

## ANATOMICAL AND CLINICAL CORRELATIONS IN SKIN TRAUMATOLOGY

**Voită-Mekereș Florica\***, **Mekeres Gabriel Mihai\*\***, **Voită Gheorghe Florin\*\***, **Pop Nicolae Ovidiu\*\***, **Voită Nuțu Cristian\*\***, **Szteklacs Tulvan Iuliana Victoria\*\*\***

\* University of Oradea, Faculty of Medicine and Pharmacy, Morphological Disciplines;

\*\* University of Oradea, Faculty of Medicine and Pharmacy;

\*\*\*National University of Physical Education and Sports, Bucharest, Romania.

Oradea, Romania, 1 Universității St., 410087

e-mail: voita\_florin@yahoo.com

### **Abstract**

*The skin is the organ that covers the entire surface of the body and is the main "place" of interaction with the external environment, offering protection against traumas caused by ultraviolet radiation, extreme temperatures, bacteria, viruses, fungi, toxic etc. Primary traumatic lesions represent the morphological substrate of local post-traumatic changes in forensic medicine and clinically objectify a trauma. The clinical presence of the traumatic lesions has both clinical, therapeutic and prognostic importance, as well as a medico-legal importance to establish the mechanism by which the trauma occurred. , and lesions with a continuity solution in excoriations and wounds. Wound healing is the process by which the skin is repaired after a trauma. In non-damaged skin, the epidermis and dermis, form a protective barrier against the external environment. When this barrier is damaged, a biochemical cascade of processes goes into action to repair the lesion. The major importance of these traumatic lesions is represented by their description, which will include the topographic location, shape, evolutionary stage, size and specific characteristics.*

**Keywords:** skin anatomy, primary traumatic lesions, topographic location.

### **INTRODUCTION**

The skin is the organ that covers the entire surface of the body and is the main "place" of interaction with the external environment, offering protection against traumas caused by ultraviolet radiation, extreme temperatures, bacteria, viruses, fungi, toxic etc. (Freinkel, 2001)

The anatomical structure consists of three layers: epidermis (ectodermic origin) and dermis (mesodermal origin). Under the dermis, there is the hypodermis or subcutaneous tissue that represents a structure that is not part of the skin. (Mekeres, 2017).

The subcutaneous tissue is made up of lax connective tissue, rich in adipose cells that form the hypodermic adipose panicle, having as macroscopic correspondent the superficial fascia because it ensures the lax adhesion of the skin to the underlying anatomical layers. (Junqueira, 2008)

Typically, two types of tegument are described: the thick tegument represented by the glabrous, smooth or non-oily skin and the thin, hairy tegument, which covers most of the body. The thickness of the epidermis makes the difference between these two types of tegument, the thick

tegument having between 400 and 600  $\mu\text{m}$ , and the thin one between 75 and 150  $\mu\text{m}$ . (Krishnaswamy, 2004) (Kanitakis, 2002)

Primary traumatic lesions represent the morphological substrate of local post-traumatic changes in forensic medicine and clinically objectify a trauma.

The clinical presence of the traumatic lesions has both clinical, therapeutic and prognostic importance, as well as a medico-legal importance to establish the mechanism by which the trauma occurred. , and lesions with a continuity solution in excoriations and wounds. (Dermengiu, 2015)

## **MATERIAL AND METHOD**

We evaluated the clinical manifestations imminent to the action of the traumatic agents in the production of primary, complex and specific skin traumatic lesions in order to highlight their importance both in the clinic from a therapeutic and prognostic point of view, but especially in the current forensic practice.

The skin has variations in thickness, depending on location, gender and age. The difference in thickness is given by the thickness of the dermis because the epidermis is usually constant throughout life and anatomical location. The location where the tegument has the greatest thickness is in the palm and in the plant, where it is about 1.5 mm, and at the level of the eyelids, the tegument has a thickness of 0.05 mm.

Skin changes associated with age include: thinning, laxity, fragility and wrinkles. Areas exposed to the sun, in addition to age changes, depigmentation, premature wrinkles, telangiectasis and actinic elastosis. Skin aging is characterized by intrinsic and extrinsic changes. (Anatolie, 2016)

Wound healing is the process by which the skin is repaired after a trauma. In non-damaged skin, the epidermis and dermis, form a protective barrier against the external environment. When this barrier is damaged, a biochemical cascade of processes goes into action to repair the lesion. This process is divided into the following phases: abscess formation (hemostasis), inflammation, tissue growth (proliferation), tissue remodeling (maturation). (Stadelmann, 1998)

The major importance of these traumatic lesions is represented by their description, which will include the topographic location, shape, evolutionary stage, size and specific characteristics.

