

## Squamous Cell Carcinoma on Permanent Tattoo of the Face: Diagnostic that should be Prevent by Demoscopic Monitoring and Topical Chemotherapy

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### Abstract

Many skin lesions have been reported in connection with tattoos, both benign and malignant. The pathogenesis of malignant transformation in tattoos is unknown, although hypotheses include the toxic effects of the pigments. To date, we have notice 31 case reports and series (17 men, median age: 50.5 years) of KA and CSC on tattoos. Other factors; UV exposure, fair skin, and immunosuppression increase incidence of cSCC. Recurrence and metastasis are associated with tumor diameter greater than 2 cm, depth greater than 2 mm or beyond subcutaneous fat, extensive or large-caliber perineural involvement, and poor differentiation on histopathology. AJCC 8 is used for TNM staging for cSCC of the head and neck. BWH offers an alternative T staging system. Management is primarily surgical with rare indications for adjuvant chemoradiation.

**Keywords:** Squamous cell carcinoma, Tattooing, chemotherapy.

#### ABBREVIATIONS

KA: keratoacanthoma.

Csc: squamous cell carcinoma.

UV: ultraviolet.

AJCC 8: american joint cancer classification 8 eme edition.

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### BACKGROUND

Cutaneous squamous cell carcinoma is the second most common malignancy. It comprising 20% of all cases of nonmelanoma skin cancer, and results in 1 million cases in the United States each year resulting in up to 9000 approximated deaths. This incidence continues to growth annually with an estimated 50% to 200%, increasing with age, with an average age of onset in the mid-60s, in the last three decades [1]. cSCC is more frequent in men than women (3:1 ratio) [1].

The disease has been linked to immunosuppression, Human Papilloma Virus (HPV) infection, arsenic exposure, radiation and chronic ulceration, injure such tattoo [2].

While it usually exhibits benign clinical behavior, some aggressive forms can lead to serious

complications. Skin biopsy deep enough is crucial for making the diagnostic.

Ten-years survival post-surgery exceeds 90% but falls drastically in case of metastases which makes early detection an essential prognostic factor [3].

Here we represent a case of a young women with pigmented cutaneous squamous cell carcinoma on permanent tattoo of the face that had remained undiagnosed for a prolonged period of time.

### CASE REPORT

A ninety-year-old women was referred to our Dermatology department for investigation of a solitary facial skin lesion that has been evolving for more than two years.

She reported no medical history apart from multiple painful sunburns in childhood, took no

medication, and family history for dermatological disease was negative.

The clinical examination showed a developed ulcerative tumor with a seropurulent surface, roughly rounded, 4cm long axis, flesh-colored with beaded border, sitting at the level of the right cheek with extension towards the lower eyelid and the nose (Figure 1).

The tumor was located on the upper half of the cheek on the right with extension to the right eye that

had caused vision impairment. The lesion was not painful.

Lymph nodes examination revealed no anomalies, especially Local lymph nodes and parotid.

Skin biopsy of the affected area showed nests of epithelial cells arising from the epidermis and extending to the dermis with important keratinization.

The diagnostic of cutaneous squamous cell carcinoma was given. The patient underwent surgery for total tumor resection.



**Figure 1: An ulcerative tumor with a seropurulent surface, roughly rounded, 4cm long axis, flesh-colored with beaded border, sitting at the level of the right cheek with extension towards the lower eyelid and the nose**

## DISCUSSION

Squamous cell carcinoma also called epidermoid carcinoma is the second most common type of skin cancer, with basal cell carcinoma being the first [4].

SCC commonly affects the scalp, neck region, back of hands, superior surface of the pinna, and the lip. SCC lesions may have a scaly, erythematous macule or plaque. Telangiectasia, central ulceration may also be present. The ulcer may be superficial and hidden by a crust. Removal of the crust may reveal a well-defined papillary base [4].

SCC arising in areas of prior radiation, thermal injury areas of chronic ulcers, and chronic draining sinuses. Or permanent tattoos.

