

Change in spectrum of dermatophytes isolated from superficial mycoses cases: First report from Central India

Sir,

Superficial mycoses include fungal infections of skin, hair and nails caused predominantly by dermatophytes, yeasts and molds. Dermatophytes are anthropophilic, zoophilic and geophilic fungi, classified into three genera – *Trichophyton* spp. (*T.*), *Microsporum* spp. (*M.*) and *Epidermophyton* spp. (*E.*). Few species of dermatophytes (*M. ferrugineum*, *T. soudanense* etc.) are endemic in certain parts of the world and they are rarely encountered in other parts of the world.^[1] Distribution of the dermatophytes varies with the geographical area and during the course of time.^[2] We are observing a change in the spectrum of dermatophytic isolates from superficial mycoses cases in our region, and therefore the present study was carried out to know the changing epidemiology of dermatophytes, with special reference to *M. ferrugineum* a rare isolate in India.

Microsporum ferrugineum, an anthropophilic dermatophyte is endemic in Africa and Oriental Asia; sporadic cases have been reported from other countries,^[2] only six cases have been reported so far from North-East India.^[3]

In a retrospective study from August 2008 to September 2009, a total of 165 specimens were processed from clinically suspected cases of superficial mycoses attending the outpatient department of Dermatology and Venereology of our hospital. All specimens were examined by 10% KOH mount for screening of fungal elements and inoculated on duplicate Sabouraud's Dextrose Agar (SDA) with 0.05 mg/ml chloramphenicol (with or without 0.5 mg/ml cycloheximide) at 25°C in a BOD incubator for three weeks. Fungal isolates were identified according to standard procedures.^[1] Laboratory-confirmed cases either by direct microscopy or culture were included in the data analysis and cases negative in both KOH and culture were excluded from the study. *M. ferrugineum* was identified on the basis of colony morphology on SDA medium, supplemented with chloramphenicol 0.05 mg/ml and cycloheximide 0.5 mg/ml [Figure 1a], characteristic microscopic findings - 'bamboo hyphae' with chlamydoconidia and lack of macro and microconidia in Lactophenol

Cotton Blue (LCB) mount of slide culture [Figure 1b], negative *in-vitro* hair perforation test, positive urease test and production of yellow pigment of Lowenstein Jensen medium.^[1]

Out of 165 cases enrolled, 148 (89.6%) cases were positive by direct microscopy and 137 (83%) cases were culture positive. Male : female ratio was 2 : 1, majority of patients belonged to 21–30 (32.4%) followed by 1–10 (21.6%), 11–20 (18.9%), 31–40 (13.5%) age groups, 114 (77%) cases belonged to low socioeconomic status and 90% cases were from sub-urban background. Most common clinical presentation was tinea corporis (45%) followed by *T. capitis* (34%), *T. unguium* (11%), *T. manuum* (5%), *T. cruris* (3%) and *T. pedis* (2%). All



Figure 1a: Folded, velvety, yellowish colony of *Microsporum ferrugineum* on Sabouraud's dextrose agar

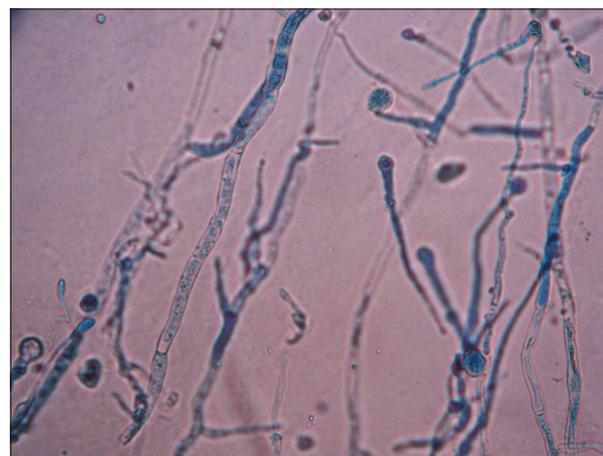


Figure 1b: Lactophenol Cotton Blue (LCB) mount of *Microsporum ferrugineum* showing characteristic microscopic findings - 'bamboo hyphae' with chlamydoconidia and lack of macro and microconidia (x400)

cases were immunocompetent and neither case had any history of traveling or staying abroad nor had any unusual clinical presentation. Treatment response could not be recorded due to poor patient compliance.

