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CASE REPORT **OPEN ACCESS**

Pilomatricoma at COVID vaccination site

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ABSTRACT
Pilomatricomas are benign tumours of hair follicle resembling hair matrix. They are usually solitary calcified tumours occuring at sites of trauma, scarring and vaccination. They are best diagnosed histologically on demonstration of basaloid and ghost cells. We report a case of subcutaneous pilomatricoma at COVID vaccination site. It was possibly reaction to spilling of vaccine in subcutaneous tissue while giving intramuscular vaccination.
Key words: *Pilomatricoma, Pilomaxtricoma, Calcifying epithelioma of Melherbe, COVID vaccination. COVISHEID vaccine*

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INTRODUCTION
Pilomatricoma or pilomaxtricoma or calcifying epithelioma of Malherbe is not very uncommon. They are benign, well circumscribed calcified tumour of hair follicle. They are rubbery to hard in consistency and are present dermally or subcutaneously. They are usually solitary but can be multiple in rare cases.[1] It might occur due to number of etiologies like trauma, auto inoculation, scarring or vaccination.[2] Pilomatricomas associated with vaccination have been documented, although none have been after COVID vaccination on Pubmed search. Hence, we report a case of pilomatricoma at COVID vaccination site.

CASE REPORT
A 37 year old male patient came to Dermatology OPD with raised hard asymptomatic lesion over left arm since 8 months. The lesion developed following COVISHEILD vaccination. He received his first dose of COVISHEID on 21st July 2021 and the lesion developed on 1st August 2021.
On cutaneous examination, a solitary nodular lesion of size 1.5 X 1.5cm with slight erythema and surrounding hypopigmented halo was present subcutaneously over deltoid region of left arm (Figure 1). It was slightly tender, hard in consistency and freely mobile over underlying muscle and fascia . He did not have any previous history of similar lesion and family history was insignificant.
Biopsy examination revealed basaloid cells (Figure 2) and ghost cells (Figure 3) compatible with the diagnosis of pilomatricoma.

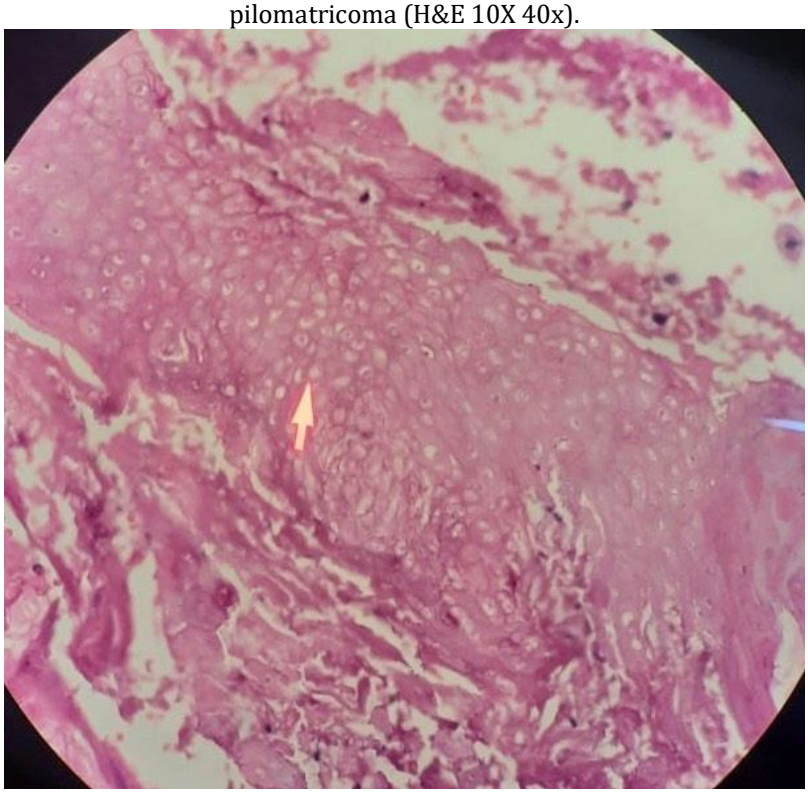
DISCUSSION
In 1880, Malherbe and Chenantais for the first time reported pilomatricoma, a benign tumor with differentiation toward the hair follicle matrix.[3] Pilomatricomas are solitary, deep seated tumors that are either dermal or subcutaneous in origin.[4] Pilomatricomas are believed to occur due to mutation in Wnt signaling pathway.[1] It is a benign tumor of hair follicle hence, is composed of cells containing hair matrix. Head, neck and arms are most common sites of occurrence. It occurs following trauma, auto inoculation, scarring and vaccination. These tumors undergo calification and is the reason why it is hard in consistency. Aquilina S et al[2] in 2006 reported the first case of pilomatricoma at vaccination site in a 13 year old female child following BCG vaccination. There are various subtypes of the tumor like subcutaneous, ulcerative, pigmented, perforating, anetodermic, keratotic, vascular, bullous, telangiectatic and those resembling basal cell carcinoma.[2]
Though CT scan and MRI scans can diagnose pilomatricomas but histology is the best diagnostic tool for pilomatricomas due to its typical findings.[5] Tumors when examined histopathologically show basaloid cells, shadow or ghost cells and dystrophic calcification. Shadow or ghost cells are cells with eosinophilic cytoplasm and no nucleus compatible with term ghost cells and are formed due to giant cell reaction.

Basaloid cells are closely bound cells with high nucleus cytoplasmic ratio and high mitotic activity. Basaloid cells are seen merging with ghost cells.[1] Treatment of pilomatricoma is complete surgical excision with clear margins for better cosmesis and to prevent recurrence.[5] We did excision biopsy of the lesion and there was no recurrence of the lesion. On follow up there was no recurrence of the lesion. COVID vaccination is given intramuscularly. It appears there was spilling of vaccine in the subcutaneous tissue leading to such reaction.

Figure 1. A nodular swelling on left deltoid region of left arm at the site of COVID (COVISHEILD) vaccination.

Figure 2. Histopathologyof excision biopsy of nodular lesion showing basiloid cells consistent with the diagnosis of pilomatricoma (H&E 10X10x)

Figure 3. Ghost cells seen in the biopsied specimen in another section further confirming the diagnosis of pilomatricoma (H&E 10X 40x).



CONCLUSION

Pilomatricomas are not uncommon and are caused due to multiple etiologies. Pilomatricomas due to vaccination has also been reported but none have been reported due to COVID vaccination on Pubmed search. It was possibly reaction to spilling of vaccine in subcutaneous tissue while giving intramuscular vaccination. Hence, we are reporting the first case of pilomatricoma arising at COVID vaccination.

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