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CASE REPORT**Year :** 2016 | **Volume :** 34 | **Issue :** 1 | **Page :** 103-106Chronic invasive fungal rhinosinusitis by *Paecilomyces variotii*: A rare case report[T Swami](#)¹, [S Pannu](#)¹, [Mukesh Kumar](#)¹, [G Gupta](#)²¹ Department of Microbiology, S.P. Medical College, Bikaner, Rajasthan, India² Department of Otorhinolaryngology, S.P. Medical College, Bikaner, Rajasthan, India

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~ Abstract

Fungal infection of the paranasal sinuses is an increasingly recognised entity,

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both in normal and immunocompromised individuals. The recent increase in mycotic nasal and paranasal infections is due to both improved diagnostic research and an increase in the conditions that favour fungal infection. *Aspergillus*, *Candida*, and *Mucor* species are the most common causative agents of fungal sinusitis, but infection with lesser known species have been reported across the world infrequently. This article reviews and presents a case report of chronic fungal sinusitis in an immunocompetent adult male infected with *Paecilomyces variotii* which is opportunistic soil saprophyte, uncommon to humans.

Keywords: *Fungal sinusitis, opportunistic infection, Paecilomyces variotii mycosis*

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~ Introduction



Rhinosinusitis is a group of disorders characterised by inflammation of the mucosa of the nose and paranasal sinuses. Chronic rhinosinusitis (CRS) is a group of disorders characterised by inflammation of the mucosa of the nose and paranasal sinuses of at least 12 consecutive weeks duration.^[1] This inflammation may be due to microbes (bacteria and fungi) or allergic and non-allergic causes.

Fungal rhinosinusitis (FRS) is increasing in prevalence; it causes significant physical symptoms, negatively affects the quality of life, and it can substantially impair daily functioning. It presents in five clinicopathological forms, each with distinct diagnostic criteria, treatment, and prognosis. The invasive forms are acute fulminant, chronic, and granulomatous invasive FRS (IFRS). The non-invasive forms are a fungal ball and allergic FRS and is associated with mucosal alterations ranging from inflammatory thickening to the gross nasal polyp formation.^[2] Although fungal infections of the paranasal sinuses are uncommon, 3–5% of cultured sinus samples are positive for fungi. *Aspergillus* species are the most common causative agents of fungal sinusitis followed by *Candida* and *Mucor*.^{[3],[4]}

CRS accounts for more than 90% of all cases of rhinosinusitis and *Aspergillus*

fumigates is the most common organism involved.^[1] We are reporting a rare case of chronic IFRS (CIFRS) caused by *Paecilomyces variotii*.

~ Case Report



A 45-year-old farmer came to ENT OPD of hospital with complaints of running nose for 1-year, pain and heaviness on right cheek, and nasal blockage for 8 months and since last 2 months bleeding from right nostril while sneezing. The patient was a farmer, non-vegetarian, smoker, and in a habit of chewing tobacco since last 20 years. None of his family members was having complained of this type even in their life. History was not suggestive of diabetes mellitus, steroid intake or any other medication for hypertension, and tuberculosis, etc.

On general examination, no cyanosis, clubbing, pallor, anaemia or lymphadenopathy was present. On local examination deviated nasal septum was found. Bleeding during sneezing was drop by drop and during the examination of oral cavity bulging was present on the right side of soft palate. On laboratory investigation: Hb - 11.5 g/dl, BT - 3.1/min CT - 4.1/min, blood sugar - 98 mg/dl, blood urea and serum creatinine were found normal. The patient was HBsAg, anti-HCV and HIV negative ECG were normal.

The patient was subjected for contrast enhanced computed tomography of paranasal sinuses which showed a polypoidal soft tissue mucosal thickening in all sinuses on the right side with near complete blockage of ostiomeatal units with internal hyperdensity. The minimum erosion of bone was there, and no intracranial extension was seen. There was an erosion of hard palate and maxillary bone. No evident mass was there in nasopharynx or parapharynx region. A diagnosis of acute on chronic sinusitis along with pansinusitis and with secondary fungal infection was made.

The patient was operated by functional endoscopic sinus surgery under general anaesthesia, and a mass of tissue was sent for KOH mount and fungus culture in the microbiology laboratory. On KOH mount hyaline, dichotomous hyphae were seen. The culture was done on Sabouraud Dextrose Agar (SDA). Two tubes each of SDA media with and without cycloheximide were inoculated and kept at 25°C and 37°C. Fungus is grown after 1-week on both plain and media with cycloheximide. The colony was flat, powdery, velvety, and yellowish in colour. On microscopy elongated tapering, phialides with long slender tube and chain of conidia seen [\[Figure 1\]](#) and [\[Figure 2\]](#). The fungus was identified as *Paecilomyces* species on the basis of gross and microscopic morphology.^[1] The fungus was sent to Mycology Department of PGI Chandigarh for identification of species where it was confirmed as *P. variotii*.



