

CLINICAL STUDY OF MYCETOMA

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Summary

This paper analyses 110 cases of mycetoma and reveals that :

It is endemic in the surroundings of Bikaner.

Commonest age group of occurrence is between 21-24 years.

Males outnumber the females in the ratio of 6:1

Mostly affects the manual workers.

Extrapaedal involvement is not uncommon.

15.3% of cases did not have either sinuses or granules.

Surgery remains the treatment of choice and incomplete removal may lead to recurrence.

Mycetoma was first recognised as a clinical entity in Madura (South India), but is now known to be prevalent in other countries like Africa, Canada, U.S.A. and Sudan. In spite of it being recognized first and having a fairly high incidence in India, reported studies on it are not many (Trivedi and Mukherjee¹, Ghosh et al², Andleigh³, Kakoty and Dey⁴, Panja and Choudhari⁵, Banerjee et al⁶, Murti and Padmavathy⁷, Maya Sanyal and Basu⁸, Klokke⁹, Khandhari et al¹⁰, Verghese and Klokke¹¹, Klokke et al¹², Chouhan and Agarwal¹³, Mankodi and Kanvinde¹⁴, and Desai et al¹⁵). It was therefore proposed to undertake a clinical study of the cases of mycetoma in this part of country.

Material and Methods

The subjects of present study comprises of 110 patients of Mycetoma treated at Associated Group of Hospitals, S. P. Medical College, Bikaner from January, 1963 to January, 1971. They were interrogated for the past history of thorn prick, local traumatic ulcer etc., and examined physically for extent of lesion, involvement of bone, type of granules and associated discharge. The diagnosis was also confirmed by histopathological examination of biopsy material from suitable site.

OBSERVATIONS

Geographical Distribution

In the present study most of the cases were from Rajasthan and a few from neighbouring States (Fig. 1). Maximum cases were seen from Bikaner district. This does not reflect the true incidence of occurrence of mycetoma in Rajasthan.

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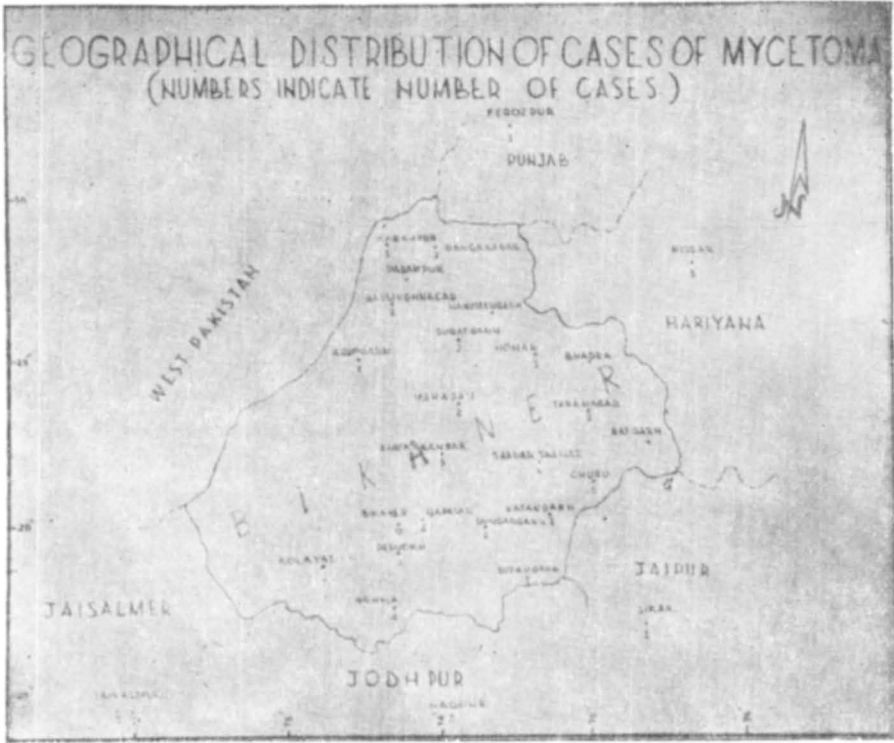


Fig. 1

Geographical distribution of cases of Mycetoma
(36 cases from adjoining States have not been shown)

Age Incidence

The incidence of age of mycetoma as observed in the present study is shown in Fig. 2. Sixty-nine percent of cases were between 21-40 years. The youngest patient was six years old and the oldest sixty years.

