

## Pseudoepitheliomatous Hyperplasia Appeared on a Tattoo

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Published:

J Turk Acad Dermatol 2015; 9 (2): 1592c3

This article is available from: <http://www.jtad.org/2015/1/jtad1591c3.pdf>

**Keywords:** Pseudoepitheliomatous hyperplasia, reaction, tattoo

### Abstract

**Observation:** Tattoo is intradermal injection of insoluble pigments for many different reasons and tattoo applications have become quite popular and reactions to tattoo and adverse affects have increased accordingly in recent years. We present a case of pseudoepitheliomatous hyperplasia which is a rare reaction appeared on a red coloured tattoo. We also provide a review of the literature regarding the diagnosis, differential diagnosis, and treatment of pseudoepitheliomatous hyperplasia.

### Introduction

Tattoo is intradermal injection of insoluble pigments for esthethical, culturel, social or religious reasons. Tattoo application has become quite popular all over the world recently. Accordingly, reactions to tattoo and adverse affects have increased over the last decade. Pseudoepitheliomatous hyperplasia (PEH) is a rare reaction to tattoo and there are few cases in the literature [1, 2, 3, 4, 5]. Herein, we present a case of PEH appeared on a red coloured tattoo of Turkish flag.

### Case Report

The patient was applied a Turkish flag shaped tattoo on the dorsal surface of his right hand eight months ago. A verrucous plaque lesion began to appear three months after the application of this red coloured tattoo. The size of the lesion was 5x3 cm and the lesion covered all red coloured parts of the tattoo (Figure 1). An incisional biopsy was taken from the edge of the verrucous plaque lesion. The initial diagnoses of viral wart, tuberculosis cutis verrucosa, keratoacanthoma, verrucous

carcinoma and PEH were made. Red pigment was easily seen underneath the verrucous, hyperkeratotic epidermis on the macroscopic examination of the biopsy material (Figure 2). There were prominent irregular epidermal hyperplasia, hyperkeratosis in the epidermis and mononuclear cell infiltration inside the dermis on the microscopic examination. Cytologic atypia and mitotic figures were absent (Figure 3). The PAS stain for fungus was negative. The patient diagnosed as PEH with these findings. After intralesional steroid injections twice, the lesion decreased in size significantly (Figure 4). The patient is still at follow up.

### Discussion

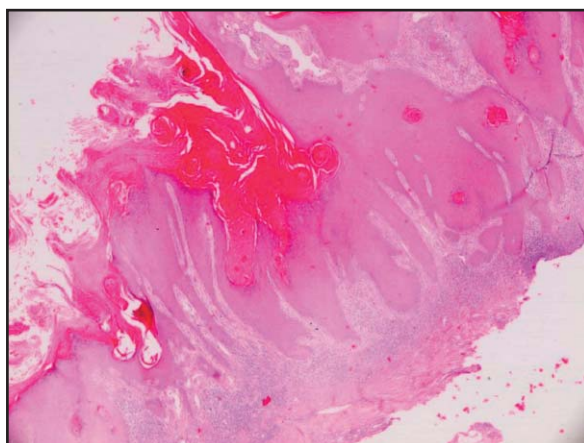
Skin reactions to tattoo have been increasing since tattoos have become very popular for the last years. Contact dermatitis, lichenoid reactions and granulomatous reactions are the most frequently seen reactions to tattoo [4]. Most of hypersensitivity reactions were caused by red pigmented (mercury sulfide) tattoo. However, purple, green, yellow and



**Figure 1.** Hyperkeratotic plaque lesion on the tattoo



**Figure 2.** Macroscopic appearance of insisional biopsy material



**Figure 3.** Irregular epidermal hyperplasia, hyperkeratosis in the epidermis and mononuclear cell infiltration inside the dermis (H&E, Ex100)



**Figure 4.** Appearance of the lesion after intralesional steroid injections

black pigmented tattoos may result in allergic reactions less frequently [4].

Lichenoid reaction is the most common delayed-type allergic reaction to tattoos [2]. Besides, sarcoidosis, pseudolymphoma and morphea like lesions may be seen due to tattoo [4]. There are only seven cases of pseudoepitheliomatous hyperplasia appeared on tattoos in the literature [1, 2, 3, 4, 5].

Pseudoepitheliomatous hyperplasia (PEH) is reactive hyperplasia of epidermis and adnexal epithelium and a benign condition as well [6]. PEH may occur as a result of numerous reasons such as chronic irritation, trauma, cryotherapy, chronic lymphedema, protozoal infestations, viral, bacterial and fungal infections. There are also PEH cases associated with spitz nevus, melanoma, granular cell tumour and T cell lymphoma [4]. Rarely, PEH

can develop on tattoos and most of these cases came out on red pigmented tattoos. There are cases of keratoacanthoma and squamous cell carcinoma developed on tattoo reported and clinically they may resemble to PEH [7, 8]. Because of that, it is important to distinguish PEH from keratoacanthoma and squamous cell carcinoma histopathologically. The clues that favour PEH are irregular acanthosis involving the epidermis, absence of atypia and sparsity of mitosis [2, 4]. Our case met all these criteria.

Topical steroids, intralesional steroid injection, topical 5-FU, cryotherapy, surgical excision, ablative laser applications and photodynamic light are the therapeutic options for the treatment of PEH [9]. We treated our patient with intralesional steroid injections and had a good response.

We present the case here since PEH is a rare reaction which may develop on a tattoo. And also, we want to emphasize that it is essential to distinguish PEH from keratoacanthoma and squamous cell carcinoma both clinically and histopathologically.

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