Figure 1: *Paecilomyces* growth on Sabouraud Dextrose Agar

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Figure 2: *Paecilomyces* on lactophenol cotton blue mount

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Tissue was also sent for histopathological examination (HPE). Yellowish white polypoidal mass from right middle meatus was subjected for HPE. Several serial sections were examined which showed infective granulomatous lesion of fungal origin and fungus was found PAS positive [Figure 3], [Figure 4], [Figure 5], [Figure 6].

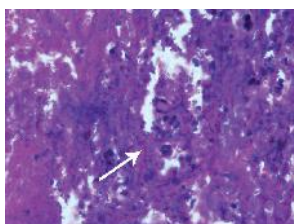


Figure 3: Fungal granuloma on histopathological examination (H and E stain)

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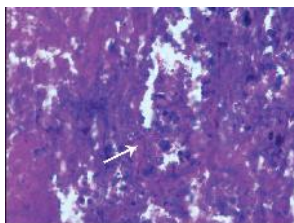


Figure 4: Fungal granuloma on histopathological examination (H and E stain)

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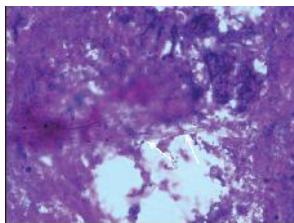


Figure 5: Fungal granuloma on histopathological examination (H and E stain)

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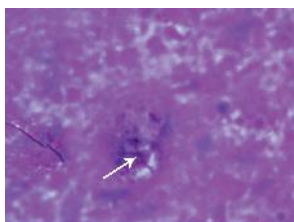


Figure 6: Fungal granuloma on histopathological examination (H and E stain)

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The patient was given antibiotic injection cefotaxime 1 g BD along with anti-inflammatory drugs and itraconazole 200 mg twice a day. The patient was discharged after 1-week of surgery and was advised to take itraconazole 200 mg twice a day for 3 months. An follow-up of the patient was done every

month by endoscopy. The patient recovered completely after 3 months of therapy.

~ Discussion



CFRS is an emerging entity occurring commonly in diabetics and patients on corticosteroid therapy, and is characterised by dense accumulation of hyphae, occasional presence of vascular invasion, sparse inflammatory reaction, involvement of local structures, and isolation of *Aspergillus* species. This is a slowly destructive process that most commonly affects the ethmoid and sphenoid sinuses but may involve any paranasal sinus.[\[4\],\[5\],\[6\]](#)

Paecilomyces is a cosmopolitan filamentous fungus that inhabits the soil, decaying plants, and food products. *Paecilomyces* is usually considered as a contaminant but may also cause infections in humans and animals as a superficial or invasive infection. The genus *Paecilomyces* contains several species. The most common are *Paecilomyces lilacinus* and *P. variotii*. The colour of the colony and certain microscopic features help in differentiation of the *Paecilomyces* species from each other.[\[1\]](#)

In the present case, the patient was immunocompetant, and no history of steroid intake or diabetes was present. Since the fungus *Paecilomyces* is soil saprophyte so probably the patient may have acquired the infection during agricultural work. The causative fungal spores might have been inhaled leading to the development of FRS. As shown in [\[Table 1\]](#) chronic fungal sinusitis by *Paecilomyces* spp., had been reported earlier also from India and abroad.[\[7\],\[8\],\[9\]](#) However, in all these cases, *Paecilomyces lilacinus* species was isolated whereas in our case *Paecilomyces variotii* species was isolated. Hence, we are reporting the first rare case of chronic fungal sinusitis by *P. variotii* from India (to our knowledge).

Table 1: *Paecilomyces lilacinus* infections of paranasal sinuses

Case	Sex	Age	Location	Pathogen	Treatment
1	Male	45	India	<i>Paecilomyces lilacinus</i>	Antifungal therapy
2	Male	45	India	<i>Paecilomyces lilacinus</i>	Antifungal therapy
3	Male	45	India	<i>Paecilomyces lilacinus</i>	Antifungal therapy
4	Male	45	India	<i>Paecilomyces lilacinus</i>	Antifungal therapy
5	Male	45	India	<i>Paecilomyces lilacinus</i>	Antifungal therapy

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Most forms of fungal sinusitis are found more commonly in males. The exact reason for this predisposition is not known. Young adult males who commonly go to the field in a hot, dry climate sustain frequent mucosal injuries of paranasal sinuses, and acquire the agent from the field.

