

Original Research Article

Rhinocerebral Mucormycosis: A Review of 32 Cases In Mosul

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Abstract

The aim of the present study is to evaluate the effectiveness of oral systemic antifungal (fluconazol) with nasal antifungal wash and aggressive surgical debridement in treatment of rhinocerebral mucormycosis. In a prospective hospital based study, we reviewed the management of 32 patients with rhinocerebral mucormycosis in Mosul general hospital and Al-Rahma Hospital (Mosul_Iraq), over a period of 7 years (Jan 1995 - Dec 2001). Diabetes mellitus was the main underlying cause in our patients and the main causative agent was mucor sp..The mortality rate was 56.2%.

In Conclusion management of patients with rhinocerebral mucormycosis by oral antifungal (fluconazol) with nasal antifungal wash by mixture of clotrimazol and 20% sodium bicarbonate solution and aggressive surgical debridement after the control of the underlying disease, seems to be effective.

الخلاصة

هدف الدراسة هو تقييم فعالية أحد مضادات الفطار البدني الذي يأخذ عن طريق الفم الفلاكونوزول مع غسول الأنف بمضاد الفطار ذو الاستخدام الموضعي (كلوترايمازول) مع النظر الجراحي لمنطقة الإصابة للمرضى المصابين بمرض الفطار المخي الأنفي. اعتمدت الدراسة المستقبلية أساساً على إعادة النظر في علاج 32 مصاباً بداء الفطار المخي الأنفي تمت معالجتهم للفترة من كانون الثاني 1995 ولغاية كانون الأول 2001 في مستشفى الموصل العام ومستشفى الرحمة-مدينة الموصل-العراق. تبين أن المصابين بداء الفطار المخي الأنفي هم بالغين ومعدل أعمارهم 49 سنة وكان داء السكر هو المرض الأساسي الذي تم تشخيصه كمسبب للمرض في هؤلاء المرضى وكان فطر صنف أميوكور هو المسبب الرئيسي للمرض وكان معدل الوفيات هو 56.2%. أوضحت النتائج فعالية معالجة المصابين بمرض الفطار المخي الأنفي بواسطة عقار الفلاكونوزول البدني مع غسول الأنف بالكلوترايمازول الذي هو مضاد موضعي للفطار مع النظر الجراحي للمنطقة المصابة وبعد السيطرة على المرض الأساسي عند المريض.

Introduction

At least four forms of fungal infection of the Sino nasal tract have been recognized. Two are noninvasive: allergic fungal rhinosinusitis and fungus ball (mycetoma). The other two are tissue-invasive: chronic invasive (indolent) fungal sinusitis and acute invasive (fulminant) fungal sinusitis [1].

One form of acute invasive sinusitis caused by fungi of the order Mucorales is known as mucormycosis [2]. Mucormycosis is a rapidly progressive opportunistic infection that usually develops in-patients who are metabolically or immunologic ally-compromised [3], however, recently several cases were reported in healthy individuals [4-7], if left untreated, it is rapidly fatal [1-8].

Mucormycosis classically involves the nasal mucosa with invasion of the sinuses, orbit, and brain [8-10]. The causative organisms are members of the family Mucoraceae, which belongs to the order Mucorales of the class Zygomycetes [2,11]. They are saprophytes commonly found in soil, decomposed vegetation, and in the healthy human respiratory and digestive tracts, and their distribution is worldwide [12].

Mucormycosis can manifest as one of six different clinical syndromes; it appears in rhinocerebral, pulmonary, gastrointestinal, central nervous system, and subcutaneous and disseminated forms [2, 11, 12]. Rhinocerebral mucormycosis (RCM) is the most common of these forms. The keys to management are early diagnosis, reversal of the underlying cause of immunocompromise, appropriate antifungal therapy and surgical debridement of the involved tissues [1, 13].

In this study we describe the treatment of RCM and illustrate the importance of maintaining a high index of suspicion in making an early diagnosis [14-15].

