Study on the nail changes and nail disorders in the elderly

Thesis

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قَالُوا سُبْحَانَكَ لاَ عِلْمَ لَنَا إِلاَّ مَا عَلَّمْتَنَا إِنَّكَ أَنتَ الْعَلِيمُ الْحَكِيمُ

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Contents

GLOSSARY

Some important definitions:

1- Onychauxis: hypertrophy of the nails.

2- Onychocryptosis: ingrown nails: it occurs when the free edge of the nail plate penetrates through the soft tissue of the nail fold

3- Onychoclavus: hypertrophic tender dark area under the distal nail plate margins'.

4- Onychoschizia: splitting or lamination of the nail plate.

5- Onychorrehexis: narrow, longitudinal parallel striations of the nail plate.

6- Beau's lines: transverse linear depressions in the nail plate.

7- Koilonychia: transverse or longitudinal concavity of the nail resulting in a spoon shaped nail

8- Mees' lines: transverse white bands that affect multiple nails.

9- Muehrcke"s lines: pairs of transverse white lines that extend all the way across the nail.

10- Leukonychia: white lines or spots on one or more nails which commonly occurs in children

11- Melanonycia: brown discolouration of the nail.

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Introduction

Nail disorders comprise approximately 10% of all dermatological conditions and affect a high percentage of the elderly ***(Raja, 2001).***

Various changes and disorders are seen in the aging nail, many of which are extremely painful, affecting stability, ambulation and other functions ***(Hall, 2006).***

Senile changes in the nails are thought to result from impaired peripheral circulation, commonly due to arteriosclerosis. Although nail plate is an efficient sunscreen, UV radiation may play a role in such changes. Trauma, faulty biomechanics, infections, concurrent dermatological or systemic diseases and their treatments are also contributory factors **(Raja, 2001).**

Nail diseases are distinct from diseases of the skin. Although nails are a skin appendage, they have their own signs and symptoms which may relate to other medical conditions. Nail conditions that show signs of infection or inflammation require medical assistance and cannot be treated at a beauty parlor. Deformity or disease of the nails may be referred to as onychosis **(Hall, 2006).**

Geriatric nail diseases may include: Onychia, Onychocryptosis, Onychodystrophy, Onychogryphosis, Onychomycosis, Onycholysis, Onychomadesis, Onychophosis,

Onychoptosis, Paronychia, Koilonychia, Subungual hematoma, Onychomatricoma, Nail Pemphigus, Erythronychia and Melanonychia ***(Hall, 2006).***

The prevalence of onychomycosis increases with age and reaches nearly 20% in patients over 60 years of age ***(Loo, 2004);*** Onychomycosis has been reported to be more common in elderly men than in elderly women ***(Weinberg et al., 2004).***

Captopril has been described as being capable of inducing reversible onycholysis. There has been a report of a lichenoid skin disorders eruption with, ageusia and nail dystrophy with lichen planus-like features in a patient with renal failure treated with captopril ***(Tosti et al., 1994).***

Nail disorders have been reported to occur in approximately 71.4% of uremic patients ***(Altmeyer et al., 1982).***The most common disorders being: half and half nails, absent lunula, and splinter hemorrhages ***(Dyachenko et al., 2007).***

The prevention and management of these conditions require periodic cutting of the nails and appropriate medical care. Unfortunately, these are difficult for the elderly because of thickness of the nails, difficulty in accessing the feet, poor vision and sometimes, lack of motivation for personal care ***(Hall, 2006).***

Aim of the Work

The purpose of this work is to study the prevalence of different nail disorders among geriatric Egyptian population.

Structure of the Nail Unit

A-Embryology & histogenesis of the nail unit

The limb buds begin to appear towards the end of the 4th week as slight elevations of the ventrolateral body wall. The tissues of the limb buds are derived from two main sources, the somatic mesoderm of the lateral plate and the ectoderm. The nails are derived from the epidermis, which is first segregated from the ectoderm during the process of neurulation. Nail development represent specialized differentiation of epidermal cells ***(Brademas, 1990).***

The nail apparatus begins to develop in utero at 9 weeks from the same primitive epidermis that gives rise to hair, sweat glands and stratum corneum. The mature nail consists of four anatomically distinct compartments. Despite their common embryological origins, the nail folds, the nail matrix, the nail bed and the hyponchium (including the vestigial solehorn) all have unique features which distinguish them from each and from the integument ***(Sinclair et al., 1994).***

At the Fifth gestational week, the human fetus has no fingers-only arm buds. The most distal extensions of these are mitten-like structures which represent the future hands. The sectioned arm bud at the stage reveals a seeming disarry of mesenchymal tissue separate from the ectoderm ***(Brademas, 1990).***

At 10 weeks, the human hand is 8mm long and outwardly an exact miniature of the hand at term; except for the absence of nails. Nails fields are delineated by circumferential grooves (proximal, distal and lateral). Vessel formation can be observed in the 12^{th} week. At that time, a true invagination of epidermal cells has begun on the dorsal surface proximal to the developing nail bed. This invagination termed the matrix premordium will continue to grow ventrally and proximally until it reaches a distance of 1 mm from bony phalanx in the full-term finger. The matrix premordium becomes the proximal nail groove ***(Brademas, 1990).***

At 14 Weeks, extension of the matrix premordium can be seen. The future nail with its dorsal and mid layers elaborated by the centrodistally oriented cells of the dorsal, apical and ventral matrices, will occupy the space separating the ventral surface of the proximal nail groove which is seen as the lunula when it extends beyond the edge of the proximal nail fold ***(Fleckman, 1985).***

The accumulated mass of eosinophilic material on the most distal aspect of the nail bed represents the distal ridge. It will be sheared off by the nail plate as the plate passes over it and will persist as a small rise of the epidermis; the hyponychium. Rudimentary epidermal rete ridges extend ventrally beyond the hyponychium. At the stage of 14 weeks, both the nail bed and the invaginated nailfold develop a