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MELANOM I SKVAMOCELULARNI KARCINOM KOŽE NASTALI NA OŽILJKU OD OPEKOTINE

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Running title: skin cancer arising in scars
Abstract

**Introduction.** Development of malignancy in chronic burn scars is described in 2% of cases, with cutaneous squamous cell carcinoma (cSCC) being the most frequent. It develops several years after the burn injury, as a consequence of malignant transformation in chronically inflamed tissue. Melanoma in a burn scar is, however, quite rare; in several cases, a synchronous or metachronous appearance of melanoma and cutaneous squamous cell carcinoma was noted. Based on the previous rare reports, melanoma and cSCC can concurrently arise on thermal burn scars, as well as on the areas treated with skin grafts.

**Case report.** We report on a case of a 67-year-old male who was accidentally scalded by boiling water at the age of 14. The patient subsequently developed melanoma at the age of 60, according to clinical and dermoscopic examination at the site of the burn scar, and after excision and histopathological analysis, the diagnosis of melanoma was confirmed (superficial spreading melanoma, Breslow 0.87 mm, with ulceration, pT1b). Complete surgical excision was done and diagnosis confirmed on histopathological analysis. After diagnosis of melanoma, regular follow-up every six months was schedule, and three years after, cSCC was suspected and confirmed after surgical excision and histopathologic analysis. **Conclusion.** This case highlights the importance of long-term dermatological follow-up after burn injuries and early detection and treatment of skin cancer that can lead to better outcome in this group of patients.

**Key words:**

burn scars; melanoma; squamous cell carcinoma.

Apstrakt

**Uvod.** Maligni tumori kože mogu se razviti na terenu ožiljaka od opekotina kod 2% pacijenata, a kutani planocelularni karcinom (karcinom skvamoznih ĉelija kože) je najĉešći. Razvoj melanoma na ožiljku od opekotina je veoma redak; opisano je nekoliko sluĉajeva sinhronog ili metahronog pojavljivanja melanoma i karcinoma skvamoznih ĉelija kože.

Melanom i kutani planocelularni karcinom mogu da se istovremeno pojave na ožiljku od opekotine kao i na regiji sa autotransplantatom kože. **Prikaz bolesnika.** Prikazujemo
muškarca starog 67 godina koji je imao opekotinu ključalom vodom u 14. godini. U 60. godini života na mestu ožiljka od opekotine, kliničkim i dermoskopskim pregledom postavljena je sumnja na melanom, a nakon ekscizije i histopatološke analize, potvrđena je dijagnoza melanoma (površinsko šireći, Breslow 0.87 mm, sa ulceracijom, pT1b). Nakon postavljene dijagnoze i odluke Konzilijuma za melanom, pacijent je redovno kontrolisan i tokom treće godine praćenja učinjena kompletna hirurška ekscizija suspektnog kutanog planocelularnog karcinoma kože, potvrđenog histopatološkom analizom. **Zaključak.** Ovaj slučaj naglašava važnost kliničkog i dermoskopskog pregleda kože kod pacijenata sa opekotinama, radi rane dijagnoze i odgovarajućeg hirurškog lečenja, koje smanjuje rizik za recidiv bolesti.

**Ključne reči:**
ožiljak od opekotine; melanom; karcinom skvamoznih ćelija.

**Introduction**

About 2% of chronic burn scars develop into malignant tumors many years after the burn occurrence. Squamous cell carcinoma is the most frequent cancer that arises on the affected skin, although in a general population, this form of malignant tumor is less common than basal cell carcinoma. Available empirical evidence suggests a mean time latency of 23 to 37 years. However, not many cases of melanoma on thermal burn scars are reported in pertinent literature. They nonetheless suggest that melanoma (MM) and squamous cell carcinoma (SCC) can concurrently arise on thermal burn scars, as well as on the areas treated with skin grafts.

**Case report**

We report on a case of a 67-year-old male who suffered burns after being accidentally scalded by boiling water at the age of 14. The burn resulted in the development of an extensive scarring of the skin on his back, which subsequently led to the emergence of two malignant tumors in the burn scar region. Melanoma occurred 46 years after the burn, followed by a squamous cell carcinoma 3 years later. The first symptoms the patient
noticed were painless pigmented and crusty lesions in the middle of the burn scar that were clinically indicative of melanoma.

