

A Study of Prevalence of Tinea Pedis in the Staff of Hamadan Sina Hospital, Iran, 1999

*Zamanian A. MD, *Nazeri H. MS

*Department of Dermatology, Hamadan University of Medical Sciences, Hamadan, Iran

Abstract

Background: Tinea pedis is probably the commonest form of dermatophytoses in developed countries and is one of the public health problems. The wearing of shoes and resultant maceration of toe cleft predisposes to this condition. The aim of this survey was study of conditions and prevalence of tinea pedis in health staves of Hamadan, Sina hospital.

Methods: A quality descriptive cross sectional study was carried out on 156 individuals whose diseases were diagnosed based on clinical and laboratory assays in 1999.

Results: The prevalence of tinea pedis was 4.48% (7 cases) both microscopically and by culture. *T. mentagrophytes* was the main agent of the disease.

Conclusions: The prevalence of tinea pedis in this special occupational unit was almost parallels the prevalence of Hamedan community (4.5 vs 5%). These infections were found only in men.

Keywords: dermatophytoses, tinea pedis, Hamadan, Iran.

Introduction

Dermatophytoses are of the world-wide distribution and tinea pedis is the commonest form of dermatophytes infection in some countries and probably throughout the developed countries (1-3). The commonest form of the infection is an intertriginous dermatitis characterized by peeling, maceration and fissuring affecting the lateral toe clefts (4). Itching is a common complaint in warm weather. The chance of infection where washing facilities are shared or in pools is likely to increase. Overall prevalence within community including all age and occupational groups has not been reliably demonstrated in Iran and extensive epidemiological surveys of dermatophyte species may be useful to detect the sources of infection (5, 6). For this purpose,

we initiated a survey to assess the prevalence and species of tinea pedis in staff of Hamedan Sina hospital according to age, sex, occupation and environmental factors.

Materials and Methods

A total of 156 people (physicians, nurses, paraclinic personnel) of the hospital were examined clinically during April to August 1999. Among these people, 40 cases were suspected having dermatophytoses, so all clinical specimens were cultured in sabouraud glucose agar including cyclohexamide (50 mg per 100 ml) and chloramphenicol (5 mg per 100 ml) at both 25°C and 37°C. As growth became evident, mycelium was transferred to a slide culture preparation. For the slide cultures two media were used: cornmeal agar with 1% glucose for colonies suspected of being *T. rubrum* and sabouraud agar without antibiot-

Correspondence: Dr Zamanian, P.O.BOX: 379 Hamadan, Iran, E-mail: abbaszamanian@yahoo.com

ics for visualization of conidial arrangement and mycelial appendages (7). When conidia were evident in the slide cultures, lactophenol cotton blue-mounting fluid was used for accurate observation. To distinguish between some strains of *T. mentagrophytes* and *T. rubrum* the formation of hair perforation organs and ureas reactions were determined.

Results

Table 1 shows the personal details and habits and tables 2 and 3 show the positivity and signs of infections in the staff. Cultures were available from 40 cases that were suspected having dermatophytes in microscopic examination. Among them 7(4.48%) were positive for dermatophytes (Table 2) and 9(5.76%) for saprophytes. The commonest cause of *T. pedis* in our study was *T. menta va interdigitalis* (Table 3). Different isolates obtained from patients are presented in table 4.

Table 1: Personal details and habits in the staff of sina Hospital, Hamadan, Iran

Total number examined	156	
Average age (Years)	37.6	
Age range (Years)	21-65	
Average time of footwear (h)	8 h	
Type of footwear on regular basis		
Leather shoes	70	44.9%
Sandals	86	55.1%
Type of stocks worn		
Cotton	16	10.3%
Synthetic	140	89.7%
Wool	0	0

Table 2: Positive culture from toe cleft in our patients in the staff of sina Hospital, Hamadan, Iran

	No	Positive	Negative
Male	93	7	86
Female	63	0	63
Total	156	7	149
Percent	100	4.5	95.5

Table 3: Signs of tinea pedis in our patients in the staff of sina Hospital, Hamadan, Iran

