MYCETOMA: A LOCAL EXPERIENCE

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ABSTRACT

Objective: To report the existence of cases of mycetoma in our setup so that treatment can be specified.

Material and Methods: Clinically suspected mycetoma cases from January 1998 to December 2002 were analysed by various stains to differentiate between actinomycetes and eumycetoma.

Results: In this study out of 12 cases, 6 (50%) were caused by actinomycetes, 5 (41.7%) were caused by fungii and one case was chromomycosis. The mean age was 52.5 years with a slight male preponderance.

Conclusion: Mycetoma must be distinguished from chronic granulomatous disease and at the same time actinomycetes must be differentiated from eumycetoma as in all cases the treatment differs radically.

Key words: Mycetoma, Actinomycetes, Eumycetoma, Madura foot, Chronic granulomatous disease.

INTRODUCTION

Mycetoma is a chronic infectious disease which occurs rarely. In Pakistan only one recent case report was found in available research material[1]. Many research articles report mycetoma but a few cases over a number of years e.g. 20 cases in India, about 2000 in 30 years in Mexico, 130 cases in 27 years in Senegal[2,3,4] and usually case reports are seen[1,5].

Mycetoma is a chronic subcutaneous infection caused by Actinomycetes (Actinomycetoma or Actinomycosis) or fungi (Eumycetoma). The Actinomycetoma and Actinomycosis both being of bacterial origin are to be differentiated from each other, mainly because the treatment is different. Actinomycetoma is caused by Norcardia, Streptomyces species etc. and Actinomycosis is due to Actinomyces isreallii (treated by penicillin). Mycetoma is an infection which results in a granulomatous response in the

deep dermis and subcutaneous tissue, which can extend to the underlying bone. It is characterized by the formation of grains containing aggregates of the causative organisms that may be discharged into the skin surface through multiple sinuses. This disease was first described in the mid 1800 and initially named Madura Foot after the region of Madura in India where it was first identified[6,7]. It remains localized and is non contagious[8]. The etiological agents include bacteria or filamentous fungi. Mycetoma due to dermatophytes is uncommon[9]. Actinomycetes are true bacteria related to corynebacterium and mycobacteria but they form long branching filaments that resemble the hyphae of fungi. They are gram positive but some are also acid fast. Among them are medically important organisms Actinomyces isreallii, Nocardia asteroides and Streptomycetes species[4]. Actinomycetoma and Eumycetoma presents clinically in a similar way[7]. The organisms are usually present in the form of grains. The infecting agent is implanted into host tissue by a breach of skin produced by trauma with sharp objects such as thorns, stones or splinters etc.[10].

Differentiation between Actinomycetoma and Eumycetoma is important because of different response to treatment. Where as the bacterial element can be treated with antibiotics such as sulphadiazine, tetracyclines, sulphamethoxazole trimethroprim and penicillins (only in case of Actinomyces Isreallii), on the other hand fungal mycetoma i.e eumycetoma is usually treated with antifungal drugs and surgical intervention. Diagnosis is also important, as the differential diagnosis includes cellulitis, kaposi sarcoma, malignant melanoma and granulomatous disease where the treatment is entirely different[7,8,10,11]. The distribution of mycetoma is world wide and endemic in tropical and subtropical regions specially in arid and hot climatic zones with foci in southern India, Somalia, Senegal, Argentina etc.[10,12,13]. The usual site of lesion is the foot[10,14].

The present paper reports efforts to find mycetoma in our set up and direct the attention of the clinician to the correct treatment in these infrequently occurring cases.

MATERIAL AND METHODS

This study was conducted in the Pathology Department PGMI/LRH, Peshawar from January 1998 to December 2002. During this time 12 cases of clinically suspicious mycetoma were seen. These cases were systematically analyzed by stains, which were:

1. Haematoxylin-Eosin staining (H&E) of a biopsy sample which allows for detection of grains of mycetoma.
2. Periodic Acid –Schiff stain (PAS): to detect the hyphae of fungal agent and so confirm Eumycetoma.
3. Gram Stain: to detect fine, gram positive branching filaments within the actinomycetoma grain.

All these stains were applied along with positive control. They differentiate between Actinomycetes and Eumycetoma.

RESULTS

During the period from January 1998 to December 2002, twelve cases of mycetoma were analyzed. Out of these cases 6 (50%) were caused by actinomycetes, 5 (41.66%) cases were caused by fungi i.e. eumycetoma and one (8.33%) case was chromomycosis.

The mean age was 52.2 yrs. There were seven males and five females.

The treatment was various antibiotics e.g. penicillins, cephalosporins, sulphanomides and antifungals in case of 8 patients and antituberculous treatment for 4 patients. The site of infection in all twelve cases was the foot.

CASES OF MYCETOMA

Causative agent	No	%
Actinomycosis	06	50
Eumycetoma	05	41.67
Chromomycosis	01	8.33
Total	12	

TABLE - I

AGE DISTRIBUTION

Age	No of patients
Less than 25	01
25-45	02
46-65	09
Total	12

TABLE - 2

DISCUSSION

Mycetoma is a localized, chronic granulomatous infection involving cutaneous and subcutaneous tissue and eventually in some cases the bones. The disease is distributed world wide. Regardless of etiological agent involved the causal organism develops in the form of soft or hard compact mycelial masses, known as grain within the infected tissue. The classical etiology of mycetoma involves a relatively limited set of agents[11]. The diagnosis of mycetoma i.e, that it is a mycetoma and also what type of mycetoma has great significance, as to the out come of the disease. This is because the treatment depends upon the accurate identification of the etiological agent[6,7,10].

