

## **Mycoepidemiologic study of superficial and cutaneous fungal zoonotic disease in patients who referred to skin clinic of Arak**

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### **ABSTRACT**

*Dermatophytosis is one of the most prevalent fungal cutaneous zoonotic diseases which must be considered continuously in the society hygienically and economically. Animals such as cow, sheep, dog, cat, rodents and birds are assumed as the main origin of these infections. Infection in animals is often a chronic incidence but in humans is along with severe inflammatory reactions. Upward trend of superficial cutaneous fungal infections is one of the hygienic problems of developed and developing societies and zoophilic factors have a major effect on incidence of such infections. Information of its circumstance and share of each one of resources is necessary for hygienic-therapeutic planning. To apply this study, the patient suspected to fungal lesions referring to different clinics in Arak were sampled, within June 2011 to June 2012. Then, direct test and culture were made. In order to determine the fungal types, slide culture and complementary tests were used, if required. Out of 435 referred patients, superficial cutaneous fungal infections were diagnosed in 215 patients (49.4%), of which 138 patients (31.7%) were infected with Dermatophytosis, 61 patients (14%) with Tinea Versicolor, 8 patients (1.8%) with Erythrism and 2 patients with Otomycosis. Dermatophytosis was the most prevalent infection in this study and tinea corporis had the most incident among fungal infections. Trichophyton mentagrophytes was the main culprit.*

**Key words:** Superficial and Cutaneous Fungal Infections, Dermatophytosis, Tinea Versicolor

### **INTRODUCTION**

Study on the skin fungal disease such as Dermatophytosis is signified in any geographical zone with respect to the general health and non-observance of hygienic points and other precipitating factors, increases its incidence in any society and sometimes in public centers such as schools, prisons and barracks may result in epidemics. In addition to disease agent in environment, other factors such as high temperature and moisture, age, job, living conditions and breach of hygienic provisions are effective on the skin fungal diseases, significantly, so that one or more precipitating factors in a group may lead to their disease spread [1]. Superficial and cutaneous fungal infections are skin fungal diseases that are occurred by fungus such as dermatophytes, some opportunist fungi such as Malassezia and trichosporon.

Dermatophytosis still is one of the major problems of general health in plenty of world regions. The difference between incidence of superficial and cutaneous skin diseases probably may be under effect of environmental, climatic and ethical factors [2,3].

Before controlling such diseases, identification of pathogenic factor characteristics is necessary, thus specifying the dominant species in a region and its transmission to the human may aid to control the pathogenic factor.

There are precise statistics of superficial cutaneous fungal diseases all over the world that is very important epidemiologically. In our country also, various studies have been applied on epidemiology of superficial cutaneous fungal diseases and registered, but in Arak, due to including various villages and centrality of this city, no precise statistics have been collected within the last years.

The objective of this study is to identify the different species of dermatophytes and superficial fungal factors in Arak, and quality of disease incidence towards finding the origin of infections and training the society for familiarity with risks arising out of contact with infectious people and animals.

### MATERIALS AND METHODS

This type of study is observation which has been performed periodically for one year from 22.05.2011 to 21.05.2012. In this study, 436 patients suspected to one of superficial cutaneous infections referred to treatment centers of Arak, were sampled. All patients were emphasized to take bath at least 3 days ago and during the week, not to use any ointment.

In sampling method, firstly the lesion surface was cleaned by alcohol 70%. Later, the scabs and scruffs were separated from lesion surface by surgery scalpel which had been sterilized on the flame and cooled by alcohol, and a dew scabs were used directly for slide examination, and the remaining scabs were collected in a plate or small pockets for culture and slide culture tests and sent to mycology section of faculty of medicine for testing. Skin and nail samples were prepared by potash 10% and hair samples by lactophenol cotton blue solution and to separate the fungus, the samples were cultures on the sabord dextrose agar media containing chloramphenicol and cycloheximide or excluding antibiotic, and after a required while and growth of fungus colonies, slide culture was provided and culture result was examined. To separate the albicans candida from other yeasts and candidates, corn meal agar media was used.

In addition, all moral observations were applied in relation to patients' information. The data was collected by questionnaire.

### RESULTS

From among 435 patients referred to skin clinic of Arak, during one year, 174 clients were women (40%) and 261 clients were men (60%). According to the results, it was concluded that age range 20-29 formed the maximum age range and age range 0-9 the minimum age range suspected to these diseases. The samples were taken including 165 cases of body (37.9%), groins 26 (6%), head 37 (8.5%), beard and moustache 11 (2.5%), hand 11 (13.1%), foot 78 (17.9%), fingernail 34 (7.8%), and toenail 26 (6%). Out of these samples, the most complaints related to tinea corporis including 165 cases and the least one related to beard and moustache including 11 cases.

