± 0,75 * |
| Degree of adjacent tissue fibrosis [b] | 1 ± 0 | 1 ± 1 |

*$p < 0.05$

[a] = quantitative variable, analyzed as a percentage

[b] = qualitative variable, analyzed with medians (1 = grade 0; 2 = grade 1; 3 = grade 2; 4 = grade 3

## Discussion

Rhinosporidiosis was more prevalent in men according to the work data, and this finding is similar to those of other studies.[11,13,14] According to some studies, men whose jobs routinely expose them to soil, clay, and standing water are at greater risk of developing rhinosporidiosis.[2,7] As previously shown, this disease affected all age groups, with a peak incidence in the second and third decades of life.[6,10,11]

Reports of imaging exams in studies on rhinosporidiosis are limited, but the use of computed tomography provides more details on the location and extent of the lesion as well as in cases of recurrence or involvement of bone structures, aiding in the planning of the surgery. Although an important tool, the conclusive diagnosis is only

formed with the histopathological examination.[1,4,8,13] In the evaluation of our patients, imaging exams showed expansive lesions and mucosal veins, both nonspecific.

As the pathogenesis of rhinosporidiosis is unclear, some studies have shown low diagnostic suspicion.[13,17] In our study, only 14% of cases were given a diagnostic hypothesis in the preoperative period, even though the study was performed in Maranhão, a state in Brazil with the highest number of cases.[9,18,19] Endemic regions, where physicians have more contact with the pathology, were reported to have high clinical suspicion rates.[11,20] Due to similarities with other pathologies, results of patients' physical examination can influence the physicians to have other diagnoses, describing the lesion as papilloma, granuloma, tumor, and polyp.

Histologically, the main differential diagnosis is *Coccidioides spp* (Figure 1), which has similar mature stages represented by large, thick-walled, spherical structures containing endospores. However, sporangial endospores of *R.seeberi* are more numerous and larger in size on hematoxylin and eosin stain compared with *Coccidioides spp*, and *Coccidioides spp* does not stain with mucicarmine. [2, 12, 13] *Coccidioides spp* is a dimorphic fungus, with *Coccidioides posadasii* being endemic in the states of Maranhão, Piauí, and Ceará.[21-23] According to Deus Filho (2009), Maranhão had six diagnosed cases of coccidioidomycosis.[22]

Surgical excision is the treatment of choice of this polypoid mass. [7,13,15,16] Diaminodiphenyl sulfone (dapsone) is used as adjuvant to surgical treatment, promoting fibrosis in the stroma and reducing the relapse rate.[13,16] The recurrence rate is very variable in the literature, ranging from 10%–93%,[24-26] but most reports show an incidence close to 10%, as explained by incomplete injury. Late recurrences are described, and long-term follow-up is necessary.[26]

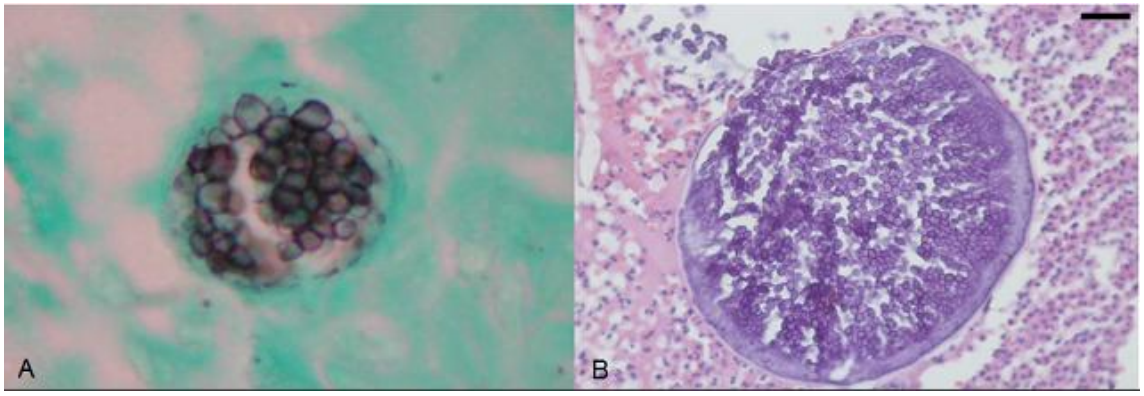
Reports with high relapse rates may be related to the lack of disease suspicion, leading to non-cauterization of the lesion base during the surgical procedure and non-use of dapsone postoperatively.[25] Data from our study indicate a possible low incidence of relapse, but a few patients were followed up adequately.

Only a few studies described the results of hematimetric tests. In two case reports of disseminated rhinosporidiosis, one showed normal eosinophil indices and the other showed eosinophilia (40%).[27,28] In 2012, Sinha and colleagues reported discrete eosinophilia in 10 of the total 63 patients with rhinosporidiosis, not citing values.[29] The presented study showed an average eosinophil value of 14%, a percentage well above the standard. In one case with eosinophilia, the individual presented extensive lesion, affecting the nasal cavity and rhinopharynx. In our patients, other associated conditions, mainly parasitoses, cannot be completely ruled out.

Similar to previous descriptions of each case, *R. seeberi* was present in all stages of development, and it is not possible to correlate some specific forms of evolutionary stage with clinical presentation.[26,30] The literature poorly describes other morphological findings associated with *R.seeberi* infection, citing squamous metaplasia, epithelial hyperplasia, and tissue necrosis.[2,8,19,31,32] In addition, our cases have shown that other histological changes, such as vascular ectasia, lymphoid follicle formation, and mucoid degeneration, frequently occur.

This study had several limitations, such as lack of data in the medical records, lack of radiological exams in the preoperative period, and low socioeconomic status of patients, making it difficult to return and follow up.

Figure 1. Comparative histological images of *Coccidioides posadasii* and *Rhinosporidium seeberi*. A) *C. posadasii:* characterized by a thick-walled spherules containing endospores (specimen obtained from transthoracic pulmonary biopsy, Grocott, 100×); B) *R. seeberi*: has a larger, thicker-walled spherule compared with the previous image, containing more endospores and larger size.




## Conclusion

Despite being an endemic zone, rhinosporidiosis is poorly recognized by doctors in our midst and easily confused with other pathologies. It presents striking morphological characteristics; however, there are no specific radiological and laboratory tests. In our cases, the high rates of eosinophilia are striking, which may increase diagnostic suspicion. Histological examination, besides contributing to the diagnosis, shows a series of alterations that were not previously described in the literature.

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