Structural aspects in melanocytic nevi

A. CHEȘCĂ (1)*, A. G. GYURKA (1), S. A. CHEȘCĂ (1), D. T. MICU (1)

1 Transilvania University of Brașov, Romania
*Corresponding author
Antonella Cheșcă, Ph.D.
Department of Basic, Preventive and Clinical Sciences, Faculty of Medicine, Transilvania University of Brasov,
39, Branduselor Street, Brașov, 500389, Romania
Phone: +40(0)268.412.185, e-mail: anto.chesca@gmail.com

Keywords. Melanocytic nevi, risk factors, incidence, children, structural issues.

Summary

The pathology of melanocytic nevi is of interest at present, due to the high frequency of these skin formations, beginning in young age. From this point of view, we must take into account some factors that determine the emergence and expansion of melanocytic nevi in various segments and regions of the body. Besides the genetic component favoring the occurrence of melanocytic nevi under certain conditions, environmental factors are also taken into consideration as well as the prolonged and inappropriate exposure to ultraviolet radiation. In this context, the circumstances can favorise the occurrence of melanocytic nevi, favoring their expansion into different parts of the body. Withal we must consider that in some circumstances traumas of melanocytic nevi may occur. The most affected age group is children, currently showing increased incidence of melanocytic nevi. In this context, this study analyzes 10 cases of melanocytic nevi in pediatric patients who came to surgery for removal of integer as well as of traumatized melanocytic nevi. The idea of this study is to analyze and to describe structural aspects of melanocytic nevi and their adjacent formations, processed by conventional histological technique using Hematoxylin – Eosin staining.

Introduction

The incidence of melanocytic nevi is common at present due to genetic factors determining their occurrence and, certainly, joined by many predisposing environmental factors (Kim, 2012; Pulitzer, 1991). Between them we mention that inadequate exposure to ultraviolet radiation is a danger causing the extension of melanocytic nevi to different segments of the body (Wick, 2005; Zalaudek, 2009).

We also consider the circumstances in which melanocytic nevi may be traumatized, requiring emergency surgical removal (Salerni et al., 2012). From this point of view, professional surgery practice removal of traumatized melanocytic nevi, aims to prevent the emergence of local or general complications with possible malignant degeneration, incompletely elucidated through studies (Ahmed, 1991; Roth, 1991). Frequently, however, patients come to the specialized medical units for removal of not traumatized melanocytic nevi (Santucci, 1989; Walters, 2007).

Currently, melanocytic nevi are met in all age groups groups, especially in young people and in children, representing the most affected population segment, due to age-specific skin structure (King et al., 1984).

Due to the fact that different age groups are affected by the presence of an extended number of melanocytic nevi on different segments of the body, certain programs would be useful to inform the population about the side effects of sun exposure as major risk
factor in the occurrence and expansion of these skin formations (Blum, 2003; Kelly, 1986).

It is also considered to be useful the updating of medical information regarding inadequate exposure to ultraviolet radiation and skin protection measures (Botelho, 2014; Dediol, 2011; Kittler, 2013). Presenting this information to citizens, it would be possible for people to realize that prolonged exposure to ultraviolet radiation could be dangerous (Crutcher, 1990; Rezze, 2011). From this point of view and in the idea of a presumptive malignant degeneration of melanocytic nevi, it is useful to recall that malignant melanoma shows a high degree of metastasis being a rapidly fatal type of malignant disease (Lindelöf, 2008; Schulz, 1996; Skender-Kalnenas, 1995).

Materials and methods

This study presents the structural aspects of melanocytic nevi observing 10 pediatric cases. The patients came to the specialized surgical unit for removal of these skin formations. In this context, the study shows structural aspects of surgically removed melanocytic nevi in pediatric patients done on request of their parents. The traumatized melanocytic nevi were surgically extirped as an emergency. We also present structural aspects of regions adjacent to melanocytic nevi. In order to highlight the structural aspects, the surgically excised pieces were histologically processed. These were stained using classical histological Hematoxylin Eosin staining technique. The structural aspects of melanocytic nevi and adjacent regions were visualized using Nikon optical microscope and objective magnifying power x20 and x40.

Results and discussions

During the structural analysis of the microscopic preparations, nests of nevi cells were observed, with characteristic arrangements of their subjacent connective tissue surrounding structures. (Figure 1)

Fig. 1. Hematoxylin – Eosin staining x20.

On a microscopic image using power magnifying lens to observe in detail the structural elements, the typical dome aspect of nevi formations is remarkable. Alongside there is a part of a sebaceous gland that may belong to the hair adjacent to a melanocytic nevus. Structural elements belonging to the connective tissue of the subjacent area which has been referred to above can also be observed. (Figure 2)

Fig. 2. Hematoxylin – Eosin staining x40.

Given the fact that the study refers to traumatized melanocytic nevi requiring emergency excision surgery, the microscopic
image below details a small part of a traumatized area, observed at longitudinally sectioned sebaceous glands level. The next microscopic image shows a longitudinally sectioned, not traumatized sebaceous gland. Around it structural elements of connective tissue can be distinguished, blood vessels of different caliber in a specific conjunctive structural atmosphere. Presenting structures like sweat glands and sebaceous glands, we emphasize that melanocytic nevi referred to in this study were in regions adjacent to these structures (Figure 3).

Fig. 3. Hematoxylin – Eosin staining x40.

On a microscopic preparation a transected traumatized melanocytic nevus can be noticed as well as injured connective structures in adjacent areas, longitudinally sectioned. We also observe the surrounding areas of typical structures of connective tissue, with small areas of sweat glands adjacent to regions with traumatized and excised melanocytic nevi (Figure 4).

Fig. 4. Hematoxylin – Eosin staining x20.

Since the excised melanocytic nevi were found in an adjacent area to sebaceous and sweat glands, following microscopic image details these structures (Figure 5).

Fig. 5. Hematoxylin – Eosin staining x40.

On a detailed microscopic image area sweat glands adjacent to the excised melanocytic nevi as well as structural surrounding elements of the conjunctiva are presented (Figure 6).
The selected cases of patients in this study were chosen both to be presented at structural level of the excised melanocytic nevi in patients specially requesting excision, as well as at description level of traumatized melanocytic nevi requiring surgical excision. Certainly along with the morphological description of the structural nevi components, the structural aspects of adjacent formations to the excised melanocytic nevi, integer or traumatized, are also presented.

Conclusions

The pathology of melanocytic nevi represents a topical medical field given the existence of determinant factors and the risk of extending of these formations and their numerical multiplication. From this point of view, the analytical approach of this field is complex and depends on the objective of the study.

In the context of the idea of this study, informational and educational programs regarding the risks of prolonged exposure to ultraviolet radiation are welcome for any age group.

It is also worth noting that the excision of melanocytic nevi on demand or in emergency conditions, reduces the risk of possible complications or possible malignant degeneration.

References


