DOI: 10.3315/jdcr.2008.1005

Journal of Dermatological Case Reports

Giant pilomatricoma (pilomatrixoma) following an intramuscular injection

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Key words:

Appendageal tumors, haematoma, parenteral therapy

Abstract

We describe a young Indian male patient who developed a large solitary tumor following an intramuscular injection at the same location. The tumor was histologically proven to be a pilomatricoma. It was treated by surgical excision and there was no recurrence until one year after the operation. An alarming phenomenon following intramuscular injection is presented here for its novelty.

Background

Pilomatricoma (pilomatrixoma, PM), also known as calcifying epithelioma of Malherbe, is an uncommon, benign appendageal tumor originating from the hair matrix cells. It usually presents as a single, deep-seated firm to hard nodule. It generally reaches a size of about 0.5 to 3cm. Large tumors are rare, as are familial cases and the latter may be associated with multiple cutaneous lesions and myotonic dystrophy. Common anatomical sites affected are head, neck, and upper extremities. Surgical excision is the treatment of choice.[1]

The practice of injections is quite common in South-East Asia. It has been estimated that an average person is receiving four injections per year, with therapeutic indications being more frequent than prophylactic ones.[2] Intramuscular injection (IMI) is the commonest mode of parenteral drug administration by the family physicians. It is generally assumed that IMI is uneventful and with no complication. We report here a case illustrating possibly a novel and rare complication of IMI.

Case report

A 27-year old Indian male accountant presented with a non-painful but rapidly enlarging swelling over the extensor aspect of his right arm for about seven months. He gave a history of receiving an IMI of diclofenac sodium for the fever and bodyache associated with respiratory tract infection before appearance of the mass. He described appearance of a “bruise-like swelling” immediately after the injection, which he vigorously rubbed to relieve the discomfort. The lesion persisted for four days and then gradually resolved. Two weeks later, at the same location, he noticed a firm, bean-sized non-painful swelling, which progressively hardened and enlarged over six months to become an irregular mass of a size of 8.5 cm x 6 cm. It was bosselated, hard, non-tender and angulated at the inferior pole, with stretched and thinned out normal appearing overlying skin. It was not fixed to the deeper structures. There was no induration or swelling in other parts of that arm. There was no regional lymphadenopathy.

His past health was good except for hyperhidrosis since childhood. His past experience with IMI was uneventful. There were no similar tumors elsewhere on the body but several acne comedones were noted on his face and trunk. His general and systemic examinations, including muscular and neurological assessments, were normal.

Investigations including blood counts, urinalysis, blood glucose, HIV antibodies, VDRL, serum calcium and phosphate, liver, kidney and thyroid function tests, and clotting profiles were normal.

The tumor was completely excised under general anaesthesia taking a vertical incision and it could only be dissected out in a piecemeal fashion. The thinned out portion of the overlying skin was also excised. Wound healing was uncomplicated. A linear scar remained with hyperpigmentation and surrounding hypopigmentation. There was no recurrence until one year after surgery.

Gross examination of the excised tissue revealed multiple greyish-white, stony-hard masses measuring of varying sizes. The cut surface was yellowish to greyish-white with areas of calcification (Figure 1). Histopathological examination revealed a dermal, adnexal tumor composed of several islands of basaloid cells embedded in the cellular stroma. The periphery of the island showed elongated, deeply staining basophilic cells with scanty cytoplasm resembling hair matrix. There were few areas of calcification within the stroma (Figure 2a) and the centre of the islands showed faint eosinophilic cells without nuclei, giving an appearance of the "shadow cells" (Figure 2b). There was no evidence of malignancy.

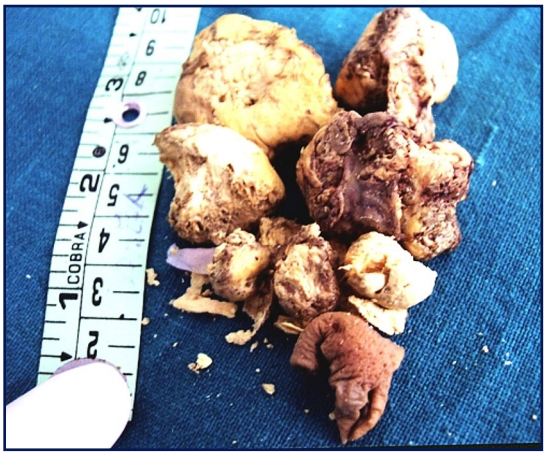

Figure 1
The cut surface was yellowish to greyish-white with areas of calcification.

