Dermoscopic and Immunohistochemical Changes in Acquired Melanocytic Nevi following Narrow Band Ultraviolet-B Therapy

Thesis submitted for partial fulfillment of M.D degree of Dermatology

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Abstract

Background: Acquired Melanocytic Nevi (AMN) have been reported to undergo morphological and dermoscopic changes following exposure to NB-UVB radiation.

Objectives: To study the clinical, dermoscopic and immunohistochemical changes in AMN exposed to NB-UVB radiation.

Patients and Methods: 40 patients diagnosed with different dermatological conditions were enrolled in the study. Three sessions of suberythemogenic NB-UVB per week were delivered for a total of 30 sessions. For each patient a minimum of 2 nevi were selected. One nevus was surgically removed prior to sessions as control, for the other nevus/nevi dermoscopic images were captured before and after NB-UVB sessions. The images were evaluated for morphological and dermoscopic changes. At the end of the irradiation cycle another nevus was surgically removed. Immunohistochemical assessment of Ki67 (marker of proliferation) and Melan A (marker of melanogenesis) were done for the biopsy specimens.

Results: Our study showed a statistically significant increase in the size of AMN after NB-UVB radiation ($P<0.001$). Benign dermoscopic changes in the form of an increase in the overall darkening, width of network, number and size of brown dots and blurring were observed. A statistically significant positive correlation was found between the darkening of brown color and the total cumulative dose of NB-UVB. A statistically significant positive correlation was found between the width of network and the total cumulative dose of NB-UVB. Immunohistochemical analysis did not show any significant change in exposed AMN in comparison to unexposed controls

Conclusion: AMN irradiated with repeated suberythemogenic doses of NB-UVB showed benign morphological and dermoscopic changes and this was confirmed by our immunohistochemical study.

Key words

DETECTION OF EXTENDED SPECTRUM BETA-LACTAMASE AND Ampc BETA-LACTAMASE-PRODUCING *ENTEROBACTERIACEAE* CLINICAL ISOLATES AND TESTING THEIR SUSCEPTIBILITY TO NOVEL ANTIBIOTICS

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ALM: Acral Lentigenous Melanoma

AMN: Acquired Melanocytic Nevi

BB-UVB: Broad Band Ultraviolet B

C: Cytosine

CDKN2A: Cyclin Dependant Kinase Inhibitor 2A

CMN: Congenital Melanocytic Nevi

CTCL: Cutaneous T- Cell Lymphoma

HIV: Human Immunodeficiency virus

HMB: Human Melanoma Black

IL: Interlukin

LMM: Lentigo Maligna Melanoma

LOH: Loss of Heterozygosity

MA: Melan A

MAL: Melanoma associated Leucoderma

MART: Melanocyte antigen recognized by T cells

MC1R: Melanocortin 1 receptor

MED: Minimal erythema Dose

Mel-CAM: Melanoma cell adhesion molecuole

MF: Mycosis Fungoids

MITF: Microphthalmia associated transcription Factor

MMR: Mammalian mismatch repair

NB-UVB: Narrow Band ultraviolet- B

NGFR: Nerve Growth Factor receptor

NM: Nodular Melanoma

NMSC: Non Melanoma Skin Cancer

PASI: Psoriasis Area and severity Index

PTEN: Phosphate andTensin Homologue

PUVA: Psoralen+Ultraviolet-A

SL: Solar Lentigens

SSM: Superficial Spreading Melanoma

T: Thymine

TH17: T helper 17

TNFα: Tumor Necrosis Factor Alpha

TP53: Tumor Protein 53

UV: Ultraviolet

UVA: Ultraviolet A

UVR: Ultraviolet Rays

Introduction

Phototherapeutic modalities are commonly used for the treatment of skin diseases. Previous studies have reported that repeated solar and artificial UVB (280–320 nm) and UVA (320–400 nm) exposure can modify the clinical, dermoscopic and histological features of acquired melanocytic nevi. However, it is unclear whether the changes are caused by molecular events with a carcinogenic potential (**Manganoni et al., 2011).**

Previous studies revealed an increased risk of non melanoma skin cancers following UV therapy. Studies of the risk of melanoma following UV therapy revealed controversial results **(Archier et al., 2012).**

Distinction between benign and malignant melanocytic lesions may be difficult even for highly skilled dermatopathologists emphasizing the importance of advanced diagnostic tools such as immunohistochemistry and dermoscopy **(Nielsen et al., 2011).**

Ki67 "which is a nuclear protein and a cellular marker of proliferation" is the most important marker in distinguishing benign from malignant melanocytic tumors **(Ohsie et al., 2008).**

MART1 (melanoma antigen recognized by T cells 1) also known as Melan A is a protein antigen found on the surface of melanocytes. It is another marker highly specific for melanoma. Ki67/MART1 stains are valuable diagnostic tools to distinguish melanomas and nevi with a large degree of certainty **(Nielsen et al., 2011).**

Dermoscopy is a noninvasive, in vivo method for the early diagnosis of malignant melanoma and the differential diagnosis of pigmented lesions of the skin. By allowing visualization of sub-macroscopic pigmented structures that correlate with specific underlying histopathologic structures, dermoscopy provides a more powerful tool than the naked-eye examination for clinicians to determine the need to excise a lesion **(Roldan-Marin et al., 2012).**