

A RARE CASE OF PAEDIATRIC ASPERGILLUS FUNGAL RHINO-SINUSITIS AND NASAL POLYP : A CASE REPORT

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ABSTRACT

INTRODUCTION

Allergic fungal sinusitis (AFRS) is a benign, non-invasive inflammatory fungal disease of the paranasal sinuses, commonly affecting adolescents and young adults. Patients typically present with nasal obstruction, congestion, rhinorrhea, anosmia, and headache. However, its occurrence in the paediatric population is relatively uncommon and may present with more aggressive clinical features.

METHODS

This study reports a case of a 12-year-old male diagnosed with AFRS at our institution. Diagnosis was established based on Bent and Kuhn diagnostic criteria. Clinical evaluation, including nasal examination, was performed to assess disease extent and associated features.

RESULTS

The patient presented with prolonged nasal discharge and was found to have nasal polyposis. There were no orbital or neurological complications at presentation. The diagnosis of AFRS was confirmed clinically. The patient was managed with a combination of medical and surgical intervention, emphasizing the need for aggressive management in paediatric cases.

DISCUSSION

Although AFRS is considered a benign and non-invasive condition, paediatric cases may exhibit a more aggressive course, ranging from simple nasal symptoms to potential intraorbital and intracranial complications. Early diagnosis and comprehensive management are essential to prevent disease progression and recurrence.

CONCLUSION

AFRS in children requires careful clinical evaluation, histopathological confirmation, and prompt management, including endoscopic sinus surgery followed by steroid therapy. Long-term follow-up is crucial to monitor and prevent recurrence.

KEYWORDS

Fungal sinusitis, Aspergillus, dematiaceous fungi, diagnosis, management, Rhinosinusitis, fungal allergy, chronic fungal rhinosinusitis with nasal polyps,

INTRODUCTION

Allergic fungal sinusitis (AFS) in young adults and adolescent develops as non-invasive, benign inflammatory fungal disease of the paranasal sinuses^{1,4,5,6,8,10} It is a type I hypersensitivity reaction to fungal antigens^{2,3,6,8,9} It's mostly occurring in areas with warm and humid

climate^{1,2,5}AFRS is more aggressive in children as compared to adults as they are in developing age and tend to develop facial dysmorphism in the form of proptosis.⁴The primary causative agent is *Aspergillus*^{1,3,5,7} which is a mold⁷ and others like dematiaceous fungi *alternaria*, *bipolaris*, *curvularia* and *drechslera*^{3,5,8}, causing different diseases like pulmonary aspergillosis, rhinosinusitis, central nervous system (CNS) aspergillosis, endocarditis, osteomyelitis, and endophthalmitis⁷ Generally, Rhino-sinusitis has four types: acute and chronic rhino-sinusitis with nasal polyps (CSRwNP), chronic rhinosinusitis without nasal polyps (CSRsNP), and allergic fungal rhinosinusitis (AFRS)¹ Further fungal sinusitis subdivided into: invasive form and non-invasive form^{1,4}. Patients present with complaints of nasal obstruction, congestion, purulent or clear rhinorrhoea, anosmia, and headache ^{1,2,3,5} There are associated symptoms like epiphora due to nasolacrimal gland obstruction.¹

On histological findings, allergic mucin has sparse numbers of fungal hyphae^{1,3,6,8} In this article, we will review a unique case of AFRS, in a paediatric male. Diagnosis is mainly combination of clinical, radiological, microbiological and pathological findings. In 1994 formulated, Bent and Kuhn diagnostic criteria is widely accepted which includes type I hypersensitivity, nasal polyposis, typical CT findings, and eosinophilic mucin containing fungus without invasion across the mucous membrane. Minor criteria like asthma, Charcot Leyden crystals, eosinophilia, unilateral disease, fungal culture and bony erosion were added^{5,6,8,10} Management is based on both surgical and medical therapy^{2,3,6}

CASE REPORT

A 12 years male patient presented to ENT OPD with complaints of nasal obstruction, purulent

rhinorrhoea and with left sided facial pain and swelling for 2 year.

His Blood investigations were found to be normal.

