

# Dermatophyte infections in Ankara, Turkey, over a 10-year-period.

Nilgün Karabıçak<sup>1</sup> and Selmur Topal<sup>2</sup>

<sup>1</sup> Mycology Reference Laboratory and <sup>2</sup> Communicable Diseases Department, Public Health Institute of Turkey, Ankara, Turkey

**Objectives:** The distribution of the dermatophytoses, their aetiological agents and predominant anatomical infection patterns vary both geographically and with time. This study was undertaken to investigate the prevailing species of dermatophytes and their pattern of infection in Ankara, Turkey, over a 10-year-period.

**Methods:** Mycological examinations were performed according to international standards and included direct microscopy and/or culture examination. Laboratory records comprising direct microscopy and culture results of 3473 specimens consisting of hair, skin and nail scrapings collected from January 2001 through December 2012 were retrospectively analyzed in the Mycology Reference Laboratory of the Public Health Institute of Turkey. The chi-square test (x<sup>2</sup>) and Fisher's exact test were used to analyze the frequency of dermatophytes occurring as causative agents in ringworm infections. Differences with a p-value of <0.05 were considered statistically significant.

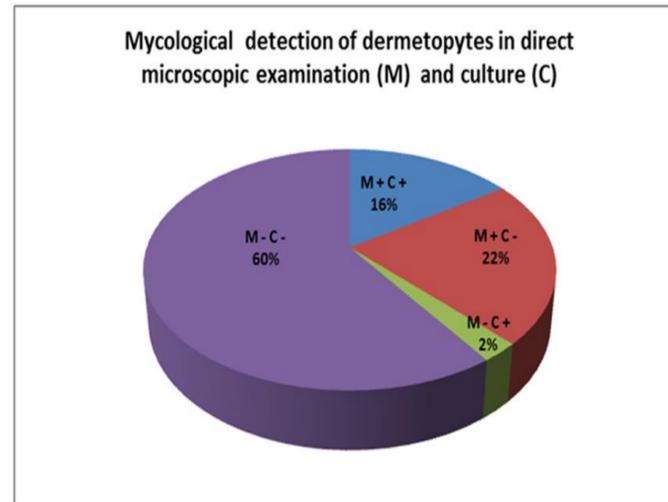


FIG. 1. Mycological detection of dermatophytes in direct microscopic examination (M) and culture (C) (n=3473).

**Results:** Out of a total of 3473 clinical specimens obtained from 2740 patients (1499 females and 1241 males) with clinical signs of dermatophytosis, 1397 (40%) cases were mycologically positive by microscopy and/or culture. Of these, 771 (22%) samples were found to be positive by direct microscopy only, 85 (2%) by culture only and 541 (16%) by both techniques (Figure 1). Among these specimens, dermatophytes were isolated in 626 (18%). *Trichophyton rubrum* was the most frequently isolated pathogen (61.9%) in all locations except in scalp. In tinea capitis, *Microsporum canis* comprised >60% of isolates, being the most prevalent agent. *Trichophyton mentagrophytes* was the second most common cultured dermatophyte (24.7%). Anthropophilic species, such as *T. tonsurans*, *Epidermophyton floccosum*, *T. violaceum*, and *M. audouinii*, were isolated less frequently. The most common clinical presentation was tinea unguium (40.6% of cases), then in decreasing order, tinea pedis (34.3%), tinea manuum (10.1%), tinea corporis (9.1%), tinea capitis (3%), tinea faciei (1.6%), and tinea cruris (1.3%) (Table 1). When we analysed the clinical manifestations separately, according to the distribution of age and gender we observed the following: Tinea capitis was more frequently observed in the age range of 1–10 years (83%); on the contrary, tinea pedis and tinea unguium were rarely observed in children, but commonly observed in the age range of 30–60 years (71% and 68%, respectively). Most of the cases were equally distributed in both genders, except for tinea unguium which was more prevalent in males than in females (p<0,001).

**Conclusion:** In conclusion, tinea unguium and tinea pedis had, over time, the highest overall prevalence of 74.9%. *Trichophyton rubrum* and *T. mentagrophytes*, the two common causes of tinea unguium (92.1%) and tinea pedis (90.7%) of all dermatophytes isolated between 2001 and 2012. During this period the pattern of etiological agents of dermatophytoses in Ankara was relatively stable. The present study has provided recent data on the prevalence of dermatophytoses and their aetiological agents in Central Anatolia, essential for developing measures for prevention and control of dermatophyte infections and establishment of therapeutic strategies.

TABLE 1. Distribution of dermatophytes isolated from samples by location of infection in Ankara, Turkey (2001-2012).

Dermatophytes	Tinea unguium n/%	Tinea pedis n/%	Tinea manuum n/%	Tinea corporis n/%	Tinea capitis n/%	Tinea faciei n/%	Tinea cruris n/%	Total n/%
<i>T. rubrum</i>	177/69.7	135/62.8	44/69.8	23/40.4	0/0.0	4/40	5/62.5	388/61.9
<i>T. mentagrophytes</i>	57/22.4	60/27.9	13/20.6	17/29.8	1/5.3	4/40	3/37.5	155/24.7
<i>T. tonsurans</i>	17/6.7	18/8.4	4/6.3	9/15.8	3/15.8	1/10	0/0.0	52/8.3
<i>M. canis</i>	0/0.0	0/0.0	1/1.6	8/14	12/63.2	0/0.0	0/0.0	21/3.4
<i>E. floccosum</i>	3/1.2	2/0.9	1/1.6	0/0.0	0/0.0	0/0.0	0/0.0	6/1.0
<i>T. violaceum</i>	0/0.0	0/0.0	0/0.0	0/0.0	2/10.5	1/10	0/0.0	3/0.5
<i>M. audouinii</i>	0/0.0	0/0.0	0/0.0	0/0.0	1/5.3	0/0.0	0/0.0	1/0.2
<b>Total/%</b>	<b>254/40.6</b>	<b>215/34.3</b>	<b>63/10.1</b>	<b>57/9.1</b>	<b>19/3.0</b>	<b>10/1.6</b>	<b>8/1.3</b>	<b>626/100.0</b>

## References

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