Materials and Methods

32 patients with rhinocerebral mucormycosis were included in this prospective hospital based study in Mosul general hospital and Al-Rahma Hospital (Mosul-Iraq), over a period of 7 years (Jan 1995 - Dec 2001). For every patient included in this study a detailed history and physical examination was done. All patients were presented with unilateral nasal obstruction, headache, rhinorrhea, and/or epistaxis along with black nasal or oral masses. Anesthesia precedes the development of the characteristic tissue necrosis. Progression can lead to orbital cellulitis, orbital apex

syndrome, cavernous sinus thrombosis, and eventually fatal involvement of the central nervous system. All patients were examined and biopsy was taken from the infected nasal cavity for tissue diagnosis with KOH preparation and culture to confirm the diagnosis. All the patients were subjected to MRI or CT scan to confirm the diagnosis and to plan for surgical debridement.

Surgical debridement were done under general anesthesia and all the patients were started on fluconazole tablet 150 mg as starting dose followed by 75mg daily for month and 75 mg each other day for the next 8 months.

The patients were advised for nasal wash using mixture of clotrimazol and 20% Nabicarbonate solution thrice daily. Post-operatively there were significant improvements in general condition of the patients. Regulars follow up for the next 18 months.

Results

As shown in table 1, 32 patients with rhinocerebral mucormycosis were adults (18 male, 14 female; mean age 49 years; range 34-64years). Diabetes mellitus was the main underlying cause in 19 patients (59 %), 7 patients (22 %) were uraemic, 4 patients (12.5 %) had leukemia and 2 patients (6.2 %) were apparently normal. Tissue diagnosis with KOH preparation and culture were positive in all the patients and more than 80% of the culturally proven human cases are caused by *Rhizopus*, *Rhizomucor*. Follow up showed complete recovery in 14 patients. 18 patients showed recurrence of the disease or no significant response to treatment was died during the follow up with mortality rate of 56.2%.

Table 1: The underlying disease in the 32 patients with rhinocerebral mucormycosis.

Clinical presentation	No. of patients	%
Diabetes mellitus	19	59.3
No underlying disease	2	6.2
Chronic Leukemia	4	12.5
Chronic renal failure	7	22
Total	32	100%

Discussion

Rhinocerebral mucormycosis is often a fatal condition and is characterized by an aggressive necrotizing infection spreading from the nose to Para nasal area, orbit and hence the central nervous system [16]. The infection begins less commonly in the palate or the pharynx [17].

Systemic or local acidosis may interfere with phagocyte mobilization and function [13]. These conditions allow the fungal organisms to proliferate and to damage more vessel [14]. Mucormycosis should be suspected in cases of active sinusitis, epistaxis, ecchymosis and dehydration in immunosuppressed patients [18,19]. Many modalities have been used for treatment of this disease (Surgical debridement and amphotericin B or liposomal amphotericin, and /or adjunctive hyperbaric oxygen therapy) [15-16,20,21].

In this study an early diagnosis through high index of suspicion, Control of the predisposing illness, fluconazol oral therapy and nasal wash with mixture of clotrimazol and 20% Nabicarbonat solution combined with aggressive surgical debridement to remove the dead tissue and improve the aeration have been the primary modes of treatment. The aeration done during surgical debridement was capable of reversing the condition. The idea that aeration is the most important factor of treating mucormycosis is noted, although some cases was fulminating, yet only surgical debridement and local antifungal treatment were used to control the disease.

The mortality rates of our patients were less than those quoted in the literature (56.2% versus 72%) [21], with our aggressive combined approach.

Ochi et al. [21] and Chtchotisaked et al. [22] found that despite the antifungal therapy with amphotericin B and debridement the mortality rates was 82% and 72.2% respectively.

Conclusion

Treatment of rhincerebral mucormycosis by oral systemic antifungal (fluconazol) with nasal wash by mixture of clotrimazol (local antifungal) and 20% Nabicarbonat solution and aggressive surgical debridement after the control of the underlying disease, seems to be effective in the treatment of this disease.

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