



## **Rhinofacial Zygomycosis – A Rare and Interesting Case**

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**Abstract:** We report a rare case of a 53 year old male patient who presented to us with complaints of bilateral nasal obstruction, diffuse, painless swelling over the dorsum of the nose and denasal voice of four months duration. A diagnosis of Rhinofacial Zygomycosis was made based on the histopathological features suggestive of subcutaneous zygomycosis and fungal culture which grew colonies of *Conidiobolus coronatus* species. Patient was treated with oral Fluconazole for three months with regular follow up. His symptoms subsided completely and is still on follow up. Rhinofacial Zygomycosis is a rare entity. Early diagnosis and prompt treatment can achieve complete recovery.

**Key-words:** Subcutaneous Zygomycosis, *Conidiobolus coronatus*, Nasal obstruction, Facial swelling

## Introduction

Rhinotomophthoromycosis (conidiobolomycosis) is a rare, chronic, localized, subcutaneous zygomycosis, characterized by painless, woody swelling of the rhinofacial region [1]. This is a sporadic subcutaneous infection seen mostly in tropical areas of South East Asia, Africa and Central America. Very few cases have been reported from India [2]. We report one such rare case.

## Case Report:-

A 53 year old healthy male patient, presented to our out patient department with complaints of bilateral nasal obstruction of four months duration. It was associated with a diffuse, progressive, painless swelling over the dorsum of the nose. There were recurrent episodes of watery nasal discharge and sneezing. Patient had developed a denasal voice. There was no history of fever, epistaxis, restricted eye movements, diplopia, facial pain, ear ache, hearing loss or neck swelling.

Examination revealed a diffuse bulge over the dorsum of the nose with a nodular surface, more pronounced on the right side (Fig.1). Skin over the nose appeared normal and was pinchable. Anterior rhinoscopy revealed a single, pale, smooth surfaced, firm mass covered with watery discharge, arising from the right vestibule with thickening of the right nasal ala. The mass was completely obstructing the nasal cavity, nevertheless there was a cleavage between the mass and the nasal septum (Fig.2). The right nasolabial furrow was obliterated and the surrounding skin and the upper lip was indurated. Similar mass was present in the left nostril obscuring the lateral wall. Probe could be passed between the mass and the septum and the floor. Left side of the septum and floor of the nose was normal. The mass was sensitive to touch, non tender and did not bleed on touch. There was no paranasal sinus tenderness. Post nasal examination could not be done as the patient could not breathe through the nose. Direct nasal endoscopy also was not possible.

Examination of the oral cavity showed fullness in the right gingivobuccal sulcus opposite to the right central and lateral incisor teeth. Rest of the oral cavity, oropharynx, larynx and hypopharynx was normal. Bilateral submandibular and jugulodigastric lymph nodes were palpable, firm, non tender and mobile.



Fig. 1: Diffuse swelling of the external nose, more pronounced on the right side.



Fig. 2: Nodular lesions seen in bilateral nasal vestibule. Cleavage between the nodule and the septum can be seen on the right side.

All blood investigations were within normal limits except for ESR and eosinophil count which were slightly elevated (ESR – 20 mm/ 1<sup>st</sup>, Eosinophil count – 7 %). CT scan of the nose and paranasal sinuses showed soft tissue densities in the anterior part of both nasal cavities with no obvious calcification and mucosal hypertrophy of bilateral inferior turbinates.

Bilateral excision of the nasal mass was carried out and the specimen was sent for histopathological examination, fungal and bacterial culture. The nasal mass was found attached to the anterior part of the lateral wall, free from the inferior turbinate.

On review after two weeks, patient had persistent nasal obstruction on the right side with bilateral watery nasal discharge. The upper lip had painfully swollen along with erythema over the nasal dorsum and the upper lip.

The histopathology section showed mucosa lined by keratinized stratified squamous epithelium. The underlying dermis was lined by multiple granulomas, dense eosinophilic and neutrophilic infiltrate and fibrosis. At places, amidst the granulomas and within giant cells, thin walled fungal hyphae were seen surrounded by Splendore – Hoespli phenomenon (Fig.3). These features were suggestive of subcutaneous zygomycosis. The fungal culture grew colonies of *Conidiobolus coronatus* species which were identified by the presence of characteristic features like wide non septate hyphae and round conidia and prominent protruding papillae on one side (Fig. 4). The bacterial culture failed to grow any organism.

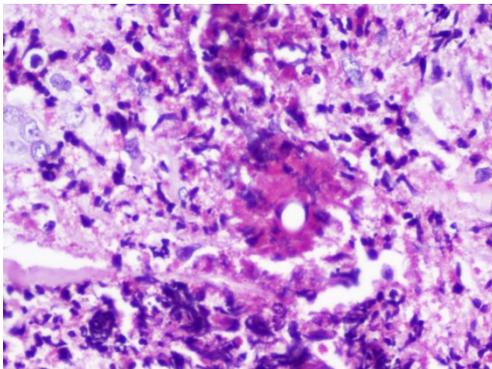


Fig. 3: H and E stained section (magnification 10x40) showing multiple granulomas, dense eosinophilic and neutrophilic infiltrate and fibrosis.

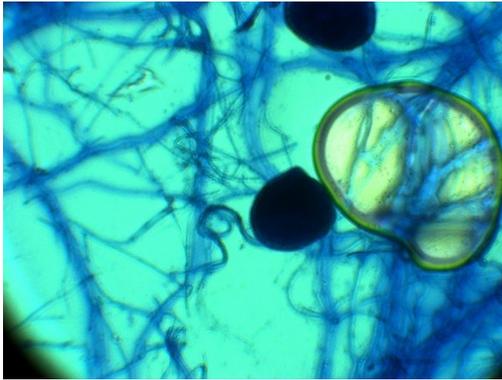


Fig. 4: Microscopic picture showing wide non-septate hyphae with round conidia and prominent protruding papillae on one side.

