Research Article

The Role of Dermoscopy in Diagnosis of Superficial Fungal Cutaneous Infections

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Abstract
Introduction: Dermoscopy is a non-invasive method that allows evaluation of colors and microstructures of the epidermis, the dermoepidermal junction, and the papillary dermis not visible to the naked eye. **Aim of the work:** The present study aims to evaluate the role of dermoscopy in diagnosis of superficial cutaneous fungal infections. **Patients and methods:** The present study had included 120 patients suspected clinically to have superficial cutanous fungal infections from the attendants of Dermatology Outpatient Clinic, Minia University Hospital and chosen randomly over a period of 12 months (From the beginning of December 2015 to the end of November 2016). **Results:** The present study was conducted on 120 patients over a period of 12 months (From the beginning of December 2015 to the end of November 2016) from the attendants of Dermatology Outpatient Clinic, Minia University Hospital. **Discussion:** Superficial fungal infections of the skin, scalp and nails are very common and have been reported worldwide. The most common causative agents of these mycoses are dermatophytes, yeasts and molds. **Summary:** Dermoscopy should be regarded as a safe and rapid diagnostic tool that assists in clinical examination and management decision in dermatology, as the stethoscope does for diagnosing heart, lung or abdominal problems. As a consequence, dermoscopy can be nowadays seen as the dermatologists' stethoscope
Keywords: Dermoscopy, Superficial Fungal,

Introduction
Dermoscopy is a non-invasive method that allows evaluation of colors and microstructures of the epidermis, the dermoepidermal junction, and the papillary dermis not visible to the naked eye. The identification of specific diagnostic patterns related to the distribution of colors and dermoscopy structures can better suggest a malignant or benign pigmented skin lesion. The use of this technique provides a valuable aid in diagnosing pigmented skin lesions (Mazzotti et al., 2014).

The increasing use of dermoscopy in general dermatology can be partially explained by commercially available new generations of handheld dermoscopes, which are small enough to be easily placed in every dermatologist's pocket (Fargnoli et al., 2012).

Dermoscopy should be regarded as a safe and rapid diagnostic tool that assists in clinical examination and management decision in dermatology, as the stethoscope does for diagnosing heart, lung or abdominal problems. As a consequence, dermoscopy can be seen as the dermatologists' stethoscope (Kaçar et al., 2012).

Superficial fungal infections of the skin are among the most common diseases seen in our daily practice. These infections affect the outer layers of the skin, the nails and hair. The main groups of fungi causing superficial fungal infections are dermatophytes, yeasts and mould (Higgins et al., 2000).

The dermatophytes that cause only superficial infections of the skin are grouped into three genera: Microsporum, Trichophyton, and Epidermophyton. Dermatophytes grow on keratin and therefore cause diseases in body sites wherein keratin is present including the skin surface, hair and nail. Dermatophyte

infections are subclassified in Latin names according to the sites of skin involved (Robert and Pihet, 2008).

Yeasts are not pathogenic, but when the host's cellular defenses, skin function, or normal flora are altered, colonisation, infection, and disease can occur. Candida albicans is the most virulent of these organisms. The yeast Malassezia furfur, a skin commensal, can cause pityriasis versicolor (Sobera and Elewski, 2005).

Dermoscopy aids in the diagnosis of fungal infections and differentiate tinea capitis (fungal scalp infection) from alopecia areata (Slowinska et al., 2008).

Recent studies have reported “comma hairs” as a typical dermoscopic feature of tinea capitis observed at low magnification (Lacarrubba et al., 2015).

Hughes et al., (2011) identified another dermoscopic pattern of tinea capitis in a black population: «corkscrew hairs», which have been reported as adermoscopic marker for endothrix tinea capitis.

Aim of the work

The present study aims to evaluate the role of dermoscopy in diagnosis of superficial cutaneous fungal infections.

Patients and methods

The present study had included 120 patients suspected clinically to have superficial cutanous fungal infections from the attendants of Dermatology Outpatient Clinic, Minia University Hospital and chosen randomly over a period of 12 months (From the beginning of December 2015 to the end of November 2016). The study was approved by Dermatology Department Ethical Committee, Faculty of Medicine, Minia University. The committee for postgraduate studies and research.