In this study between 1998 and 2002 there were 12 cases of mycetoma suspected clinically, after treatment failure with various drugs over a variable amount of time and diagnosed ultimately in the pathology department on the basis of various stains. In this study we found six cases of actinomycetes, five of fungi and one case of chromomycosis. They were being treated with anything but the appropriate antimicrobials and four of the patients were also on antibuberculous drugs.

The male: female ratio showed slight preponderance of male, though the numbers are few in our studies but this has been shown in studies in Bangladesh, India, Africa, South America and Africa. The age range also conforms to past research literature[2,3,4,14]. The slight change in age can be explained on the basis of the small numbers of cases we found retrospectively. The site of infection of all the patient is the foot as shown in studies[3,4,10,12,14] in more than 70% of cases.

The real purpose of this study was to bring to the attention of the clinician that there are cases of mycetoma and correct diagnosis even preliminary assessment on the basis of stains gives us a correct clue to the diagnosis and so changes the treatment and out come of disease[3,12,15].

The main point to stress is the treatment failure which is the actual cause of the patient finding its way to us.

In studies conducted world wide the causative agents of mycetoma are mainly bacteria and 30% or less are due to fungi. Even in studies of limited numbers like ours the bacterial element is more than fungal[2,3,4,13,15] in countries with similar climate like ours e.g. India, S.America, Dakar Africa etc.

If we keep in mind a few things, that mycetoma are common in tropical areas and in countries with warm weather e.g. India, Africa, South Asia[10,12,13]. The time between inoculation and onset of symptoms is usually long, very often weeks to years[11], the differential diagnosis is primarily granulomatous disease foremost among them tuberculous and chronic bacterial infections[7,8,10] which our clinician suspects first of all.

The treatment is specific antimicrobials for actinomycetes and antifungals for

eumycetes. In case of eumycetes surgical intervention is necessary even upto the point of amputation in some cases[8,15,16].

CONCLUSION

We have demonstrated the presence of mycetoma in our hospital set up. Mycetoma is a disease fairly common in tropical and warm weather countries like ours. This disease responds well to medical treatment with antibiotics including streptomycins, penicillins etc.

Mycetoma must be distinguished from chronic granulomatous disease etc. and also actinomycetes must be differentiated from eumycetoma as the treatment differs radically. We can give the diagnosis on basis of stains, but we feel an effort to culture would add to our knowledge. The list of possible agents of mycetoma needs to be expanded. In addition the concept of endemic occurrence of etiological agents needs to be established.

REFERENCES

01. Hussain Q, Majeed S, Aslam R, Qureshi G. Mycetoma (Madura foot). Pak. Armed Forces Journal, 2001; 51(1): 66.

02. Talwar P, Sehgal SC. Mycetomas in North India. Sabouraudia 1979; 17(3):287.

03. Dieng MT, Sy MH, Diop BM, Ndiaye B, Niang SO. Mycetoma 130 cases. Ann Dermatol Venreol 2003; 130(1 Pt 1): 16.

04. Lopez Martnez R, Mendez Tovar LJ, Lavalle P, Saul A, et al. Epidemiology of mycetoma in Mexico: study of 2105 cases. Gac Med Mex 1992; 128(4):477.

05. Akhtar MA, Latief PA. Actinomycetoma pedis. Postgrade Med J 1999; 75 (889): 671.

06. Balows A. 35-Aerobic Pathogenic Actinomycetales. Manual of clinical microbiology 5th Ed Balows A, William J, Hausler JR, Kenneth . L. Herrmann, Henry D. Isenberg, h. Jean Shadomy Washington DC 1991; 340.

07. Brooks GF, Butel JS, Morse SA. 45 Medical, mycetoma. Jawetz, Melnilk, Adelberg's Medical Microbiology. 22nd Ed Foltin J, Ransom J, Lebowite H, Holton B. Washington DC, MC gravenill companies 2001; 541

08. McGinnis MR. Mycetoma. Dermatol Clin 1996; 14(1): 97.

09. Vezon G, Desbois N, Boisseau Garsaud, AM, Helenon R, et al. Mycetoma Microsporum Canis mycetoma of Scalp. Ann Dermatol Venereol, 2000; 127(8-9): 729.

10. Fahal AH. Mycetoma. Review article Mycetoma updates Mycetoma Research centre University of Khartoum 2003.

11. Faesal, Adraine M, Tsehu P, et al. A chronic draining plaque on foot. Arch of Int Med. 2002; 138:1371.

12. Develoux M, Ndiaye B, Dieng MT. Mycetomas in Africa. Sante 1995; 5(4):211.

13. Ahmad A, Adelmam D, Fahal AH, Verbrugh H A, Vanbelkam A, Hoog S. Environmental Occurrence of Medurella Mycetomatis the Major agent of Human Eumycetoma in Sudan. Journal of clinical Microbiology 2002; 40(3): 1031.

14 Hazra B, Bandyopadhyay S, Saha SK, Banerjee DP, Dutta G. A study of mycetoma in eastern India, J Commun Dis 1998; 30(1):7.

15. Welsh O, Salinas MC, Rodriguez MA. Treatment of eumycetoma and actinomycetoma. Curr Top Med Mycol 1995; 6:47.

16 Fahal AH, Hassan MA. Mycetoma. Br J Surg 1992; 79(11):1138.

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