With these findings, a definitive diagnosis of Rhinofacial zygomycosis was made. Patient was started on Tab Fluconazole 200 mg once daily for three months with regular follow up. The nasal lesion had regressed and induration of the external skin as well as the vestibule had disappeared completely by three months. Patient is now totally symptom free and is still on follow up.

#### Discussion:

The name *Entomophthorales* has been derived from the Greek word “*Entomon*,” which means insect [1]. These are saprophytic fungi present in soil, decaying fruit and vegetable matter as well as in the gut of amphibians and reptiles. Basically these fungi are pathogens infecting insects [2]. The human pathogens in this order include *Basidiobolus* and *Conidiobolus* species.

The infection can be transmitted by insect bites or transepidermal inoculation with contaminated vegetable matter. Traumatic implantation may also play a role [3]. Entomophthoromycosis caused by *Basidiobolus ranarum* manifests clinically as a firm, painless, disciform nodule on the trunk or extremities. If left untreated, it may enlarge and spread locally, but systemic dissemination is extremely uncommon. Rhinofacial zygomycosis caused by *Conidiobolus coronatus* is a locally progressive infection of the nasal cavity, paranasal sinuses, and soft tissues of the face. Both forms of entomophthoromycosis have similar microscopic features and lead to formation of an eosinophilic granuloma within the subcutaneous tissues [4].

The first cases of infection caused by *Conidiobolus* species were described in early 1960s. *Conidiobolus coronatus* was first identified as an agent of nasal granulomatous disease in horse in Texas in 1961; while the first human infection was reported in Jamaica in 1965 by Bras et al [1]. Conidiobolomycosis is characterized by painless, woody swelling of rhinofacial region and causes severe facial disfigurement [5].

The disease affects adult males; more commonly those of agricultural background. Contrary to this, our patient worked in a post office and had no agricultural background. Though seen more often in healthy individuals, it may affect the immunocompetent as well [6]. The inferior turbinate is usually affected first, followed by submucosal spread through the natural ostia to the paranasal sinus and to the subcutaneous tissues of the face (forehead, periorbital region and upper lip) [7].

The lesions are smooth, rounded and firmly attached to the underlying tissue, but do not involve the bone. The overlying skin remains intact [8]. Patient may present with nasal stuffiness, sinus pain, nasal obstruction. If the facial swelling becomes severe, patient may be unable to open his eyes. Development of subcutaneous nodules in the eyebrows, upper lip & cheeks may give the patient the appearance of hippopotamus or tapir [9]. Though distant dissemination is rare, it can still occur and can be fatal also. Infection in pharynx and larynx causing dysphagia and stridor as well as chronic extensive lymphoedema has been reported. Walker et al reported a case of disseminated *Conidiobolus coronatus* with blood vessel invasion in a renal transplant patient [1].

Though the characteristic clinical appearance may clinch the diagnosis, mycological and histological examinations are required for confirmation. *C. coronatus* can be grown on standard mycology medium, including Sabouraud, potato dextrose and corn meal agar. Growth is rapid at 37° C. Waxy to powdery colonies form which appear white on the surface and are covered with short, aerial mycelia and conidiophores. Conidia are forcibly discharged and stick to the walls of the culture container, completely clouding the view into the culture with time. On microscopy, broad septate hyphae with unbranched short, erect conidiophores are seen. These conidiophores present single – celled large conidia with prominent papillae on the wall, giving rise to secondary conidia. This gives the original spore a corona appearance, hence the species name “coronatus”. A conidium may also produce hair like appendages called villae [1].

On histopathological examination, the specimen shows fibroblastic proliferation, chronic granulomatous inflammatory reaction and broad thin walled hyphae. Hyphal elements in the tissue surrounded by a sleeve of eosinophils – Splendore Hoespli phenomenon may be seen. Periodic Acid Schiff’s (PAS) stain is useful to demonstrate fungal hyphae [8].

The differential diagnosis include Rhinoscleroma, cellulitis, lymphoma, lymphoedema and sarcoma. Diagnosis of Rhinotomomycosis is usually established late, hence the difficulty in treating this condition. Oral itraconazole (200 – 400 mg/day), ketoconazole (200 – 400 mg/day), fluconazole (100 – 200 mg/day), oral potassium iodide and amphotericin B infusion and co-trimoxazole have been used in the treatment [9,13]. Among the various treatment options, itraconazole and fluconazole have been found to be both effective and relatively safe [10]. Treatment should be continued for at least one month after the lesions have cleared. Saturated potassium iodide solution (1gm/ml) has also been tried. It is easy to administer and cost effective. It is started in a dose of five drops/day (diluted in water, milk and fruit juice) and gradually increased upto a maximum of 40 – 50 drops/day, as tolerated [11]. Potassium iodide in combination therapy with oral azoles gives rapid results. Surgery may be required to remove accessible nodules and permit reconstructive and cosmetic surgeries [12], though relapses are often seen. Cryotherapy has also been tried. Relapse is common, even after successful treatment.

To conclude, rhinofacial zygomycosis is a rare form of fungal infection that presents as a subcutaneous swelling in the rhinofacial region in adult males. Though the disease is more common in people with an agricultural background, it may also occur otherwise as in our case, thereby misleading the clinician. Hence the need to know and consider such rare fungal diseases while arriving at a diagnosis. Demonstration of aseptate fungal hyphae on histopathology and confirmation by fungal culture help in making a definitive diagnosis. Early diagnosis and appropriate therapy with Potassium iodide and/or azoles can lead to complete cure and also prevent unnecessary surgical intervention and disfigurement due to advanced disease.

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