

Role of dynamic optical coherence tomography for in vivo investigation of nails

Mandel Victor Desmond,¹ Starace Michela,^{1,2} Piraccini Bianca Maria,² Pellacani Giovanni¹

¹*Dermatology Unit; Department of Surgical, Medical, Dental and Morphological Sciences with Interest Transplant, Oncological and Regenerative Medicine; University of Modena and Reggio Emilia, Modena, Italy;*

²*Division of Dermatology, Department of Experimental, Diagnostic and Specialty Medicine, University of Bologna, Bologna, Italy.*

Introduction

Nail diseases are often troubling to the patient and diagnostically challenging for dermatologists. Therefore, a nail biopsy is required in some cases although often perceived uncomfortable by the patient and potentially scarring. Non-invasive imaging techniques are of particular interest in the diagnosis of nail diseases, reducing the number of nail biopsies.

Objective

The main objective of this study was to describe the typical aspect of healthy nail in Dynamic OCT (D-OCT) and assess the morphological changes that occur in different affected nails. Secondary objective was to detect the main characteristics of each nail disease.

Material and Methods

This was an observational, retrospective study carried out in our dermatology center from January 2016 to June 2018. Consecutive patients affected by nail diseases and volunteers with healthy nail were recruited. There were no limitations in age or gender. Standardized clinical and dermoscopic images were acquired per patient. D-OCT (VivoSight®: Michelson Diagnostics, Maidstone, UK) was performed on the surface of any nail investigated at three different distances: proximal nail fold, proximal and distal part of the nail plate. In case of suspicious nail tumour, for a better identification of the lesion and its borders, more D-OCT acquisitions were executed.

Results

25 nail diseases from 126 patients were evaluated and divided in six main groups: nail changes, unguis infections, ingrowing toenails, nail pigmentation, nail neof ormations and inflammatory nail disorders. Mean age of our patient population was 45.7 years (range 9-87) and the majority were

female (81 cases, 64.3%). Moreover, 2 healthy nails from 5 volunteers (2 men and 3 women) with a mean age of 34.4 years (range 26-56) were collected.

Conclusions

D-OCT allows an early diagnosis of nail disease, reduces the number of nail biopsies, helps for the biopsy site selection, detection of the nail tumours borders and for the treatment monitoring.