	Maceration	Scaling	Pruritus	Without Sign
Male	2	2	0	3
Female	0	0	0	0
Total	2	2	0	3
Percent	28.5	28.5	0	42.8

Table 4: Species of dermatophytes isolated from patients in the staff of Sina Hospital, Hamadan, Iran

	<i>T. menta.</i>	<i>T. rub.</i>	<i>E. flu</i>
Male	6	0	1
Female	0	0	0
Total	6	0	1

Discussion

Tinea pedis is probably the commonest form of dermatophytoses in England and the United State as well as throughout the developed countries (1, 2, 3). In the USA it is believed that 70% of populations are infected (8). The present study and a similar one in Iran (5) showed that the prevalence of tinea pedis is low in our community (Table 2). Of 156 personnel who work in Sina hospital only 7(4.5%) cases had positive cultures for dermatophitic infection in plantar and toe cleft. So the rate is lower in comparison with countries mentioned above. This study also showed that 71.4% of personnel had footwear worn at least for 6 hours per day but the average time of it was 8 hours per day (Table 1). In some studies the prevalence of tinea pedis in both sexes was the same (3). In our study all the patients were male. These differences may partly be explained by different exposure to causal fungi (1, 10) and habits (9). Although it is said that maceration in toe cleft is the commonest clinical sign (4), according to our study (Table 3), scaling with 42.8% was the most common manifestation, and 28.6% of patients had no

sign of dermatophytosis. By far *T.rubrum* was shown to be the most common cause of tinea pedis (3, 4, 6) but our cultures and microscopic examination showed that *T.mentagrophytes* variation of interdigitalis was the commonest cause of infection (Table 4). We did not find any *T.rubrum* in our cases. It is necessary to remember that surveys on the different communities like institutes, coal mines and swimming pools (11, 12) indicated that the relative frequency of infection with *T.menta va interdigital* compared with those of *T.rubrum* was much higher than what we saw in clinics. *T.menta* would outnumber of *T.rubrum* by as much as eight to one. Albeit tinea pedis is one of the public health problem but we can decrease the size incidence of it by health education of people.

References

1. Rippon JW. *Medical mycology: the pathogenic actinomycetes*, 3rd ed, pp: 169-275. Philadelphia, WB sounders; 1988.
2. Gana S, pearth MJ, Raubitsche KF. Tinea pedis in school children: An epidemiological study. *Dermatologica*; 1963. **126**:253-258,
3. Burns DA, Burton JL, Breathnach SM. Champion RH. *Textbook of dermatology* 6th edition, pp:1308-1310 Blackwell science, 1998.
4. Talwar P, Hunjan BS, Kaurs Kumar B, Chitkara NL. Study of human dermatomycoses. *Indian J Med Res*; 1979. **70**:187-194.
5. Omidynia E, Sadjjadi M, Zamanian A, Farchian M, Rashidpouraei R. A study of dermatophytes in Hamadan, the government-ship of west Iran. *Mycopathologia*, **133**:9-13, 1996.
6. Schochohe T. A survey of dermatomycoses in the patients of the mycological department, School of Public Health, Tehran university from 1981-1985. PhD thesis university of Tehran, Tehran, Iran, 1990, pp.34-57.
7. Evans EGV and Richardson MD. *Medical Mycology. A practical approach*, Oxford University Press. Oxford 1989, pp. 34-89.
8. Demis DJ. *Clinical Dermatology*, Twenty-fifth revision, vol-3, unit 17-9, Lippincott-Raven 1998.
9. Noufal Raboobee. MBChB (Natal) et al. Tinea pedis ET. ungiun in the Muslim community of Duban, South Africa. *Int j of Dermatology*; **37**:759-65, 1998.
10. Leyden JJ, Kligman AM. International athlete's foot: the intraction of dermatophytes and residual bacteria. *Arch Dermatol*; 1978; **114**: 1466-72.
11. Gentles GC, Holmes JG. Foot ringworm in coal miner. *Br J Idust Med*; 1975 ; **14**:22-9
12. Genetles GC, Evans EGV. Foot infection in swimming bath. *Br Med J*; 1973; **3**:260-2.