Keratoacanthomatous Tattoo Reaction

*Dr.Nausheen Syed, ** Dr.Vishal Indurkar, *** Dr Ramesh Gosavi, **** Dr. Mithila Gadekar, * Dr. Jigisha Marwale, *****Dr. Sainath Revanwar, *Dr. Ashutosh Chate

Department of Dermatology, Venerology and Leprosy

* Resident, ** Asso Professor, *** Professor and Head, Department of Dermatology, ****Asst. Professor.

**** Resident, Department of Surgery, Dr. Vithalrao Vikhe Patil Foundation's Medical College Ahmednagar

Corresponding Author : Dr. Nausheen Syed

Mail id : nausheen.syed@gmail.com

Mobile No.: 8412909059.

Address : Department of Dermatology, Venereology & Leprosy, Dr. Vithalrao Vikhe Patil Foundation's Medical College, Ahmednagar

Abstract :

Keratoacanthomas are rapidly growing, keratinizing, epithelial neoplasms that tend to spontaneously involute and are rarely multiple or eruptive. It is still debatable, whether or not this condition is a malignancy or a benign epidermal neoplasm; Although the association between malignancy and tattoos is very uncommon, dermatologists and dermatologic surgeons should be attentive to this possibility. When waiting for spontaneous involution is not an option, surgery is the preferred treatment. Other therapeutic modalities used for the treatment of this condition include radiotherapy; cryotherapy; laser therapy; and multiple intralesional, topical, and systemic agents. We report here, a keratoacanthoma arising in a red ink portion of a recent tattoo which was treated by surgical excision.

Introduction : Keratoacanthomas represent tumors characterized by the proliferation of atypical, highly differentiated squamous epithelia. Clinically, and even more so microscopically, keratoacanthomas resemble SCC. Clear distinction from a highly differentiated SCC is often impossible. However, the clinical course is usually benign and lesions are believed to undergo spontaneous regression if not excised.[1]

Several forms of keratoacanthoma (KA) have been described including trauma-induced KA and those following the injection of ink solids through the epidermis into the dermis. The characteristic reaction associated with KAs resembles a pseudoepitheliomatous hyperplasia.[2]

Case Report : A 35-year male presented with a slowly progressive lesion arising over the dorsal surface of the right forearm since 15 days. The patient reported having a "heart"-shaped tattoo onto the same site by a professional tattooist 1 month previously. Upon physical examination, there was a scaly hyperkeratotic plaque with crateriform surface within the red pigment of the professionally designed tattoo over the forearm. (Figure 1) Since the lesions clinically resembled cutaneous mycobacterial infection, empirical treatment was started.

An excisional biopsy was performed, which showed irregular pseudoepitheliomatous hyperplasia of epidermis and extreme hyperkeratosis with hypergranulosis. The hyperkeratotic stratum corneum being invaginated in the hyperplastic epidermis with foci of parakeratosis. The Papillary dermis showed papillomatosis. There was moderately dense lichenoid infiltrate of lymphohistiocytes and plasma cells with increased vascularity. There was dense irregular deposition of black as well as red tattoo ink throughout papillary dermis. After correlation of clinical and histopathological findings, the diagnosis of keratoacanthoma arising in a tattoo reaction was made.

Figure 1 : Professionally designed tattoo over the forearm, with lesion confined to the red ink.

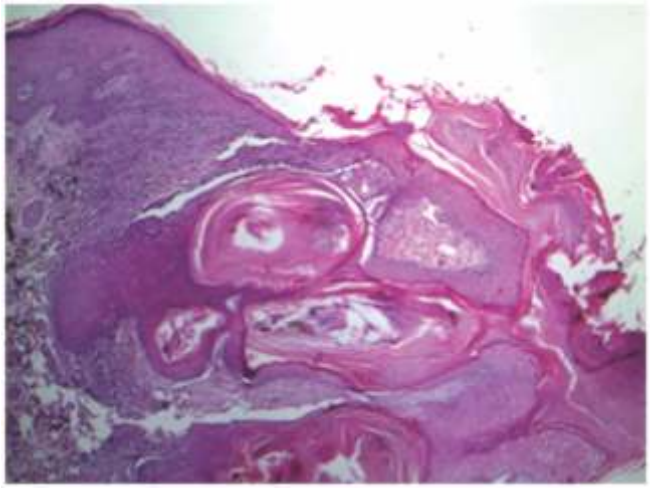

Figure 2: Irregular pseudoepitheliomatous hyperplasia of epidermis and extreme hyperkeratosis with hypergranulosis.