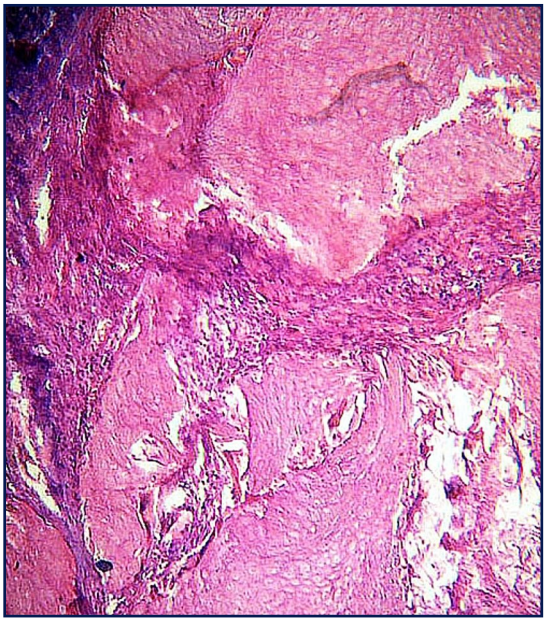

Figure 2a
The tumor composed of several islands of basaloid cells embedded in the cellular stroma. The periphery of the island showed elongated, deeply staining basophilic cells with scanty cytoplasm resembling hair matrix. There were few areas of calcification within the stroma (H&E stain).

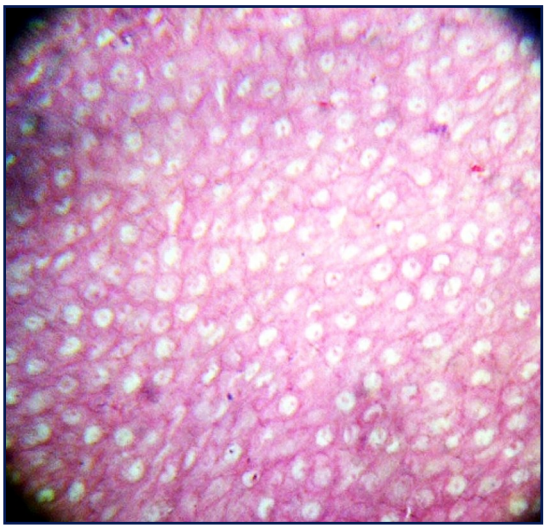

Figure 2b
The centre of the island showed faint eosinophilic cells without nuclei, the "shadow cells" (H&E stain).

Discussion

Local complications of IMI include pain, abscess, bleeding[5], thrombosis, necrosis, ulceration,[6] gas gangrene,[7,8] nerve injuries,[9] subcutaneous atrophy,[10] fibrosis and contractures of muscles and joints,[11] and granulomas[12]. tumors at the site of IMI are extremely unusual. Sarcomas at the site of iron containing IMI have been reported.[13] gangrene of distal limb.

The lesion in our patient was considerably large and such tumors of more than 5 cm. in diameter are generally regarded as giant pilomatricoma.[14] As we operated on the patient with a presumptive diagnosis of calcified haematoma, we did not take his pre-operative photographs. A diagnosis of PM is often a retrospective one after the histopathology reports.[3,4]

Our patient developed PM exactly the same anatomic location as that of the IMI. It temporally followed IMI and there was no other predisposing factor for its occurrence. Hence, we believe that the formation of PM was related to IMI. PM has recently been reported following the BCG vaccination.[15] There are reports of hard calcific nodular lesions after injections of subcutaneous low molecular weight heparin[16] and intralesional corticosteroids.[17] Our patient received diclofenac injection intramuscularly. Thus, with such diversity of injectable drugs reported antecedent to appearance of PM or PM-like hard calcific

eruptions, we believe that the local trauma of injection may play a role rather than the actual drug in the formation of PM. Indeed, PM is reported following trauma.[18] However, a possibility of co-incidence of injection and PM in our case cannot be denied with confidence.

The pathogenesis in our case is intriguing. Bleeding and haematoma[5,6] may occur following IMI. It is known that haematoma may be followed by a rapidly growing PM.[19] We speculated that following IMI, our patient developed a subcutaneous haematoma, which was worsened by vigorously rubbing the injection site. It may also be speculated that a needlestick injury or similar trauma causing damaged follicular epithelium at the IMI site may lead to a faulty suppression of apoptosis which in turn, may result into the formation of PM.[20] To the best of our knowledge, PM following IMI is not hitherto reported. However, the actual factors leading to development of PM in our case remain unexplored.

We believe that haematoma may be the inciting event in our case. Hence, practitioners should take care to avoid bleeding in order to reduce the risk of pilomatricoma in susceptible individuals, especially in patients with coagulation disorders or on anticoagulants. Likewise, the practice of vigorous rubbing at the injection site should be discouraged in such situations. A giant PM may follow IMI and may cause significant distress.

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