Structural issues of the tegument regions adjacent to the melanocytic nevi

ANTONELLA CHEȘCĂ (1)*, TIM SANDLE (2), DMITRIY BABENKO (3), ILYA AZIZOV (3)
1 Department of Basic, Preventive and Clinical Sciences, Faculty of Medicine, „Transilvania” University of Brașov, Romania
2 Head of Microbiology, BPL, United Kingdom
3 Karaganda State Medical University, Kazakhstan
*Corresponding authors
Antonella Cheșcă, Lecturer MD, PhD, Department of Basic, Preventive and Clinical Sciences, Faculty of Medicine, „Transilvania” University of Brașov 56, Nicolae Bălcescu Street, 500019, Brașov, Romania; Phone +40268412185. e-mail: anto.chesca@gmail.com

Keywords. Nevi, structure, microscopy.

Summary

This study aims at structurally observing the tegument regions adjacent to the areas where melanocytic nevi are found. The study aimed at analyzing the structural tumors accompanying the melanocytic nevi located on the scalp. Such structural analysis of the melanocytic nevi is required because of the increased frequency of occurrence of these tumors from early age; in turn this requires competent medical control for the elimination of the nevi in sufficient time due to the potential for malignant degeneration. The malignant transformation of the melanocytic nevi is triggered by external factors, in addition to the genetic factors which are responsible for the potential of the nevus to form. Moreover, we must take into consideration the influence of traumatizing the melanocytic nevi and their potential for malignant degeneration.

Introduction

In recent years we have observed an increased incidence of melanocytic nevi starting with earlier age. In this context, we appreciate that this increase is due to both genetic factors and environment factors (Armstrong, et. al., 2001). From this point of view it is important to know the noxious impact of extended and inappropriate exposure to sun radiation of young people (Boniol et. al., 2012). The experimental studies and the cases encountered in the current medical practice have demonstrated the negative impact of the inappropriate exposure to sunlight on health. This was noticed on the individuals having melanocytic nevi on different areas of the body, since sun radiations are dangerous because they first of all affect the teguments which ordinarily would protect the body from various kinds of damage, including the effects of sunlight. Therefore, we are aware of the increased incidence of the malignant melanoma that quickly transforms into metastasis, often with a lethal prognostic (Garbe, 2007; Jiménez-Requena, 2010). The occurrence of malignant melanoma is determined by various factors concurring to the transformation of the melanocytic nevi into malignant tumors (Mohr, et. al., 2009). As this a frequently encountered neoplastic pathology, there is a medical requirement for prevention methods by screening, using modern investigations, together with the use of modern therapy methods under careful monitoring (Bastiaannet, 2012; Ragel, 2007; Rastrelli, 2013). Considering that currently there are more and more individuals diagnosed with melanocytic nevi extended on various body areas, it is increasingly important that protective measures related to the extended and inappropriate exposure to sunlight are applied. From this point of view, prior knowledge of a potential danger to health is paramount (Davids, et.al., 2003).
In the context of this study, from the previous researches we have observed, in the last years, a significant increase of the number of melanocytic nevi reported among the younger population. Considering this perspective, and considering that the number of years of exposure to sunlight of this group of population extends to senesce, protection measures must be adopted. Such measures must include an assessment of the negative effects on the long term of exposure to sun radiations (Maubec, 2011; Rigel, 2008). This approach is necessary because we must take into account the possible potential of malignant degeneration of melanocytic nevi. This equally concurs with the potential associated traumas that accentuate the risk of becoming malignant. The potential of malignant degeneration of melanocytic nevi is high due to the numeric extension on various body areas. Genetic predisposition is also involved in melanocytic nevi extension, and the risk can be enhanced where an inappropriate exposure to sun light associated (Ulrich, et.al., 2011; Xing, et. al., 2012).

The risk of malignant degeneration of the melanocytic nevi nowadays must also consider the influence of demographic factors, geographic factors, climate fluctuations, and other environmental changes that impact on health (Trotter, et. al., 2013).

Materials and methods

For the structural analysis of the tegument regions accompanying the melanocytic nevi, we proceeded make observations after the excision of the melanocytic nevi by surgery. The study was carried out on 12 patients with melanocytic nevi on the scalp. The patients were with both genders who came to the specialty physicians. All patients came from the urban and the rural environments. The microscopic analysis of the teguments adjacent to the melanocytic nevi was made possible using the Nikon optic microscope with magnifying power of x 20 and x40; this was used for both the overall analysis of the structural issues and for the observance of detailed structural issues.

Results and discussions

After carrying out the microscopic study, we proceeded to analyze the tegument structures adjacent to the melanocytic nevi encountered on the scalp of patients. In this context, it is worth noting that in the group of investigated persons the melanocytic nevi were located exclusively at the scalp level. Based on this finding we must take into account the increased incidence of melanocytic nevi on the skin of the head. As a result of this position such nevi are likely to influence possible traumas in the region of the body. This places an obligation on the surgeon to extirpate in certain cases the traumatized melanocytic nevi to avoid complications or their potential malignant degradation. Surgery must be highly professional without injuring the adjacent tegument regions. The surgical excision of the melanocytic nevi on the scalp enables the structural observation of the tegument and of the afferent structures encountered in this anatomic region.

In this context we present some suggestive structural issues, adjacent to the melanocytic nevi, that we have ascertained when excising the melanocytic nevi of the patients from the investigated interest group.

The images presented show the overall or detailed structural issues of the head skin, with the muscles (as displayed in figure 1). Both the subcutaneous fat of the scalp and its structural appearance, together with the surrounding areas, are shown in figure 2. Furthermore, the sweat glands appearing on the scalp are presented in figure 3. In addition we can structurally observe the sebaceous glands enclosed to the hair follicle. In this study the sebaceous gland is presented in longitudinal section in figure 4 and in cross section in figure 5.
Fig. 1. Scalp. Longitudinal section. Hematoxylin – Eosin staining x20.

Fig. 2. Scalp. Longitudinal section. Hematoxylin – Eosin staining x20.

Fig. 3. Scalp. Sweat glands. Longitudinal section. Hematoxylin – Eosin staining x20.

Fig. 4. Scalp. Sebaceous gland. Longitudinal section. Hematoxylin – Eosin staining x20.

Fig. 5. Sebaceous gland. Cross section. Hematoxylin – Eosin staining x40.

Conclusions

This paper has presented a study related to the structural analysis of the tegument regions surrounding the melanocytic nevi. The study has enabled assertions to be made about the structural components of the scalp. By using a photonic optic microscope it was possible to make observations about the adjacent regions of the surgically removed melanocytic nevi of the scalp. From this point of view, the study aimed to observe and analyze the tegument adjacent to the melanocytic nevi, as well as other structures of the scalp. The structural observation of the tegument of the scalp region and of the adjacent regions of the investigated areas showed morphologic integrity, confirming the benign character of the melanocytic nevi of the investigated group. From this perspective,
the study excluded malignant degeneration and the occurrence of melanoma.

The information presented in this paper is designed to assist surgeons and healthcare professionals in making fast and informed judgments, based on structural alternations to the skin, as to the risks associated with melanocytic nevi.

References


