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Melanoma Malignum- Risk Factors

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Abstract

Due to the constantly increasing incidence of melanoma of the skin, its early diagnosis becomes very important, which at an early stage gives a very good therapeutic prognosis. The paper draws attention to the need to use prevention as an effective action in the field of popularizing epiddemiological knowledge and disseminating pro-health behaviors. The work draws attention to risk factors that predispose to the development of the disease.

Keywords: Melanoma; Prophylaxis; Risk factor

Introduction

Skin cancers are one of the most common malignant tumors found in humans. Due to the constantly increasing incidence of skin cancers, their early diagnosis becomes very important, which primarily in melanoma malignum at an early stage gives a good therapeutic prognosis [1,2]. Many scientific works, many studies indicate the role of ultraviolet radiation in the development of melanoma. Sunburns and mainly those in early childhood are also a big risk. In most people, especially those with fair skin, exposure to ultraviolet radiation leads to the development of ordinary melanocytic nevi, and in predisposed people it induces the development of dysplastic nevi. Besides, the genetic factor in people with a family history of melanoma, there is a mutation in the CDKN2A gene, which is responsible for two proteins – p16 and p14ARF. A mutation in the CDKN2A gene may affect the excessive or insufficient expression of the above-mentioned proteins, which may contribute to the formation of melanoma malignum [1,2].

Admission

There has been a significant increase of 10-15% in the incidence of skin cancers over the past decades. The World Health Organization (WHO) estimates that more than 65,000 people worldwide die annually from melanoma. These figures are frightening, especially when you consider how much money has been spent researching and combating the causes of cancer for many years [1,2].

Skin Melanoma (Melanoma Malignum)

Melanoma malignum is one of the most malignant tumors of the skin, mucous membranes of the mouth, genitals and eyeball. It derives from pigment cells, is formed within pigmented, atypical birthmarks, but most often in skin unchanged de novo.

The main risk factors are considered primarily solar radiation, sunburn in childhood and at a young age. Artificial radiation used in self-tanning beds “solariums”, mechanical and chemical irritation, dysplastic nevi syndrome, xeroderma pigmentosum, previous skin cancer, age. The phototype of the skin is of great importance in the etiopathogenesis of melanoma malignum [3,4].

Four basic clinical forms of melanoma are distinguished:

- Superficial spreading melanoma
- Nodular form (nodular melanoma)
- Melanoma developing from lentigo maligna melanoma
- Distal form of malignant melanoma (acrolentiginous

melanoma, ALM)

Other varieties of malignant melanoma:

- Melanoma associated with the presence of a pre-existing melanocytic nevus
- Polyploid melanoma
- Papillary melanoma
- Desmoplastic and polyploid melanomas
- Ocular form of melanoma
- Melanoma developing in pregnancy and children
- Amelanotic melanoma

Superficial spreading melanoma (SSM) is a flat pigmented lesion with a heterogeneous brown-black coloration. The edges are irregular, well demarcated from the surrounding skin (Figure 1). At a later stage, there is a bulging and ulceration. It develops most often on the basis of a dysplastic (atypical) birthmark. It is the most common form of melanoma.

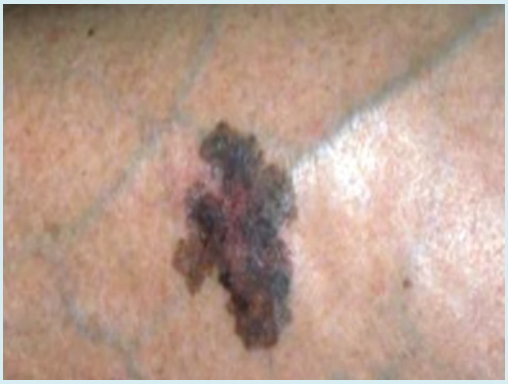

Figure 1: Superfacial spreading melanoma (Source [5]).

Nodular malignant melanoma (NMM) is the most severe variant due to its high tendency to metastasize. Most often it has the form of a nodule with rapid growth (most often within a few months), with an intense brown-black color (Figure 2).

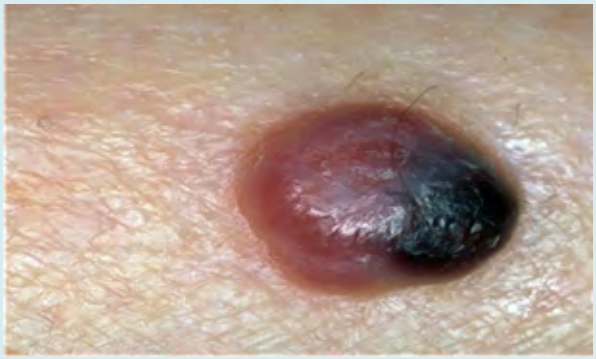

Figure 2: Nodular melanoma malignum (Source [5]).

It derives from pigmented birthmarks and is formed on previously unchanged skin. After mechanical injuries, it can bleed. In addition, there is a scab covering of the lesion, itching, the formation of an ulcer (Figure 3). Around the primary lesion, small nodules may develop.

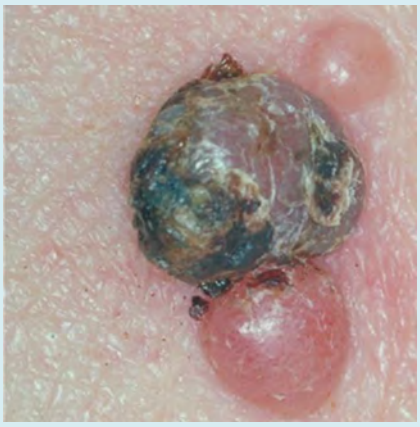

Figure 3: Nodular melanoma malignum (Source: [5]).