Clinical examination of his right lumbar region revealed an asymmetric pigmented flat lesion exceeding 3 cm in diameter that was brown and black in color, with irregular borders, according to the ABCDE rule. It was accompanied by one tumefaction covered in brown crusts on the surface of the surrounding skin (Figure 1). After clinical examination, wide surgical excision and local flap reconstruction were performed (Figure 2a and 2b). Histopathological diagnosis of one lesion was ulcerated superficial spreading melanoma (SSM) in the scar tissue (Breslow 0.85 mm, Clark III, pT1b) whereas the other lesion was diagnosed as lentiginous melanocytic hyperplasia (LMH). Final pathological findings confirmed negative excision margins, which extended 1 cm into the surrounding tissue, in accordance with the European guidelines (Figure 3).

At the three-year follow-up, an area of persistent erythema and desquamation was observed on the lumbar region, which was clinically suspicious of malignant transformation (Figure 4a and 4b). Consequently, wide surgical excision with skin autotransplantation was performed (Figure 5) and intraepithelial squamous cell carcinoma with clear margins was histologically confirmed (Figure 6). The patient attends regular follow-ups and remains free of the disease until today (six years after the intervention).

**Discussion**

There are few epidemiological data available on the risk of skin cancer arising in scars, but is described to occur in 2% of patients. Wallingford's review has identified a major gap in scientific knowledge regarding the incidence of scar neoplasms, despite a significant number of case reports. Although burn patients are not at higher risk of developing skin cancers in general, a modest increase in the prevalence of SCC at sites of past burn injuries cannot be excluded, nor can excess risk in longer study follow-up periods be disregarded.

In the study conducted by Fazeli et al., SCC was the most common diagnosis in association with chronic cutaneous inflammation and burns, which was well-differentiated most of the time. Also, several cases of concurrent melanoma and sarcoma have been reported. Koh et al. described an extremely rare, aggressive variant of cutaneous squamous cell carcinoma with extreme acantholysis, pseudoangiosarcomatous squamous cell carcinoma developing
on a burn scar. In this report, the authors emphasized the importance of establishing a diagnosis based on histological and immunohistochemical examination.

The development of melanoma on a burn scar is relatively rare; in several cases, a synchronous or metachronous appearance of melanoma and cutaneous squamous cell carcinoma was reported. In one report, multiple melanoma developed at the site of a burn scar, and in another, rare desoplastic melanoma with regional lymph node metastases was described.

In a largest review, 23 cases of melanoma and 5 cases with concomitant presence of cutaneous squamous cell carcinoma and melanoma were described, and in majority of patients skin cancer developed after a long period from the age of burn occurrence to the melanoma diagnosis (41 ± 26 years in the 23 malignant melanoma only cases, and 48 ± 13 years in the 5 cases involving both squamous cell carcinoma and malignant melanoma). Also, in another report an average latency time from burn to melanoma diagnosis was 45 years. Our patient developed melanoma 46 years after burn injury, which was followed by diagnosis of cutaneous squamous cell carcinoma three years later. A very long latency period was reported by Uchida et al., who described a case of a 78-year-old Japanese female with malignant melanoma that developed on a thermal burn scar after more than 70 years. This suggests the need for a long-term dermatological follow-up of all burn patients.

The mortality rate associated with cutaneous SCC is about 1%, while in skin cancers developing in a scar it can be as high as 21–38% based on previous literature, median survival after scar cancer diagnosis was reported to be 25 months, while 5-year survival rate varies from 52% to 80%. In patients with involvement of regional lymph nodes, median survival was 16 months, increasing to 66 months for those without lymph node metastases. Our patient is on regular follow-ups and is disease-free during the six-year follow-up.

Self-skin examination and regular clinical and dermoscopic follow-up should be recommended to patients with burn injuries, for an early diagnosis of skin cancer to avoid the complications and poor outcome in advanced disease. Initial early grafting for a deep burn wound and proper scar care is also advised.
Conclusion

Periodical and very long follow-up of thermal burn scars is important for early diagnosis of malignant transformation and timely and adequate treatment, in order to improve the outcome in these patients.

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Fig. 1. Two painless black lesions in the middle of the burn scar, developing 46 years after the burn.
Fig. 2a

Fig 2b.
Figure 2a and 2b: a) Planning and b) performing wide surgical excision with local flap reconstruction

Fig. 3. Histopathologic analysis showing: a) ulcerated superficial spreading melanoma (SSM) in a scar tissue (Breslow 0.85mm, Clark III, pT1b) with atypical cells (b). Pan CK (c) and HMB-45 (d) antibody that reacts against an antigen present in melanocytic tumors.
Fig. 4a and 4b. During the follow-up, 3 years later, area of persistent erythema and desquamation was observed on the lumbar region.
Fig. 5. We performed wide surgical excision with skin autotransplantation

Fig. 6. Histopathologic analysis showed intraepithelial squamous cell carcinoma with clear margins
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