In our study, dermatomycoses was seen in 90% cases and superficial candidiasis in 10% cases. In 137 culture positive isolates most common dermatophyte isolated was *T. mentagrophytes* (25%) followed by *T. tonsurans* (20%), *T. verrucosum* (10.5%), *M. ferrugineum* (9.5%), *T. schoenleinii* (7%), *M. audouinii* (5%), *T. rubrum* (5%) and *E. floccosum* (3%), non-dermatophytic molds namely *Aspergillus* spp., *Alternaria* spp., *Fusarium* spp. and *Scopulariopsis* spp. and *Candida* spp. were isolated from 5% and 10% cases, respectively. All *Candida* isolates were found to be of non-albicans type. *M. ferrugineum* was isolated from 13 cases - tinea corporis 4 (31%) was the most common presentation followed by *T. manuum* 3(23%), *T. capitis*, *T. unguium* and *T. pedis* 2 (15% each). Six (46%) and four (31%) cases were from suburban and rural background, respectively, and three (23%) from neighboring districts.

Singal *et al.*, in a study of *T. capitis* cases from North India reported a change in the spectrum of dermatophytes with most common isolate as *T. violaceum* (38%) followed by *M. audouinii*, *T. schoenleinii*, *T. tonsurans*, *M. gypseum*, *T. verrucosum* and *T. mentagrophytes*.^[4] We are first to report a change in the spectrum of the dermatophytes from Central India as well as one of the highest incidences of *M. ferrugineum* (9.5%) in the non-endemic part of the world; other studies have reported incidence rates between 0.01 and 7.3%. *M. ferrugineum* usually causes juvenile *T. capitis*, but recently it has also been isolated from cases of *T. corporis*, *T. manuum* etc.^[5,6] Our findings are also in accordance with these studies; however we are first to report two cases of *T. unguium* due to *M. ferrugineum*, which rarely infects nails.

In India, till date only one study by Grover and Roy has reported six (5.8%) cases of *M. ferrugineum* from North-East India and interestingly they did not isolate it from any *T. capitis* case.^[3] We hypothesize that the possible route of entry of *M. ferrugineum* in India might be from its North-East border, which adjoins Myanmar – an endemic region for this pathogen. Out of 13 cases, six (46%) belonged to urban background, four (31%) of rural background and three (23%) from neighboring districts, which suggests a fair distribution and endemicity of this pathogen in our region.

We can conclude that India is a growing economy

and during last couple of decades people have started interstate migration in search of better jobs, and foreign tourists are also visiting India more often than ever; therefore, change in spectrum of dermatophytes and uncommon fungal isolates can be encountered in clinical practice, and it would be prudent for medical mycologists to be well equipped to diagnose such cases.

Sanjeev Sahai, Devesh Mishra¹

Departments of Microbiology and ²Dermatology and Venereology, Era's Lucknow Medical College and Hospital, Lucknow, Uttar Pradesh, India

Address for correspondence: Dr. Sanjeev Sahai, Department of Microbiology, Teerthankar Mahaveer Medical College & Research Centre, Delhi Road, Bagarpur Moradabad-244 001, Uttar Pradesh, India. E-mail: sansahj1@gmail.com

Access this article online	
Quick Response Code:	Website: www.ijdv.com
	DOI: 10.4103/0378-6323.79718
	PMID: 21508578

REFERENCES

1. Rippon JW. Dermatophytosis and dermatomycoses In: Medical mycology-The pathogenic fungi and actinomycetes. 3rd ed. Philadelphia: W.B. Saunders company; 1988 p. 169-275.
2. Seebacher C, Bouchara JP, Mignon B. Updates on the epidemiology of dermatophyte infections. *Mycopathologia* 2008;166:335-52.
3. Grover S, Roy P. Clinico-mycological profile of superficial mycosis in a Hospital in North East India. *Med J Armed Forces Ind* 2003;59:114-6.
4. Singal A, Rawat S, Bhattacharya SN, Mohanty S, Baruah MC. Clinico-mycological profile of tinea capitis in North India and response to griseofulvin. *J Dermatol* 2001;28:22-6.
5. Neji S, Makni F, Cheikhrouhou F, Sellami A, Sellami H, Marreckchi S, *et al* Epidemiology of dermatophytoses in sfax, Tunisia. *Mycoses* 2009;52:534-8.
6. Ngwogu AC, Otokunefor TV. Epidemiology of dermatophytes in a rural community in Eastern Nigeria and review of literature from Africa. *Mycopathologia* 2007;164:149-58.