In the different seasons, maximum infection related to fall including 73 cases (33.95%), the minimum referral related to spring including 40 cases (18.6%).

Out of 138 cases infected with dermatophytosis, 34 patients were woman (24.6%), and 104 cases were men (75.4%). According to table 1, self-employment formed the major referring group including 121 patients (27.8%).

**Table 1- Distribution of job frequency based on number and percent**

Job	Number	Percent
Student	66	15.2
University student	87	20
Clerk	38	8.7
Self-employed	121	27.8
Housewife	88	20.2
Other	31	7.1
Total	435	100

As per table 2, out of 435 patients, 137 (31.5%) had contact to the animals and 294 persons (67.6%) had no contact to the animals.

As per table 3, frequency distribution of first lesion infected organ based on number and percent is related to groin including 75 cases (17.2%).

Table 2- Frequency distribution of contact to animal based on number and percent

Contact to animal	Number	Percent
Yes	137	31.5
No	294	67.6
Total	435	100

Table 3- Frequency distribution of first lesion infected organ based on number and percent

First lesion infected organ	Number	Percent
Head	26	6
Face	13	3
Neck	48	11
Shoulder	19	4.4
Chest	23	5.3
Stomach	23	5.3
Back	5	1.1
Arm	15	3.4
forearm	5	1.1
Palm	14	3.2
Hand back	32	7.4
Hand fingers surface	1	0.2
Between hand fingers	5	1.1
Hand fingers	32	7.4
Leg	1	0.2
Heel	3	0.7
Sole	2	0.5
Foot surface	7	1.6
Toes surface	1	0.2
Between toes	11	2.5
Fingernail	27	6.2
Armpit	5	1.1
Ear	1	0.2
Total	435	100

## DISCUSSION AND CONCLUSION

Incidence of superficial cutaneous fungal infections in 20-25% of world people reveals the importance of these diseases and raises these diseases as zoonotic diseases [4,5].

The objective of this study is to determine the incidence rate of superficial cutaneous fungal diseases of clients referred to skin clinics of Arak, within 2011-2012.

In the study applied by Shokoochi (1985) in Tehran, dermatophytosis (58.8%) was the most prevalent superficial cutaneous fungal infection and cutaneous candidiasis (20.88%), Tinea Versicolor (10.6%) and Erythrism (3.4%) were placed respectively in next orders [1].

In the study performed by Ghazizadeh in Kurdistan, out of 200 patients suspected to these infections, 97 persons (48.5%) obtained positive result in direct test and 103 persons (51.5%) obtained negative result. In this examination, dermatophytosis (91.75%) had the most incidence rate among the patients. These infections included tinea corporis 31 cases (31.96%), tinea capitis 25 cases (25.77%), groin tinea 25 cases (25.77%), nail tinea 8 cases (8.24%) and tinea versicolor (8.24%) [6].

In the examination of Badiei (1999) in Shiraz, dermatophytosis (45.5%), candidiasis (32.16%), tinea versicolor (19.5%) and saprophytes (1.6%) respectively formed the most incident superficial cutaneous fungal infections [7].

In study of Yazdanfar (1996) in Hamedan, among 1562 suspected patients, only 559 patients were infected with these infections of which 91.4% infected with dermatophytosis. In this examination, trichophyton verrucosum (29.4%) was reported as the most prevalent dermatophyte [8].

In a study applied in Singapore-2005, out of 12903 suspected patients, 3516 persons were infected with dermatophytosis, 32490 with tinea versicolor and 1430 patients infected with cutaneous candidiasis [9].

In another study in Spain, Barselona (1986), high incidence rate of zoophilic types more than humanitarian types were reported [10].

In the study applied by Gozashtehnegar within 2000 to 2007 in Turkey, out of 8200 suspected patients, 5722 persons were infected with superficial cutaneous infection of which 4218 patients infected with dermatophytosis.

According to this study and its comparison with other studies, it is concluded that dermatophytosis is the most prevalent superficial and cutaneous fungal infection, hence this study is corresponding to the other researches. In this survey, one of findings of negative culture was obtained from examination of samples negative microscopically. Despite of clinical problem, the indication of thesetinea was fungus separation value. It may be because of antifungal drugs prescription for short time on the lesion, by the physicians before referring to the laboratory, or severe reaction of host to the live fungus that avoided the fungus growth. Therefore, it is necessary to provide the correct sampling from lesion area approximate to the healthy tissue and also culture along with direct test. In this study, we concluded that most of dermatophytosis infections occurred due to zoophilic species.

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