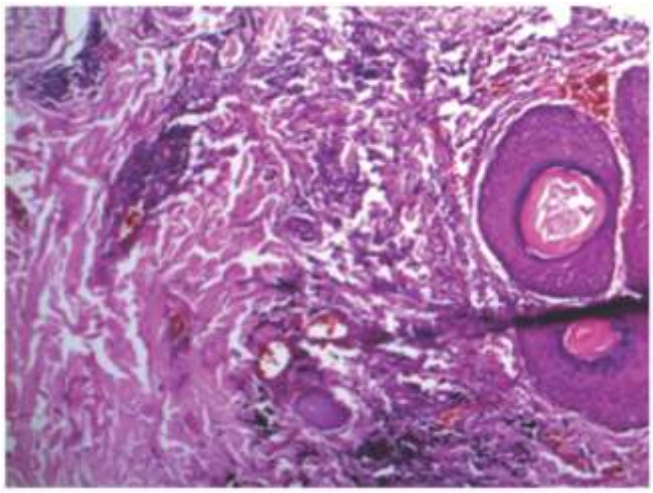

Figure 3: Dense irregular deposition of black as well as red tattoo ink throughout the papillary dermis.

Discussion: There are several reports of keratoacanthomas arising from a tattoo, and in 82 percent of the cases, red ink was the main offending substance. It is hypothesized that the skin tries to eliminate the foreign body by creating granulomas or lysing the offender via a cytotoxic or humoral immune response. Furthermore, the finding of red ink alignment along the borders of the KA and the presence of ink in the overlying keratin suggests transepidermal elimination of the pigment via adnexal hyperplasia. These processes contribute to the formation of KA and some authors consider this a reactive rather than a neoplastic condition. Surgery is the primary treatment for lesions not involuting on their own or not responding to medical treatment by 6 to 8 weeks.[3] Surgical excision should include 4 to 6mm margins and close follow up since KA is sometimes difficult to differentiate from squamous cell carcinoma.[4]

In older patients who are not surgical candidates, radiation therapy may be useful. Laser therapy and cryotherapy can be used for small lesions located in difficult areas. Intralesional agents have also shown good responses and include methotrexate, bleomycin, 5-fluorouracil, steroids, and topical agents, such as imiquimod alone or in combination with retinoic acid. Other systemic therapies include cyclo-phosphamide and retinoids. Inhibition of keratinization seems to be the mechanism by which the retinoids work for KA. Acitretin, a metabolite of etretinate that inhibits the growth of atypical keratinocytes, used in a dose of 25mg once daily is the preferred treatment for resistant lesions and for patients in whom surgery or radiation therapy can cause serious disfiguration or functional impairment.[5-7] In the patient described in this case, the characteristics of the lesions were not indicative of malignancy; they were eruptive in nature, associated with a specific offender (red ink), and displayed classic KA histopathology. Since the lesion was easily accessible and the location did not present with an aesthetic challenge, surgical treatment was the ideal choice. Following up on KA cases for recurrence and possible malignant transformation is important.[8]

Conclusion : This case report seeks to alert the reader that keratoacanthoma should be considered amongst the list of cutaneous complications related to tattooing, specifically in red-pigmented areas. The diagnosis can be a challenge; the histological differential diagnoses include pseudoepitheliomatous hyperplasia and other forms of squamous cell carcinoma. The clinical differential diagnosis would include lichenoid and granulomatous reactions. Keratoacanthomas are more common than previously reported in tattoos and are easily misinterpreted. Removal of the entire area, thorough histological examination and careful follow up are mandatory.

References :

1. Jean L Bolognia, Julie v. Schaffer, et al. Dermatology. 4th ed. London, Elsevier; 2018; 1870-1871.

2. Fraga GR, Prossick TA. Tattoo-associated keratoacanthomas: a series of 8 patients with 11 keratoacanthomas. J Cutan Pathol. 2010;37:85–90.

3. Kluger N, Minier-Thoumin C, Plantier F. Keratoacanthoma occurring within the red dye of tattoo. J Cutan Pathol. 2008;35:504–507.

4. Dos Santos Gon A, Minelli L, Garbosa Meissner MC. Keratoacanthoma in a tattoo. Dermatology Online Journal. 2009;15(7):9.

5. Rosenblum GA. Multiple palmar keratoacanthomas treated with acitretin. J Drugs Dermatol. 2006;5:1006–1009.

6. Kleinerman R, Greenspan A, Hale EK. Case reports: Mohs micrographic surgery for an unusual case of keratoacanthoma arising from a longstanding tattoo. J Drugs Dermatol. 2007;6:931–932.

7. Goldenberg G, Patel S, Patel MJ, et al. Eruptive squamous cell carcinomas, keratoacanthoma type, arising in a multicolor tattoo. J Cutan Pathol. 2008;35:62–64.

8. M, B. et al, Multiple Eruptive Keratoacanthomas Arising in a Tattoo. J Clin Aesthet Dermatol. 2010 Jul; 3(7): 54–55