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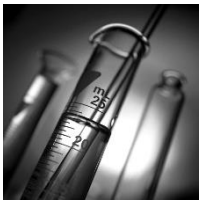

September 2018

Laboratory Processing of Mycology Samples

Pathlab has undertaken an extensive review of our current methodologies for mycological processing of skin and nail samples, accompanied by a data analysis of all mycology results over the past 5 years. In particular we have been reviewing the utility of fungal culture across different specimen types.

Toenails: Fungal infection of the toenails is essentially a clinical diagnosis. From our data analysis, negative microscopy had a negative predictive value of 92% in excluding fungal infection. Microscopy for fungal elements was approximately three times more sensitive than culture for the detection of dermatophyte infection. There are several reasons for this, including quality of sampling and prior anti-fungal treatment. A negative culture in many of these cases is likely to be misleading. In less than 10% of microscopy positive cases, a non-dermatophytic mould will be causing the nail infection. The clinical significance of non-dermatophytic moulds isolated from nail samples is uncertain and requires close clinical correlation.

Culture of toenail samples will routinely be performed in the following circumstances:

- Where microscopy is more suggestive of a non-dermatophytic mould infection.
- Where microscopy is positive but standard treatment for toenail onychomycosis with oral terbinafine has not been successful (as per clinical details provided)

Fingernails: Fungal infection of the fingernails is mainly caused by yeast species such as *Candida albicans*. The standard treatment for a yeast onychomycosis of the fingernails is itraconazole. Positive microscopy for yeasts has good positive predictive value for Candida onychomycosis. However negative microscopy is poorly predictive for the absence of infection. Over one third of our fingernail samples with negative microscopy grew a yeast species.

Culture of fingernail samples will routinely be performed in the following circumstances:

- Where microscopy is negative.
- Where microscopy is positive but suggestive of a dermatophyte infection.

Skin: Fungal infection from skin is generally due to dermatophytes, except from intertriginous areas (breast folds, axilla, groin, perineum, abdominal apron) where yeasts predominate. Negative microscopy of skin samples has a 92% negative predictive value in excluding fungal infection. The exception to this was samples taken from intertriginous areas, where a significant number of yeasts grew despite negative microscopy. Positive microscopy was nearly twice as sensitive as culture for the diagnosis of dermatophyte infection of the skin.

CLINICAL UPDATE

Culture of skin samples will routinely be performed in the following circumstance:

- When microscopy is negative and the skin sample has been taken from an intertriginous area (breast folds, axilla, groin, perineum, abdominal apron).

Scalp: Dermatophyte infections of the scalp are associated with outbreaks (e.g. *Trichophyton tonsurans*), zoophilic infection (e.g. *Microsporum canis*) and severe disease (e.g. kerion) caused by different dermatophytes. For this reason all scalp lesions will continue to be cultured in order to accurately identify the aetiology and optimise management.

The changes are summarised in the following table:

Sample type	Microscopy result	Routine Culture for Fungi?
Toenails	Positive	Only if microscopy is suggestive of a non-dermatophytic mould
	Negative	No
Fingernails	Positive	Only if microscopy suggestive of a dermatophyte
	Negative	Yes
Skin	Positive	No
	Negative	Intertriginous areas only
Scalp	Positive	Yes
	Negative	Yes

As always, the inclusion of brief but pertinent clinical details allows the laboratory to optimise diagnostic testing.

The on-call clinical microbiologist is available to discuss any severe or atypical cases of suspected fungal infection, as well as assisting in result interpretation.

If there are any queries with regards to this clinical update, please contact Pathlab before the end of September 2018.

These changes will take effect from **Monday, 1st October 2018**.

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CLINICAL UPDATE

Please ensure all members of your institution receive a copy of this clinical update.