Sex and Race Incidence

Males were observed to be suffering more often than females, the ratio being 6 : 1 approx. Hindus were observed to be suffering more frequently than Muslims. Out of 100 cases, 100 were Hindus (Fig. 3).

Occupational Incidence

Majority of the patients (56.4%) were farmers by occupation, some were

labourers (16.4%) or housewives (14.5%) and others were students, clerks, shopkeepers etc. (Table I). Out of 16 housewives, 15 were wives of farmers thus bringing the total incidence of disease amongst farmers to 70%.

Source of Infection

In 19 cases (17.3%), a history of thorn prick was available and in other 6 cases (5.5%), there was history of trauma. No such history was available in the remaining 83 cases (Table II). In two cases there was history of Guinea Worm infestation and calcified Guinea Worms were seen in skiagrams (Fig. 4 & 5).

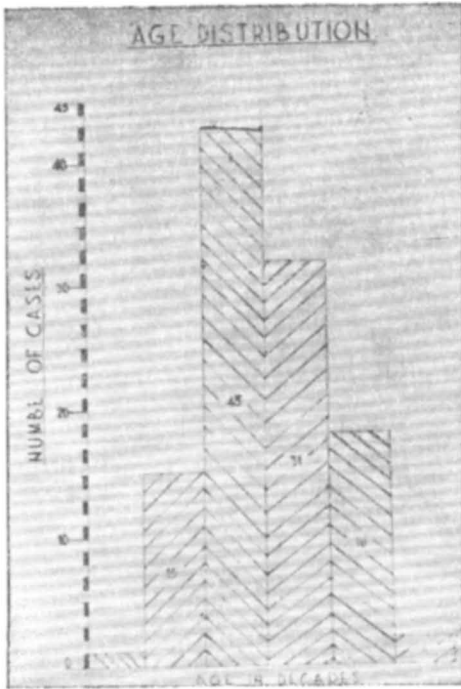


Fig. 2
Age distribution of 110 cases of mycetoma

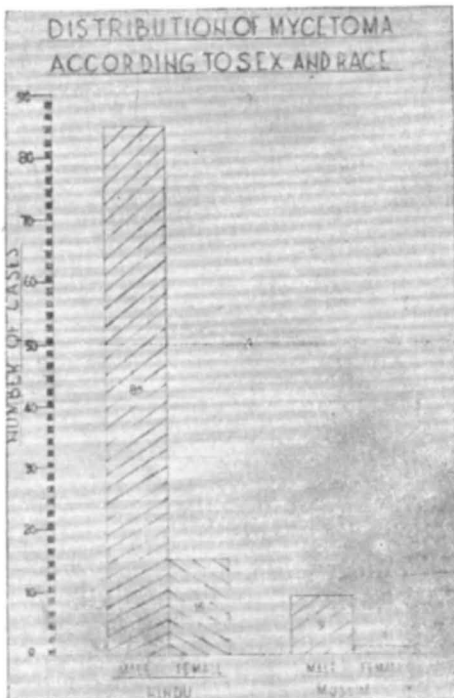


Fig. 3
Race & Sex of 110 cases of mycetoma

TABLE 1
(Showing occupational incidence of mycetoma)

S. No.	Occupation	No. of cases	Percentage
1	Farmers	62	56.4
2	Labourers	18	16.4
3	Housewives	16	14.5
4	Students	2	1.8
5	Clerk	1	0.9
6	Soldier	1	0.9
7	Prisoner	1	0.9
8	Barber	1	0.9
9	Shopkeeper	1	0.9
10	Unknown	7	6.4
Total		110	100

TABLE 2
(Showing mode of onset in mycetoma)