Also The presence of rare familial syndromes (including xeroderma pigmentosum, albinism, epidermolysis bullosa, epidermolysis verruciformis, Ferguson Smith epithelioma, Rothmund-Thomson syndrome, Bloom syndrome) can predispose an individual to multiple cSCCs at a young age [1].

Many skin lesions have been reported in connection with tattoos, both benign and malignant. The pathogenesis of malignant transformation in tattoos is unknown, although hypotheses include the toxic effects of the pigments [5].

Although most SCCs are relatively slow growing and nonaggressive, some (2% to 5%) can show rapid growth and metastases. Aggressive tumors have a higher frequency of metastasis in immunocompromised patients and when develop from scars, burns, prior

injury (Marjolin ulcer) or tattoos than those originating in actinic damaged skin [4].

Also, Existence of SCC on ears, lips, or size >2 cm are high-risk features of SCC [4].

It commonly arises in the sun-exposed areas. The tumor can present as hard lump with overlying scale, raised growth with central depression, open sore, thick wart like skin and can also form an ulcer.

The dermoscopy is very useful; In early SCCs, the vessels are predominantly polymorphous, mainly consisting of dotted/glomerular, linear, and hairpin. Moreover, early SCCs mainly displayed scales, white structureless areas, ulceration/bleeding, white halos surrounding vessels, erythema background, blood spots, and white circles surrounding follicles, findings in line with previous evidence.

The diagnostic requires a skin biopsy deep enough to permit the pathologist to observe on depth of invasion, perineural or lymphovascular penetration, differentiation, and relation with the overlying epidermis [1].

That can show nest of epithelial squamous cells deep into the dermis. The malignant cells are often large with eosinophilic cytoplasm and a vesicular nucleus with variable degree of keratinization.

Cutaneous SCC has more potential to metastasize than basal cell carcinoma, with tumor diameter being the most important prognostic factor [6].

Tumor with a size > 2 cm and a significant perineural invasion has local recurrence and metastatic risk as high as 47% and 35%, respectively [7].

Mostly, imaging is not needed unless the clinical examination is revealing an involvement of large-caliber nerves, muscle or bone, lymph node involvement, or when high-risk properties are existing.

Computed tomography with contrast is helpful for appraisal of lymph node, soft tissue, or bone involvement. MRI is favorite to measure perineural invasion or orbital and intracranial extension [1].

On the molecular level, several pathways have been implicated in the disease. Genomic instability caused by P53 mutation represent one of the earliest even in the development of squamous cell carcinoma [8].

Other changes in tumor suppressor genes like NOTCH and CDKN2A has also been reported and oncogenes like RAS. The collection of all those mutations eventually distorts important signaling

pathways including the activation of NF-KB, MAPK which mediates Epidermal growth factor overexpression [9, 10].

Treatment of cutaneous squamous cell carcinoma is mainly surgical. Complete removal of the tumor with histopathological control of excision margins is the gold standard [11].

Other alternatives include radiotherapy and cryotherapy. The use of oral tretinoin (Acitretin) may help decrease tumor size and overall tumor load in case of multiple cutaneous squamous cell carcinoma [11].

Measures of prevention are helpful for very high-risk, immunosuppressed patients including those aimed at managing field cancerization (large defects of DNA damaged skin 5-fluorouracil, imiquimod, topical retinoids, diclofenac sodium, ingenol mebutate, chemotherapy wraps, photodynamic therapy, nicotinamide and acitretin or capecitabine. But photoprotective measures including sunscreen application remains primordial, it has been shown to decrease SCC by 40% [1].

## CONCLUSION

To date, we have noticed 31 case reports and series (17 men, median age: 50.5 years) of KA and CSC on tattoos. Lesions usually develop rapidly after completion of the tattoo, between one week and several months. Exceptional cases have been described in old tattoos. Additional studies on tumor specimens are warranted to identify the possible causative agents in tattoo ink that may be responsible for these reactions.

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