Melanoma Developing from Lentigo Maligna Melanoma (LMM)

At the initial stage, it has the character of a spreading pigment spot. This process takes many years. The pigment spot is heterogeneous, with a brown, black, bluish or red coloration. The boundaries of the lesion are jagged (Figure 4).

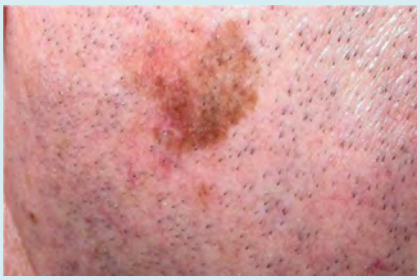

Figure 4: Lentigo melanoma malignum (Source:[5]).

Later, the lesion thickens with the formation of red-blue tubercles at the edges of the lesion. This indicates the growth of melanocytes deep into the dermis.

Distal form of malignant melanoma (acrolentiginous melanoma, ALM) (Figure 5)

Changes occur on the distal parts of the limbs. A distinguishing feature of this type of melanoma is the frequent but not always occurring Symptom of Hutchinson, i.e. the spread of the lesion towards the closer parts of the plate and epidermal hem. Around the pigment spot, nodules and foci of atrophy are formed. In the form of subnail melanoma, there is a brown

discoloration along the plate, erosions of the distal part of the nail. At an advanced stage of the disease, the destruction of the nail plate occurs.

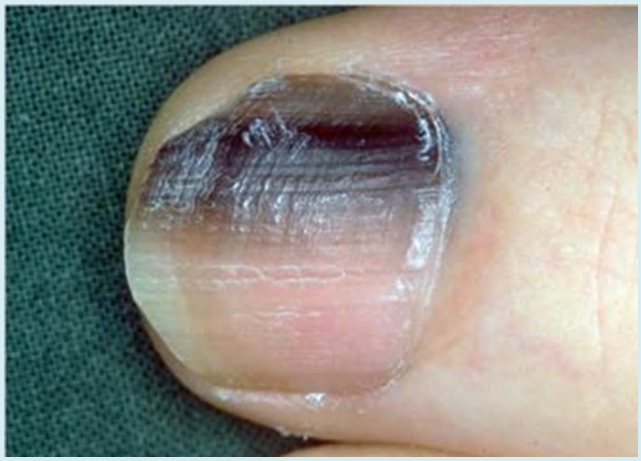

Figure 5: Acrolentiginous melanoma (Source [5]).

Risk factors

It should be remembered that the risk of developing skin cancers increases if you have fair complexion, red or blond hair, blue eyes, numerous freckles, numerous pigmented birthmarks, have low tolerance to the sun, sunburns occurred, especially in childhood, there were skin cancers in the family, solarium is used [6,7].

Groups at Increased Risk of Melanoma - MMRISK

Both women and men suffer from skin cancers, also age is not a significant differentiating factor. Morbidity increases in people with fair skin who have emigrated to lower latitudes, where sun exposure is higher than in their home country. There are certain groups of increased risk of developing skin cancers, the so-called MM RISK factors (a factor that estimates the risk of developing melanoma). These include:

Moles – a large number of atypical and giant congenital birthmarks – some of them can transform into melanomas, with various types of pigmented changes, increased vigilance and frequent examinations are necessary;

Moles atypical – the presence of atypical changes on the skin (more than three) – increases the risk of melanoma; birthmarks arising in old age also pose a potential danger;

Red hair – factors related to appearance – fair complexion, green or blue eye color, blonde or red hair – Nordic phenotype (with low concentration of melanin) significantly increases the risk of skin melanoma;

Inability to tan – i.e. the tendency to the occurrence of redness of the skin and burns already with little exposure to sunlight;

Sunburn history – related to the occurrence of skin burns in childhood.

Kindred – illustrating the genetic factor; people with a positive family history are much more likely to develop melanoma [8-10].

Conditions after organ transplants and immunosuppressive treatment are also a factor that can contribute to the formation of skin cancer.

Although the above elements are among the factors that have the greatest impact on the appearance of melanoma, they are not the only determinants of the disease. Skin melanoma can appear even in people potentially not exposed to the disease [11].

Many years of research on the development process of melanoma have allowed the discovery of numerous mechanisms responsible for the growth and spread of cells of this dangerous cancer. Genetic mutations are associated with the occurrence of many cancers. In melanoma patients, several genes have been identified whose mutations promote the onset of the disease. Advances in the treatment of advanced melanoma were made possible by the discovery of one of them in the BRAF gene. Confirmation of the presence of a BRAF mutation is obtained on the basis of the analysis of tumor tissue, which is taken during surgery. More than half of diagnosed melanomas have a BRAF mutation. Their special features are:

- Younger age of the patient at the time of illness
- Disease focus more often localized on the skin of the trunk
- Fewer features of sun damage in the skin surrounding the primary focus (the BRAF mutation is thought to be characteristic of people who have often suffered sunburn in childhood, rather than those who are constantly exposed to harmful sunlight)
- High number of pigmented birthmarks of the skin [12].

Conclusion

There is still a great need to educate dermatological patients what behaviors and what skin lesions can affect the development of MM and atypical birthmarks. Dermatological patients often do not have such knowledge of which skin lesions should worry them and what factors determine their more frequent occurrence. They are also not aware of what factors increase the risk of developing melanoma. There is therefore a need for further assessment of patients' awareness in this regard and their broad education regarding the risk factors for the development of birthmarks and melanoma related to lifestyle and resulting from genetic burdens. Prophylactic behaviour should be promoted and the need for systematic medical evaluation of melanocytic nevi should be emphasized.

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