

## Trends in diagnosis of hydrophilic pseudofungal organism *Rhinosporidium seeberi*- Old to Recent Approach

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### ABSTRACT

Rhinosporidiosis is a granulomatous disease with a chronic course, the etiological agent being *Rhinosporidium seeberi* which usually causes the development of localized lesion in the mucosa of the nose, conjunctiva, and urethra. The disease is prevalent in South India and Sri Lanka although case reports are evident from many parts of the world like Europe, America, and Africa. In the present study, we are reporting a case of rhinosporidiosis elaborating its clinical features, diagnostic modalities, and treatment. Since *R.seeberi* is not a successfully cultivable organism, in vitro susceptibility of drugs remains a concern. The main focus of the present study is on molecular detection of *R. seeberi* which can be helpful in the future for early diagnosis and prompt treatment of such cases.

**Keywords:** Rhinosporidiosis, *R.seeberi*, nasal mass, strawberry appearance

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(Received: January 12, 2020; accepted: December 08, 2020)

**Citation:** Husain U, Tilak R, Priyadarshi K, Aggarwal SK. Trends in diagnosis of hydrophilic pseudofungal organism *Rhinosporidium seeberi*- Old to Recent Approach. *J Pure Appl Microbiol.* 2020;14(4):2295-2297. doi: 10.22207/JPAM.14.4.07

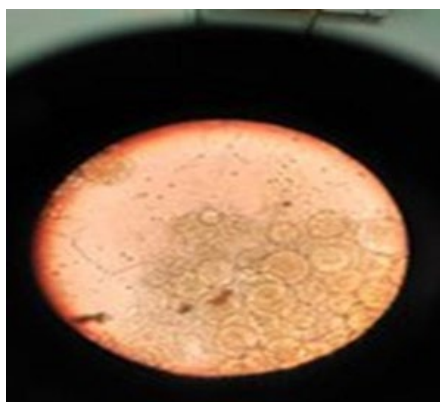
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## INTRODUCTION

Rhinosporidiosis is a non-contagious<sup>1</sup> chronic granulomatous disease<sup>2</sup> with mucocutaneous involvement. It is caused by *Rhinosporidium seeberi*<sup>2</sup>, a taxonomically debated endo-sporulating<sup>3</sup> aquatic eukaryotic organism,<sup>4</sup> which does not grow on synthetic media. The disease is endemic in South Asia particularly South India and Sri Lanka.<sup>5</sup> Nasopharynx and palpebral conjunctiva are common sites affected with the rare occurrence of dissemination. Since the disease is prone to recurrence<sup>6</sup> hence follow-up of patients is essential in such cases. This study emphasizes on molecular diagnosis of *R. seeberi* as part of evaluating modern techniques for the purpose of better patient care.

## METHODS

A 13 yr old female presented with a history of slow-growing right-sided swelling in the nose along with unilateral nasal obstruction, bleeding, and discharge. On examination, the swelling was friable, polypoidal with a strawberry appearance. The endoscopic excision of the nasal mass was done. Direct smear examination using Potassium Hydroxide (KOH) mount and histopathological staining with Gomori's Methenamine Silver and Periodic acid-Schiff stain were performed. The specimen was cultured on paired Brain Heart Infusion blood agar and Sabouraud dextrose agar at 25° C and 37° C. DNA extraction was carried out from nasal tissue using Qiagen kit and PCR was performed using *R.seeberi* specific primers F1-fw (CAAGTCTGGTGCCAGCAGCC) and F2-rev

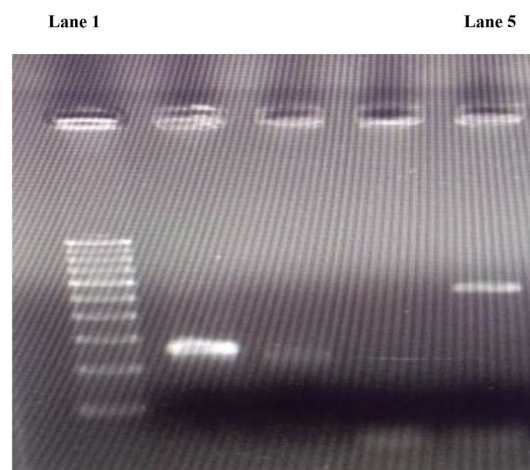


**Fig. 1.** KOH mount: sporangia filled with spores

(GATTCTCGTAAGGTGCCGA)<sup>7</sup> and the amplified product was detected by gel electrophoresis. The sequencing of the amplicon was also done.

## RESULTS

Bacterial and fungal culture results were negative. On KOH mount and histopathological stains, sporangia of *R.seeberi* showing endospores were visualized [Fig.1]. Consensus PCR with DNA obtained from the digest of nasal polyp infected with *R.seeberi* produced an amplification product of the expected size (~550 base pair) as visible on gel electrophoresis [Fig.2]. It was successfully confirmed by sequencing.



- Lane 1: 100 bp DNA ladder
- Lane 5: PCR amplicon (~550bp) using primers specific for *Rhinosporidium seeberi*
- Lane 4: Negative control

**Fig. 2.** Gel electrophoresis image of the PCR amplicons

## CONCLUSION

Nasal rhinosporidiosis may mimic neoplasm in its clinical features hence it is of paramount importance to diagnose it correctly. Local surgical excision is the mainstay of treatment which was successfully done in this case.

## ACKNOWLEDGMENTS

I would like to extend my special thanks to all of the technical staff of the Department of Microbiology –Institute of Medical Sciences, Banaras Hindu University for their co-operation and help.

### CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

### AUTHORS' CONTRIBUTIONS

All authors listed have made a substantial, direct, and intellectual contribution to the work.

### FUNDING

None

### DATA AVAILABILITY

The datasets analyzed during this study are included in the manuscript.

### ETHICS STATEMENT

The study was performed after approval from the Institutional Ethics Committee and informed consent.

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