

Pilomatrixoma of The Arm After IPL Photodepilation Treatment's Complication(Burn)

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1. Abstract

Pilomatrixoma calcifying epithelioma of Malherbe is a rare, benign, limited, calcifying epithelial neoplasm that arises from the hair pluripotent precursor matrix cells. Standard treatment for pilomatrixoma is surgical excision. We report a case of a 38-year-old female patient with a rare localisation of pilomatrixoma on the upper extremities following IPL hair removal treatment's complication (burn).

2. Introduction

Pilomatrixoma calcifying epithelioma of Malherbe is a rare, benign, limited, calcifying epithelial neoplasm that arises from the hair pluripotent precursor matrix cells. It occurs with a rate of 0.1% among skin tumors. It is observed in the head-neck region and less frequently in the trunk and extremities [1].

The use of high energy light sources [laser, intense pulsed light (IPL)] is booming in aesthetic surgery. Laser and light sources are used worldwide for different treatments especially for permanent or prolonged hair removal [2]. Most side effects associated to IPL photodepilation are transient, minimal and disappear without sequelae. There are very minimal chances of after treatment side-effects such as irritations, discolorations, skin rashes and burns occurring at some point. Adverse effects of IPL treatments have been well documented [3]; these include blistering, hypopigmentation, hyperpigmentation and if extensive, even scarring. Even though permanent side effects exceptionally occur, they are possible and seem to be related to use of high fluences (superficial burning, isolated vesicles), infection (scar formation), and dark skin (pigmentary alterations, especially in phototypes higher than IV) [4]. In this study, we wished to present a patient who presented with a mass on left arm following IPL hair removal treatment's complication (burn) and under-went excisional biopsy whose pathological result was reported to be pilomatrixoma in accompaniment with the literature.

3. Case Study

A 38-year-old lady presented with a a mass palpable in the left arm. In the history, it was learned that the mass was painful for

approximately 6 months and gradually increased in size. Physical examination revealed a cystic nodule measuring 1cm × 0.5 cm in size. Initially, the swelling was small and increased to the present size. On palpation, a firm, mobile mass with irregular borders which showed enlargement outwards from the skin was observed (**Figure 1**). The patient. a 1 year history of burn following IPL hair removal for unwanted hair in the left arm. She used several topical agents for treatment's of burn. Total excision biopsy was performed under local anesthesia. Histopathologic analysis revealed numerous islands of epithelial cells composed mostly of eosinophilic shadow cells, which are pathognomonic of pilomatrixoma. Calcification was also present (**Figure 2**). No recurrence was observed in the follow-up period of approximately three months.



Figure 1: A mobile- mass with irregular borders which showed enlargement outwards from the skin was observed.

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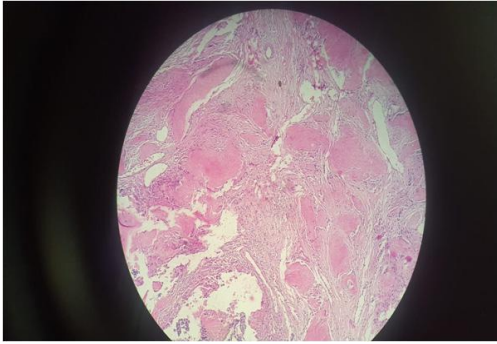


Figure 2: Section is showing eosinophilic shadow cells with focal areas of calcification in the center (H and E, $\times 40$).

4. Discussion

Pilomatrixoma is described more frequently in females and is thought to occur most commonly in the first 2 decades of life [5,6]. The female/male ratio is 3/2 [7]. The precise etiology of this tumor remains unknown [8].

Although its etiology has not yet been fully elucidated, studies suggest that pilomatrixoma can develop as a result of trauma, infection, or an interruption in the hair follicle cycle [9].

Clinically, the pilomatrixoma is usually detected as asymptomatic, mobile, subcutaneously localized nodule with possible discoloration of the skin [10]. In our case, however, a lesion was painful with palpation and raised from the skin. Photoepilation works through selective photothermolysis, by heating the chromophore melanin within the hair follicles [2]. In this treatment a wide range of non-coherent, polyspectrum light with wavelengths from 500nm to 1200nm is exposed to the skin in brief flashes [11]. A full-thickness or third degree burn would be the most severe adverse event that could occur to the skin through misuse, error or malfunction of an IPL or laser [12]. Burns occur from overheating of the tissue through excessive heat generation or by a failure of the cooling techniques. Hemorrhagic crusts and ulcerations may be seen several days post-op and can be warning signs for further complications, including scarring and dyspigmentation [13]. Patients may also report excessive pain, especially when compared to prior treatments. The degree of presentation is highly variable and can range from prolonged erythema to ulcerations and necrosis [14]. Although laser and IPL technology has not been known to cause skin cancer, this does not mean that laser and IPL therapies are without long-term risks [12]. Pathologically, calcifying epitheliomas mostly consist of basophilic and shadow cells, and the proportion of shadow cells increases over time, resulting in characteristic calcification and osteogenesis [15]. Recent studies have shown that recurrent mutations in the beta-catenin gene may be involved, as they are with several other conditions, such as Gardner syndrome, myotonic muscular dystrophy, Rubinstein-Taybi syndrome, Turner syndrome, xeroderma pigmentosum, and basal cell nevus syn-

drome [5,9]. β -catenin is responsible for adhesion between epithelial layers and among the cells. There have also been immunohistochemical studies associating the BCL2 proto-oncogene over-expression to pilomatrixoma [16].

Standard treatment for pilomatrixoma is surgical excision. We removed the tumour by surgical excision leaving substantial tissue around it. Rate of recurrence following surgery has been reported as 2–6% [1].

Photoepilation is a balancing act between maximal therapeutic effect and minimal side effect risk [2]. This is mandatory for the specialist that applies treatments with different light sources to know the necessary prevention measures to avoid complications [17]. Although, Ash at all believed that an adverse event, such as a dermal burn, does not increase the long-term likelihood of tumour formation at the injury site [12]. In this case, we don't know exact mechanism. We understand that this lesion has developed over time in the same area after the burn event. Therefore, we think that procedures such as IPL should be done by experts.

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