S. No.	History	No. of cases	Percentage
1	History of Prick	19	17.3
2	History of Trauma	6	5.4
3	Unaware of Prick or trauma	83	75.4
4	Association with Guinea worm	2	1.9
Total		110	100

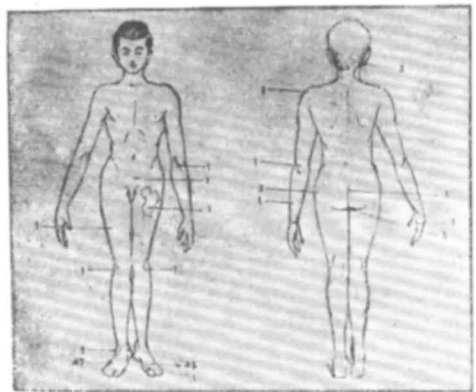


Fig. 4
Various sites of involvement in 110 cases of mycetoma

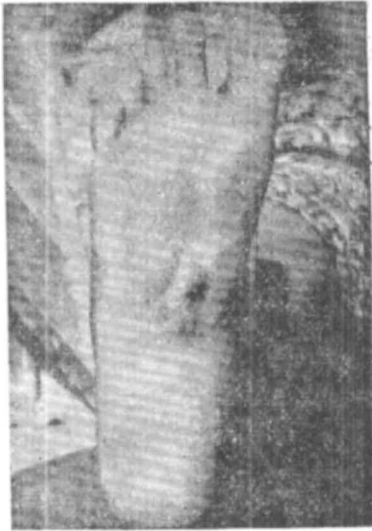


Fig. 5

Early lesion of mycetoma foot



Fig. 6

Mycetoma axillary region

Sites of Predilection

The site distribution of the lesions is shown in Fig. 6. The commonest site observed was the foot in 90 cases (82%), however, a few cases were observed involving the various uncommon sites, from head region to toes, viz. mastoid (2), Axilla (1), Shoulder (1), elbow (2), forearm (1), palm (1), suprapubic (1), sacral region (1), gluteal region (2), thigh (1), femur (1), knee (2), ankle (1), metatarsal (1) and perineum (3). In five cases, the bone involvement existed without involvement of the skin.

Clinical Features

The main complaints of the patients were appearance of swelling which ultimately burst open with serosanguineous discharge containing granules (79.1%).

The granules were yellowish in 6 cases and were white and brown in one case each. In majority of the cases (58%), the swelling was painless. Six cases complained of heaviness in foot. History of recurrent fever was present

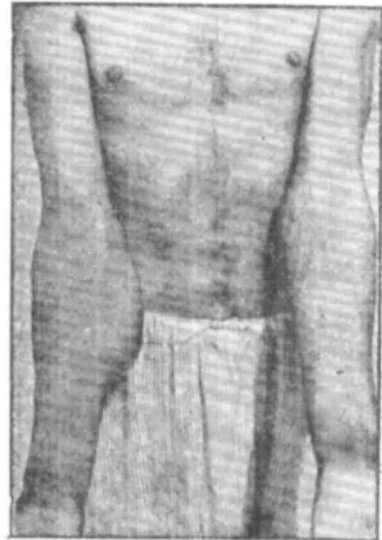


Fig. 7

Mycetoma forearm without sinuses

in 3 cases only (Table III). Nineteen cases had well defined tumour lesions in contrast to conventional lesions with surrounding induration mentioned in standard text books.

TABLE 3
(showing presenting symptoms in 110 cases of mycetoma)

S. No.	Symptomatology	No. of cases	Percentage
1.	Sinuses discharging granules	87	78.3
	Black	79	71.1
	Yellowish	6	5.4
	White	1	0.9
	Brownish	1	0.9
2.	Discharge from sinus :		
	Serosanguineous	69	62.1
	Pus	8	7.2
	Serous	4	3.6
	Blood tinged	6	5.4
3.	Painless swelling	64	58.0
4.	Painful swelling	46	42.0
5.	Fever off and on	3	2.7
6.	Heaviness of foot	6	5.4
7.	Discharge from ear	2	1.8
8.	Tumours mass	19	18.1
9.	Diffuse lesion	89	80.1
	Total	490	100

The duration of symptoms varied from one month to 16 years (Table IV). The duration was less than 4 years in 76 cases (69.1%), the longest period being 16 years in one case.