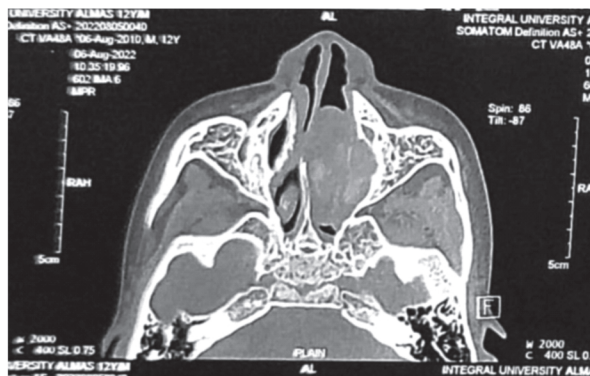
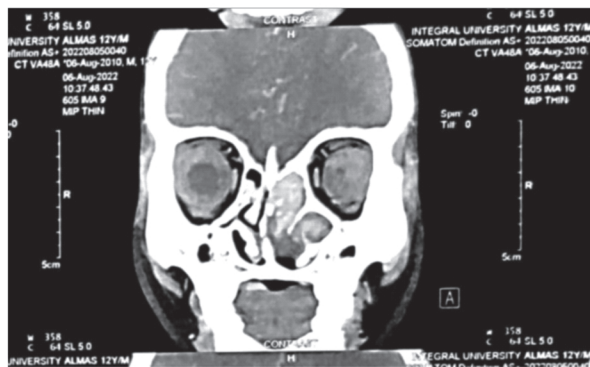
On Anterior Rhinoscopy and Diagnostic Nasal Endoscopy Examination of nose - was showing left nasal polyps with right DNS and thick fungal mucin filling in nasal cavity with grade 2 scoring according to Lund and Kennedy endoscopic grading system.

On KOH Mount for fungal element – plenty pus cells, few RBCs seen, few hyaline septate fungal hyphae with acute angle branching seen.

On Mycology - fungal culture of debris from paranasal sinuses shows growth of *aspergillus flavus* after one week.

Histopathology providing clear evidence of AFRS report reveals oedematous and loosely myxoid stroma covered by an ulcerated mucosa. There is dense lymphoplasmacytic infiltration along with many congested blood vessels. No evidence of granuloma / malignancy in the sections examined.

Computed Tomography Scan is the initial investigation of choice as it showing typical findings in AFRS showed non enhancing soft tissue lesion noted in left maxillary antrum extending into posterior choana as well as left frontal and ethmoid air cells showing central non enhancing hyper density osseous remodelling of involved sinus also seen with blocked left osteomeatal complex and frontoethmoidal recess. DNS was towards right side.



Coronal and axial computed tomography scan from the 12-year-old male patient with documented allergic fungal rhinosinusitis respectively.

Management is based on both surgical and medical therapy. Previously, whole mucosa was removed by radical surgery. Presently, surgery of choice is conservative technique called functional endoscopic sinus surgery (FESS) has surpassed it. The main aim of surgery is to remove the antigenic stimulus from the sinuses, relieve the obstruction by nasal polypectomy, removing mucin, debris, and fungal elements to improve ventilation, restore mucociliary function, and provide easy access for further debridement or local therapy. Its goal is to preserve the marginal mucosa by resection of the anatomical and inflammatory factors causing obstruction in the osteomeatal unit and treating the inflammatory disease of the sinuses, thereby avoiding radical surgery. For improving

precision, the minimally invasive sinus surgery (MIST) includes the use of a shaver.

Functional endoscopic sinus surgery (FESS) was done in this patient. The left nasal polyp was present in left maxillary antrum and fungal mucin was entirely removed from the nasal cavity. The anterior and posterior ethmoid sinuses were removed. Medial wall of maxillary antrum was also removed. Our patient was managed by a short course of systemic oral steroid, topical steroid sprays, and continuous nasal saline irrigations. This patient continued to have regular endoscopic follow up with no discharge, no polyp and no signs of recurrence after 5 months.

DISCUSSION

In literature many studies are available AFRS among adults. However it occurs in paediatric age group as well but to a less extent as only few data available about their nature, clinical course and recurrence.³ Both adults and paediatric population differ in their clinical presentation. Facial dysmorphism in form of proptosis in adolescent boy has been addressed in case reports^{11,12}, small series^{13,14} and seen in large reviews ^{15,16}. In children and adolescents nasal polyp is rarely seen unless it is associated with any underlying pathology.^{3,16} In previous studies, aggressive form AFRS seen in children as compared to adults.¹⁷ Most common fungi seen in large reviews were bipolaris and curvularia species.^{18,19} Mcclay et al. have reported unilateral nasal polyposis in 70% of their children with AFRS. Most common symptoms in AFRS patients are nasal obstruction, congestion, purulent or clear rhinorrhoea, anosmia and headache.²⁰ Lund and Mackay radiologic scores was higher in children as compared to adults. This shows in children disease is more aggressive and extensive.²¹ Akhtar MR²² reported 14% frequency whereas Irshad-ul-Haq M²³ reported

11% frequency of AFS among patients with nasal polyps. Internationally Telmesani LM24, in his study found AFS in 12.1% of nasal polyp patients.

CONCLUSION

If disease is diagnosed early and treated properly results are good. In the Indian subcontinent, *Aspergillus flavus* is most common agent, whereas *A. fumigatus* is seen in other areas. Paediatric cases are very aggressive, careful clinical evaluation and detailed histopathological examination is required. Hence it is required that disease is treated aggressively.

AUTHORS DECLARATIONS

Ethical Approval: Obtained

Consent to Participate: Obtained

Competing Interests: None

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Conflict of Interest: None

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