Clinico-mycological evaluation of dermatophytes and non-dermatophytes isolated from various clinical samples: A study from north India

Sir,

Incidence rates of fungal infections have increased significantly over the last 15 to 20 years.[1] This disorder is significant due to clinical consequence with respect to its contagious nature, cosmetic consequences, chronicity, recurrences, and therapeutic difficulties.

The present study was done to assess the clinico-epidemiological profile of fungal infections, species identification, and to compare clinical diagnosis with direct microscopy and culture positivity from clinically suspected cases. From March to August 2011, 80 specimens were processed from clinically suspected cases of dematophytosis/dermatomycosis attending the Dermatology Out Patient Department and sent to Microbiology for mycological work-up. Specimens included skin scales, hair, nails (superficial mycoses), and tissue (deep mycoses). Specimens were analyzed by direct microscopy and subjected to culture study (Sabouraud's Dextrose Agar, cornmeal agar, blood agar).

Pathogens were differentiated from contaminants following these guidelines: (1) Dermatophyte isolated on culture was considered a pathogen, (2) a non-dermatophyte mould (NDM) or yeast cultured was significant only if direct microscopy was positive and (3) NDM required repeated isolation.[2]

Most common age group among the 80 patients analyzed were 31-40 years (31.25%). Male to female ratio was 1.5:1 which could be the result of more outdoor activities, traumas and common use of occlusive footwear in males, a finding similar to Singh *et al*. (M:F- 1.3:1)[3] but contrary to Sahai *et al*. (M:F – 2:1).[4]

Most common fungal isolates were dermatophytes 19/30 (63.33%) of which 8/30 (26.66%) were *Microsporum audouinii* [Table 1]. There were three cases (3.75%) where direct microscopy (10% Potassium Hydroxide 10% KOH mount) showed sclerotic bodies suggestive of chromoblastomycosis but were culture negative. Among dermatophytoses, 11 isolates were obtained from nail, 2 from scalp/ scalp hair, and 6 from skin scales.

M. audouinii was the main isolate from nails/skin scales contrary to other studies where *Trichophyton rubrum* is commonly reported.[5,6] This finding may perhaps mark the change in spectrum of dermatophytic infections but further studies need to be done. Isolation rate in this study seemed to be lower (37.50%) when compared to other studies (45.3-52.2%) [Table 2].[7,8]

Aspergillus niger was isolated from nails in patients with diabetes and chronic recurrent infections. Candidiasis (non-albicans) was seen in 16.66% of the cases which is slightly higher but comparable than those reported elsewhere (10% cases).[4] Present data indicates that fungal infections are uncommon in children in India unlike reports from other countries.[9,10] History of contact with infected family members was seen in 26.6% which is higher in accordance with other studies. [5] Disease recurrence was noted in 16.66% of patients (lack of local immunity /inadequate treatment). Thirty (37.50%) specimens were positive by culture alone whereas 65 (81.25%) by direct microscopy alone. This is in keeping with data published by Veer *et al*.[2]

To conclude, the conventional methods for fungi identification, direct microscopy and fungal culture are both important in definitive diagnosis of dermatophytosis. The sensitivity of these diagnostic tests depends on the method of sampling, sample preparation, failure rate of microscopy/culture, and final interpretation of results.

Table 1: Distribution of Causative Organisms

Fungus	Isolate	Percentage
Dermatophytes (63.33%)		
T. rubrum	7	23.33
T. spp.	3	10
M. audouinii	8	26.66
M. gypseum	1	3.33
Non-dermatophytes (36.66%)		
A. niger	4	13.33
Alternaria	1	3.33
Non-albicans Candida	5	16.66
Syncephalastrum racemosum	1	3.33

Table 2: Microscopy and Culture positivity obtained from various clinical samples

Sample	Positivity
Total KOH positive	67.00
Total culture positive	30.00
Both +ve	30.00
Both −ve	15.00
Culture +ve KOH - ve	0.00

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REFERENCES

1. Brown TE, Chin TW, Dipiro JJ, Talbert RL, Yee GC. Superficial fungal infections: A pathophysiologic approach. 5th ed. New York: McGraw- Hill; 2000.
2. Veer P, Patwardhan NS, Damle AS. Study of onychomycosis: Prevailing fungi and pattern of infection. Indian J Med Microbiol 2007;25:53-6.
3. Singh S, Beena PN. Profile of dermatophytic infections in Baroda. Indian J Dermatol Venereal Leprol 2003;69:281-3.
4. Sahai S, Mishra D. Change in spectrum of dermatophytes isolated from superficial mycoses cases: First report from Central India. Indian J Dermatol Venereol Leprol 2011;77:335-6.
5. Bassiri-Jahromi S, Khaksari AA. Epidemiological survey of dermatophytosis in Tehran, Iran, from 2000 - 2005. Indian J Dermatol Venereol Leprol 2009:75;142-7.
6. Adhikari L, Atrayee G, Ranabir P, Singh TS. Clinic- etiologic correlates of onychomycosis in Sikkim. Indian J Pathol Microbiol 2009;52:194-7.
7. Kaviarasan PK, Jaisankar TJ, Thappa DM, Sujatha S. Clinical variations in dermatophytes in HIV infected patients. Indian J Dermatol Venereol Leprol 2002;68:213-6.
8. Bindu V. Clinico-mycological study of dermatophytosis in Calicut. Indian J Dermatol Venereol Leprol 2002;68:259-61.
9. Fernandes NC, Akiti T, Barreiros MG. Dermatophytes in children: Study of 137 cases. Rev Inst Med Trop Sao Paulo 2001;43:83-5.
10. Hernandez AD. An approach to the diagnosis and therapy of dermatophytosis. Indian J Dermatol Venereal Leprol 1987;53:174-5.

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