TABLE 4
(Showing duration of symptoms)

S. No.	Duration of symptoms	No of cases	Percentage
1.	1 to 3 months	14	12.7
2.	4 to 6 months	10	9.1
3.	7 months to 1 year	18	16.4
4.	2 Years	14	12.7
5.	3 Years	12	10.9
6.	4 Years	8	7.3
7.	5 to 10 years	11	10.0
8.	11 to 16 years	5	4.5
9.	Unknown	18	16.4
	Total	110	100

Radiological Examination

Radiological examination revealed 36 cases (32.7%) had involvement of bone, out of which 5 cases did not have

any soft tissue involvement (Table V). However these intraosseous lesions could only be diagnosed during operation or at histopathological examination. Two of these intra-osseous lesions involved mastoid, and the remaining three affected the ankle joint, metatarsal and femur respectively.

TABLE 5
Showing involvement of various anatomical tissues

S. No.	Tissues involved	No. of cases	Percentage
1.	Soft tissue mycetoma	74	67.2
2.	Primary intraosseous	5	4.5
3.	Soft tissue mycetoma involving bone	31	28.1
	Total	110	100

The radiological features noted were as follows :—

- (i) destructive and productive changes in the bones.
- (ii) Patchy decalcification of the bones with or without periosteal reaction.
- (iii) Multiple or single small or large, cavities with hypertrophic reaction and sclerosis.
- (iv) Increase of soft tissue space and thinning of the adjacent bones, due to soft tissue invasion.

Provisional Diagnosis

Most of the cases (84.7%) had typical clinical picture of granulomatous mass with multiple sinuses discharging granules. In the remaining cases bizarre diagnosis were made and correct diagnosis was only possible at operation or after biopsy report. Well defined tumour mass was seen in 19 cases, which posed diagnostic problem (Table VI).

TABLE 6

Showing various provisional diagnosis in 110 cases

S. No.	Provisional diagnosis	No. of cases	Percentage
1.	Mycetoma	93	84.7
2.	Foreign Body granuloma	3	2.7
3.	Sebaceous cyst	1	0.9
4.	Dermoid cyst	1	0.9
5.	Solitary bone cyst	1	0.9
6.	Chronic Osteomyelitis	1	0.9
7.	Tuberculosis of Knee and ankle	3	2.7
8.	Tubercular Lymphadenitis	1	0.9
9.	Abscess Heel	1	0.9
10.	Fibroma forearm	1	0.9
11.	Filonidal sinus	1	0.9
12.	Implantation dermoid	1	0.9
13.	Chronic Suppurative Otitis Media	2	1.8

Treatment

Table VII details the nature of various surgical procedures undertaken in the present study. Local excision of the lesions was commonest procedure. Amputations were performed in cases having bone involvement. In some cases, skin grafting following excision was done.

TABLE 7

Showing various types of surgical treatment in 110 cases

S. No.	Type of Surgical treatment	No. of cases
1.	Forequarter amputation	1
2.	Amputation at upper third of femur	1
3.	Amputation at lower third of femur	1
4.	Below knee amputation	17
5.	Symes amputation	6
6.	Modified Boyd's amputation	2
7.	Excision of metatarsal and toes	4
8.	Excision of toes	6
9.	Local excision with or without skin grafting	57
10.	Scrapping of sinuses	4
11.	Perianal tracks excised	3
12.	Partial synovectomy	1
13.	Excision of pilonidal sinus	1
14.	Mastoidectomy	2
15.	Treatment not mentioned	4

Recurrence

Recurrence was noted in 13 cases, out of which 8 were operated at other places. In our 5 cases, recurrence was observed in those cases who were operated without the application of tourniquet.

Discussion

The observation of maximum cases of mycetoma from Bikaner district does not reflect the true incidence of disease in this part of the country or Rajasthan because a good number of cases from other districts must have been treated by the respective district hospitals. It does indicate of the occurrence of this condition in this and neighbouring parts of state.