## **RESULTS AND DISCUSSION**

Primary traumatic lesions represent the morphological substrate of local traumatic changes that objectify a trauma. In order to have clinical and

forensic value, they need to be accurately described as soon as possible by physicians who first come into contact with them because after therapeutic interventions, skin lesions may change their characteristics.

A contagious wound that has irregular edges and has tissue bridges, if treated surgically, by surgical sectioning of the edges to debride necrotic tissue and for a superior aesthetic result, the edges will be smooth and may be confused with the cut wound that from the point medico-legal view is produced by another traumatic agent.

In order to avoid confusion and for a correct and complete lesion balance of the traumatic lesions, the description of the traumatic lesions is done according to the topographic criterion, both by the clinicians and the forensic doctors as follows: location, name of the lesion, shape, evolutionary stage, dimensions, specific characters.

Scars are part of the normal healing process. The scars are initially red or pink and slightly elevated, palpable or less depressed, atrophic or contractile. In a normal situation, over time they become discolored and flattened. (Putra, 2017)

Important factors that contribute to unsightly scarring are: tension in the suture, infections, delayed epithelialization, uneven alignment of wound edges, insufficient blood flow to healing scars, genetic factors, which cannot be controlled.

The scars represent the healing of the body after traumatic injuries and can be helpful in establishing the traumatic agent and on the mechanism of action over a long time since the trauma occurred. (Mekeres, 2017)

## CONCLUSIONS

The elemental traumatic lesions of the skin represent the post-traumatic changes of the skin produced by a traumatic agent. These are primary traumatic lesions, complex and specific traumatic injuries such as burns, frostbite, electric mark and chemical burns.

The correct description of the traumatic injuries is essential to prove the reality of the trauma, its mechanism of production, the length of the injury and sometimes the nature of the traumatic agent, elements of major importance in forensic medicine.

## REFERENCES

1. Freinkel, R. K., & Woodley, D. T. (Eds.). (2001). *The biology of the skin*. CRC Press.
2. Junqueira, L. C., & Carneiro, J. (2008). *Pele e anexos*. *Histologia Básica*, ed, 9, 303-309.
3. Mekereş, F., Buhaş, C., Rahotă, D., Moga, I., Voiţă, F., & Mekereş, G. M. (2017). *A NEW APPROACH TO EXPLORING HUMAN ANATOMY*. Romanian

Journal of Functional & Clinical, Macro-& Microscopical Anatomy & of Anthropology/Revista Româna de Anatomie Functionala si Clinica, Macro si Microscopica si de Antropologie, 16(3).

4. Shakoory, B., Fitzgerald, S. M., Lee, S. A., Chi, D. S., & Krishnaswamy, G. (2004). The role of human mast cell-derived cytokines in eosinophil biology. *Journal of interferon & cytokine research*, 24(5), 271-281.
5. Mekereş, F., Bodog, F., Beiuşanu, C., Voiţă, F., Mekereş, G. M., & Pop, N. O. (2017). THE IMPORTANCE OF THE SCARS LOCALISATION IN AESTHETIC DAMAGE. *Romanian Journal of Functional & Clinical, Macro-& Microscopical Anatomy & of Anthropology/Revista Româna de Anatomie Functionala si Clinica, Macro si Microscopica si de Antropologie*, 16(2).
6. Dermengiu D. (2015). Evaluarea gravitatii leziunilor traumatice, repere axiologice, criteriologice si metodologice, editura Gemma, Bucuresti, 22-24.
7. Anatolie, V. I. Ş. N. E. V. S. C. H. I., & Gheorghe, M. U. Ş. E. T. (2016). Corelaţii clinico-biochimice în procesul de îmbătrânire a pielii, 35-37.
8. Stadelmann, W. K., Digenis, A. G., & Tobin, G. R. (1998). Physiology and healing dynamics of chronic cutaneous wounds. *The American Journal of Surgery*, 176(2), 26S-38S.
9. Mekereş, F., Voiţă, G. F., Mekereş, G. M., & Bodog, F. D. (2017). Psychosocial impact of scars in evaluation of aesthetic prejudice. *Rom J Leg Med*, 25, 435-438.
10. Kanitakis, J. (2002). Anatomy, histology and immunohistochemistry of normal human skin. *European journal of dermatology*, 12(4), 390-401.
11. Putra, B. B. A., Jola, R., AH, E. B., Djoko, L., & Benjamin, C. T. (2017, August). Anatomical pathology and radiology appearance of ballistic wound result of cal. 177 air rifle with 4, 5 mm pellets on extrimity of the dog (canis lupus familiaris) at different shooting distances. In 1st International Conference Postgraduate School Universitas Airlangga:" Implementation of Climate Change Agreement to Meet Sustainable Development Goals"(ICPSUAS 2017). Atlantis Press.