During the recent decades, paranasal sinus mycosis has been recognised more frequently in different parts of the world mainly because of the following reasons: (1) Increased awareness among clinicians (2) improved diagnostic tools and (3) increased host susceptibility. Successful treatment of such indolent mycotic infections largely depends on the accurate identification of the pathogen and early, appropriate intervention by surgical debridement and sinus ventilation, supported with antifungal medications as per standardised regimen.[\[4\],\[7\]](#)

~ Conclusion



We report a rare case of CFRS with *P. variotii*. There is greater potential for low virulent fungi like this to cause infection in susceptible persons. A careful history along with radiological finding and microbiological diagnosis may be helpful in such type of infections. Demonstration of fungal hyphae with characteristic cellular response or fungal culture positivity in properly collected sinus content can make a fruitful diagnosis.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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Figures

[\[Figure 1\]](#), [\[Figure 2\]](#), [\[Figure 3\]](#), [\[Figure 4\]](#), [\[Figure 5\]](#), [\[Figure 6\]](#)

Tables

[\[Table 1\]](#)

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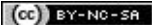
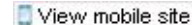
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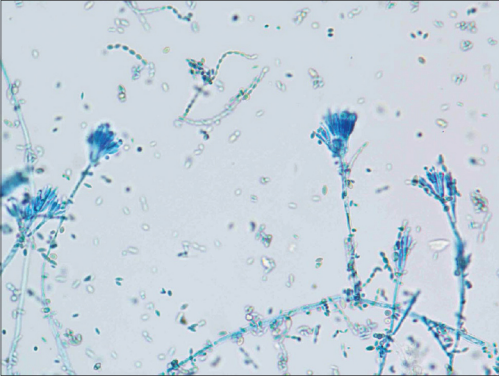
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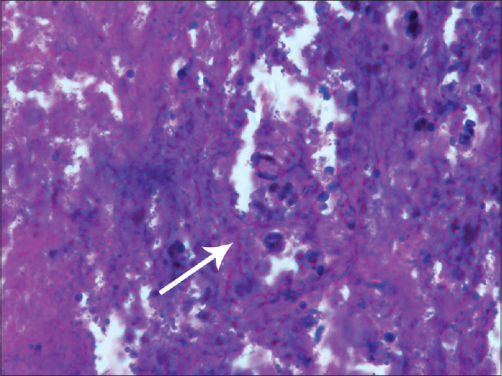
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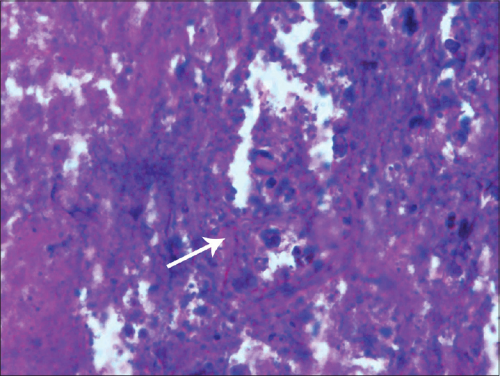
  

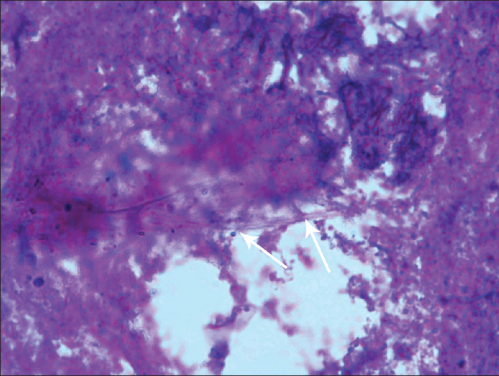
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Case	Year	Country	Age in years/gender	Predisposing factors	Treatment
1	1980	USA	47/female	Previous nasoantrostomy	Surgery
2	1982	USA	47/female	Previous nasoantrostomy	Surgery
3	1996	USA	22/female	Myeloid leukaemia	AMB, 5FC, and ITZ
4	1997	USA	57/female	Diabetes mellitus	Surgery, AMB, and ITZ
5	2000	India	8/male	Previous nasoantrostomy	Surgery and ITZ
6	2011	India	65/male	Previous healthy	Do
7	2012	India	40/male	Previous infection second molar	Do
5FC: 5-flucytosine, AMB: Amphotericin B, ITZ: Itraconazole					