The age and sex incidence in the present study corresponds to the series of other workers (Bocarro cited by Conant et al¹⁶). Majority of the patients (69%) were between 20 to 40 years. Occurrence of mycetoma beyond this age indicates that age is no bar for this infection. Our youngest patient was 6 years old. The high incidence of disease in males (Male: Female, 6:1) was also observed by Bocarro and Williams, cited by Conant et al¹⁶, who reported an incidence of 9.2:1. This difference in sex ratio may be because majority of patients in present studies were villagers, where women also work in the fields. The prevalence of infection in males is probably because their greater outdoor activities. Vanbreuseghem¹⁷, also noted similar preponderance in males in Congolese community where women also work in fields. Possibly the females have some protective mechanism against the entry and/or proliferation of fungus in their body.

The high incidence of disease in farmers may be due to increased risk of exposure of bare feet to manured soil. The greater involvement of feet

in the body again favours the hypothesis related to the frequencies with which this part of the body comes in contact with the soil. Extra pedal mycetoma has also been reported by other workers (Aldridge & Kirk¹⁸, Abott¹⁹, Moghraby²⁰, Lynch²¹, and Murray²²). The incidence of extra pedal infection is little lower in the present series than those of other workers (Table VIII). The prevalence of infection in Hindus, both males and females appears to be due to occupational difference. Only a few Muslims in this part of country work in fields and most of them are living in cities.

TABLE 8

Showing the comparative incidence of pedal and extrapedal mycetoma with other workers

S. No.	Various Authors	Pedal percentage	Extra Pedal percentage
1.	Abbott, P.H. (1956)	78	22
2.	Moghraby I.M. (1960)	70-80	20-30
3.	Lynch, J.B. (1964) Maduromycosis Actinomycotic mycetoma	73 62	27 38
4.	Murray, J.G. (1968)	76.3	23.7
5.	Present series (1970)	82	18

The voluntary disclosure of the history of thorn prick in 17% of cases at first instance appears to be against the presumption that organism is inoculated through the agency of thorn, but unawareness of thorn prick in the villagers cannot be ruled out. Thorn prick or minor trauma is usually insignificant and ignored by villagers. The association of fungus with Guinea worms also makes one to think of possible mode of entrance of fungus. Fungus infection of obscure etiology also cannot be ruled out, such as in cases of bone involvement without soft tissue involvement.

Mycetoma has long been known to be of exogenous origin and is therefore thought to be the reason for its occurrence in the exposed parts of the body as evident from most of the studies.

But involvement of internal organs and or tissues especially bones without any covering soft tissue lesions does suggest endogenous origin. Spread to regional lymph nodes has already been described (Balfour,²³; Abott,¹⁹ and Lynch,²¹). Haematogenous spread have so far not been observed but presence of pure intraosseous lesions does suggest it.

Mycetoma may not have the classical triad of features i.e., the granulomatous swelling, multiple sinuses, discharging granules and thus may present diagnostic problem as revealed by atypical picture of 14.6% of cases in the present study (Table VI). Some of these mistakes could be due to unawareness on the part of the clinician to know about the involvement of unusual sites and unusual presentations. Clinicians working in the endemic areas should also keep mycetoma in differential diagnosis of soft tissue tumours. In the present series we recorded 19 cases of well defined tumour mass proved to be mycetoma.

The delay in availing of the medical aid by the patients is because of painless slow progress of the disease, non-hindrance in his routine work, fear of amputation of the diseased part and involvement of private part in some cases may be the reasons.

Surgery has been the method of choice in treatment of mycetoma in present series and also recommended by other workers, especially in mycetoma caused by higher fungi. Chemotherapeutic treatment by the sulpha group gives excellent results with nocardial mycetoma (Tambaku and Sengupta²⁴). The existing socio-economic status of the rural people of this part of the country did not allow radical surgery, because they are manual workers and too poor to afford prosthesis. A limited radical surgery does lead to recurrence but its incidence is minimised by operating after application of tourniquet at accessible sites.

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