is not justified to classify paronychia under onychomycosis. Though secondary, at least significant nail involvement must be present in chronic paronychia when it is included in a study of onychomycosis.

REFERENCES

1. Grover S. Clinico-mycological evaluation of onychomycosis at Bangalore and Jorhat. Indian J Dermatol Venereol Leprol 2003;69:284-6.
2. English MP. Nails and fungi. Br J Dermatol 1976;94:697-701.
3. Gupta AK, Ryder JE, Summerbell C. The diagnosis of non-dermatophyte mold onychomycosis. Int J Dermatol 2003;42:272-3.
4. Zaias N. Onychomycosis. Arch Dermatol 1972;105:263-74.
5. Gupta AK, Baran R. Ciclopirox nail lacquer solution 8% in the 21st century. J Am Acad Dermatol 2000;43:96-102.

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Response by the authors

Sir,

I thank the respondent for his interest in my work and his valuable comments. High culture positivity and a high rate of detection of non-dermatophyte moulds (NDM) were the highlights of the work. An attempt was made to define the role of NDM. Was it purely a contaminant or a primary pathogen causing primary invasion of the nail, as is emerging in recent times? The stringent English criteria to delineate NDM as a primary pathogen were, therefore, applied in the study.[1] As mentioned in the article, eight of the thirteen NDM isolated in the study fit these criteria, i.e. all KOH-positive isolates that cultured pure NDM without dermatophytes. It is these eight (13.5% of the total isolates) that would, therefore, claim their role as a primary pathogen. Though the culture positivity of NDM is high, it still falls within the reported range. A combination of several factors might have contributed to high culture positivity rates: the drying procedure of Milne, the English criteria and the procedure of paired culturing of samples (in plain Sabouraud's Dextrose Agar, and Sabouraud's Dextrose Agar with chloramphenicol) which were repeatedly subcultured. Of course, larger studies would help throw more light on this rather unclear and as yet controversial role of NDM in onychomycosis. Since the study was concluded in May 2001 and submitted for publication in August 2002, we did not have the privilege of the knowledge of the later study by Gupta et al quoted by the respondent.[2]

It is true that a hot and humid climate would favor fungal growth irrespective of the etiological agent, but studies have nonetheless reported this milieu to favor the growth of NDM.[3] NDM can affect all nails, though admittedly the toenails are their main prey. We isolated NDM from practically every nail, either in pure or in mixed cultures and in some cases from multiple sites. There is no break-up to show apart from the finding that DLSO pattern was the most common clinical pattern seen.

No mention either of associated cutaneous fungal infections or of history of repeated attacks of tinea anywhere on the glabrous skin was made simply because it was not within the ambit of the study. The study did not deal with the clinical differentiation between dermatophyte and NDM infections on the skin. It dealt solely with a particular clinical form of fungal infection, viz. onychomycosis and the mycological agents responsible for causing this condition, which obviously involved culturing the isolates.

Onychomycosis is frequently a source of distress to the patient because of the unaesthetic look of the diseased nails as it is readily visible to the onlooker. And it is here where I differ with the respondent in my suggestion of a cosmetically conscious younger person (as compared to an older person) being more motivated in seeking medical consultation for his diseased nails. As already mentioned, this suggestion was *in addition to* the observation that younger persons, more so soldiers, would be more prone to occupation related subclinical trauma predisposing them to fungal infections of the nails.

The question of classification of onychomycosis is not so vexed.[4] Literature abounds in defining onychomycosis broadly as any fungal infection of the nail plate. This includes yeasts and NDM in addition to dermatophytes. Proximal superficial onychomycosis

is a recognized clinical subtype of dermatophytosis and no new classification schedule is being introduced herein. Candidal onychomycosis has three recognized clinical variants and chronic paronychia is one of them. Candida is a known primary pathogen of the nail plate and not a secondary invader as suggested by the respondent. In addition, presence of nail dystrophy is not essential in this condition; only erosion of the distal nail plate is, which was present in our cases. In any case, candidal onychomycosis must never be confused with chronic mucocutaneous candidiasis (CMC), which is a syndrome consisting of persistent candidal infection of the skin, the nail and the mouth. Only a few of these cases, when associated with systemic infections, may represent a manifestation of primary defect of the immune system. As already mentioned, patients with systemic diseases were excluded from the study; and so did not include any cases of CMC.

REFERENCES

1. English MP. Nails and fungi. Br J Dermatol 1976;94:697-701.
2. Gupta AK, Ryder JE, Summerbell C. The diagnosis of non-dermatophyte mold onychomycosis. Int J Dermatol 2003;42:272-3.
3. Tosti A, Piraccini BM, Lorenzi S. Onychomycosis caused by non-dermatophyte moulds: Clinical features and response to treatment of 59 cases. J Am Acad Dermatol 2000;42:217-24.
4. Hay RJ, Moore M. Mycology (Superficial and cutaneous mycosis). In: Champion RH, Burton JL, Burns DA, Breathnach SM, editors. Textbook of dermatology. 6th ed. Oxford: Blackwell Science; 1998. p. 1281-350.

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Grapefruit juice vs. grape juice

Sir,

While reading the article 'Drugs in dermatological practice: Relationship to food'[1] I saw that it is advised not to take cyclosporin with grape juice. I would like to point out that it is grapefruit juice and not grape juice which produces elevated serum concentrations of cyclosporin.[2] In fact many western hospitals have removed grapefruit juice from their inpatient menus to avoid the risk of drug interactions.

Grapefruit (Citrus X paradisi) is a citrus fruit which inhibits the CYP3A4 pathway in the small intestinal wall when either fresh or frozen grapefruit is eaten or grapefruit juice is drunk.[3] This inhibition may be due to Bergamottin, a furocoumarin compound or due to other flavonoids present in it. This results in elevation of serum concentrations of all drugs which are metabolized via the CYP3A4 pathway including cyclosporine, felodipine, nifedipine, saquinavir, midazolam, triazolam, terazosin, ethinyloestradiol,17-beta oestradiol, prednisone, lovastatin, simvastatin etc. Absence of 6,7-Dihydrobergamottin in orange juice probably accounts for the absence of CYP inhibitory effects.[4] Pronounced elevation of the maximal plasma concentrations are seen with drugs that have high first pass metabolism (metabolism of a drug during its passage from the site of absorption into the systemic circulation- at the small intestinal wall and in the liver in case of orally administered drugs). In fact, this inhibitory effect of grapefruit juice on the metabolism of cyclosporin may be used to achieve therapeutic plasma concentrations of the drug at lower dosage levels than usual, but this is not recommended as the effect varies with different batches of grapefruit.

REFERENCES

1. Smitha Prabhu, SD Shenoi. Drugs in dermatological practice: Relationship to food. Indian J Dermatol Venereol Leprol 2003;69:305-6
2. Shapiro LE, Shear NH. Drug Interactions. In: Wolverton SE, editor. Comprehensive Dermatological Drug Therapy. WB Saunders; 2001. p. 848-71.
3. Roller L. Drugs and grapefruit juice(letter). Clin Pharmacol Ther 1998;1:87.
4. Hollander AA, van der Woude FJ, Cohen AF. Effect of grapefruit juice on blood cyclosporin concentration (letter). Lancet 1995;346:123.

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Response by the authors

Sir,

We wish to thank Dr M. J. Cyriac for spotting the error and enlightening the readers about the interaction of cyclosporin with grapefruit and not grape juice. We