The age of patients ranged from 1.5 to 58 years. Seventy patients were males (58%) and 50 patients were females (42%).

The patients were divided into 5 groups according to the provisional clinical diagnosis.
Group I: included 40 patients of tinea capitis: 34 patients were males (85%) and 6 patients were females (15%).
Group II: included 20 patients of tinea corporis: 14 patients were males (70%) and 6 cases were females (30%).
Group III: included 20 patients of onychomycosis: 5 patients were males (25%) and 1 patients were females (75%).
Group IV: included 20 patients of tinea versicolor: 15 patients were males (75%) and 5 patients were females (25%).
Group V: included 20 patients of cutanous candidiasis: 3patients were males (15%) and 17 were females (85%).

Results

The present study was conducted on 120 patients over a period of 12 months (From the beginning of December 2015 to the end of November 2016) from the attendants of Dermatology Outpatient Clinic, Minia University Hospital.

Table (1): The type of growth in the culture of tinea capitis.

Culture growth	The study group N = 40
No growth	8 (20%)
Microsporum canis	22 (55%)
Tricophyton violecium	8 (20%)
Yeast sp.	2 (5%)

All dermoscopic features of TC were presented in patients in whom M. canis were corfirmed by culture, while comma, corckscrew, translucent, brocken hairs, black dots and scales were found in patients with T. violecium.

Discussion

Superficial fungal infections of the skin, scalp and nails are very common and have been reported worldwide. The most common causative agents of these mycoses are dermatophytes, yeasts and molds. However, these agents vary with time and depend on many factors including the geography (Diongue et al., 2016).

Dermatophytosis, pityriasis versicolor, and candidiasis are the three most common types of superficial fungal infections (Brendan and Kelly, 2012).

The dermatophytes are grouped into three genera: Microsporum, Trichophyton and Epidermophyton. They are subclassified in Latin names according to the sites of skin involved, e.g.; tinea capitis: scalp; tinea corporis: glabrous skin; tinea faciei: face, tinea cruris: crural folds; tinea pedis: feet; tinea unguium: nails (Robert and Pihet, 2008).

Dermatoscopy is a fast, non-invasive and inexpensive diagnostic tool for recognition of morphological structures that cannot be seen with naked eye. It is used widely in the last three decades, especially on diagnosis of pigmented skin lesions. However, it has been increasingly used on many skin diseases such as hair and nail diseases, parasitic diseases and connective tissue diseases (Micali et al., 2011).

The present study has been conducted to evaluate the role of dermoscopy in diagnosis of superficial cutanous fungal infections in comparison with scrap microscopic examination, mycological culture and histopathology and to detect how close is the dermoscopic examination to the previous diagnostic findings.

Summary and Conclusion

Dermoscopy is a non-invasive method that allows evaluation of colors and microstructures of the epidermis, the dermoepidermal junction, and the papillary dermis not visible to the naked eye this enhancing the diagnostic accuracy.

Superficial fungal infections of the skin are the most common diseases. These infections affect the outer layers of the skin, the nails and hair. The main groups of fungi causing superficial fungal infections are dermatophytes, yeasts and mould.

The diagnosis of cutaneous fungal infections is made by direct microscopic examination with KOH and fungal cultures; however, these conventional mycological examinations are rather complex, time-consuming and requiring trained personnel and mycological tools. Dermoscopy is a simple, fast and non-invasive diagnostic tool that is primarily used for pigmented lesions, but it has been increasingly used for many skin diseases including non pigmented tumors, hair and nail diseases, infectious and parasitic diseases.

The aim of the study aims to evaluate the role of dermoscopy in diagnosis of superficial cutaneous fungal infections.

The present study included 120 patients that were divided in to 5 groups clinically diagnosed as TC, tinea corporis, onychomychosis, TVC and Cutaneous candidasis. All patients were subjected to clinical, KOH microscopic, dermoscopic, mycological and histological examinations.

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