

## **The PAS Stain for Routine Diagnosis of Onychomycosis**

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**Background:** Onychomycosis is common, but clinical diagnosis could be difficult. The standard methods of diagnosis are known to have suboptimal yield because of low sensitivity. A more reliable method of detection would improve the diagnosis and facilitate appropriate therapy.

**Objective:** The purpose of this study is to compare the rate of detection of onychomycosis using PAS stain, KOH microscopy and mycological culture.

**Setting:** The pathology Department at the Montreal General Hospital, McGill University Health Center.

**Design:** Retrospective review of all the nail specimens that were submitted to the pathology department between January 1996 and June 2002.

**Method:** One hundred and forty-one nail specimens submitted from the dermatology clinic or private offices for PAS stain to rule out onychomycosis between January 1996 and June 2002 were reviewed. Only those subjected to all three tests (PAS, KOH microscopy and mycology culture) were included in the study.

**Result:** Out of the total culture positive cases (N=58), 28 (48.3%) were dermatophyte fungi and 30 (51.7%) non-dermatophytes, (Table 1). The percentage of positive PAS stain was 38.3% (N=54), KOH microscopy 22.7% (N=32) and culture 41.1% (N=58), (Table 2).

The percentage of positivity of combined PAS and culture was 79 (56%) and combined KOH and culture was 64 (45.4%), (Table 2). Comparing PAS test alone as an alternative method of diagnosis to combined KOH and culture (for both culture positive and culture negative cases) showed an overall sensitivity of 60.9% and specificity of 80.3%. When applied specifically to dermatophyte culture positive cases (N=28), the PAS was found to have a sensitivity of 92.9%, compared to 23% for non-dermatophyte positive culture cases (N=30).

For dermatophyte culture positive cases, the PAS and culture tests in combination had an overall specificity of 100% and a sensitivity of 80.3%.

**Conclusion:** We conclude that the PAS stain shows high reliability and sensitivity for detecting onychomycosis compared to KOH and mycological culture. In addition, the result indicates that PAS and culture combination is superior to combined KOH and culture for detection of dermatophyte infection.

*Bahrain Med Bull 2009; 31(2):*