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## Inadvertent intra-arterial injection: Cutaneous complications and management

Dear Editor,

One of the serious complications of intra-muscular (IM) injectable treatment is iatrogenic intra-arterial injection of the drug. Acute limb ischemia is one of the devastating sequelae following inadvertent intra-arterial injection of many drugs. This complication is relatively rare with an incidence of 1 in 3400–56000.<sup>1</sup>

A 24-year-old man presented to the dermatology outpatient department with complaints of erythematous lesions over the right forearm, along with bluish discoloration of the ring and little finger associated with pain and swelling in the same limb for last 5–6 days, following IM injection on the medial aspect of elbow by a quack. Past history was non-contributory for any connective tissue disorder, peripheral vascular disease, previous trauma or intravenous (IV) drug abuse. On examination, ill-defined, discrete, non-palpable, purpuric lesions were present on the medial aspect of the

right forearm, with underlying swelling over the whole forearm along with bluish discoloration of the fourth and fifth digits of the same hand [Figure 1a]. Only radial artery was palpable. Sensations were decreased over the ring and little fingers and the medial half of the palm. On performing the Allen test, there was a significant delay in regaining vascularity of the hand. The above findings were suggestive of some vascular compromise in the territory of the ulnar artery. His coagulation profile and pro-coagulant work-up were normal. X-ray neck was non-contributory. Colour Doppler showed monophasic flow in the right ulnar artery. Right ulnar sensory neuropathy was found on nerve conduction study. CT angiography revealed markedly attenuated palmar digital branch of common palmar digital artery of the fourth and fifth digits of the right hand [Figure 2]. The patient was given oral anticoagulants for 4 weeks. A week later, the erythematous lesions completely subsided, but the bluish discoloration of fingers persisted



**Figure 1a:** Multiple discrete purpuric lesions, with swelling on the medial aspect of the forearm along with bluish discoloration of the fourth and fifth digits.



**Figure 1b:** Disappearance of the purpuric lesions but persistence of bluish discoloration of the fourth and fifth digits.

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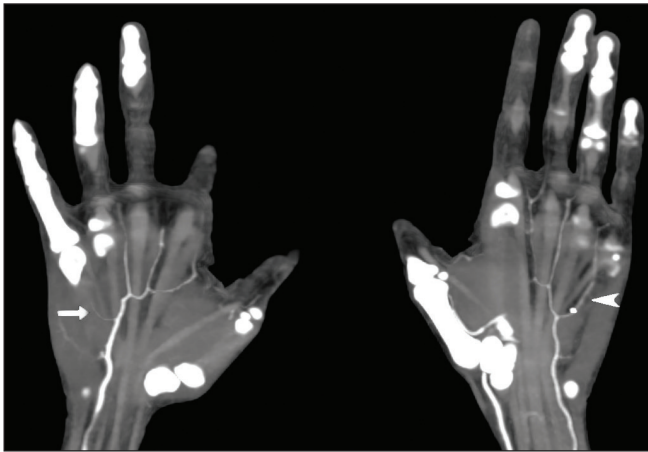
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**Figure 1c:** Palmar aspect of the hand showing dry gangrene on tips of the fourth and fifth digits with a clear line of demarcation.



**Figure 1d:** Digits after healing with scar tissue.



**Figure 2:** Coronal CT angio arterial phase image of bilateral hands showing severe luminal narrowing of the common palmar digital artery supplying the fourth and fifth digits of the right hand (arrow head) as compared to the normal common palmar digital artery supplying the fourth and fifth digits of the left hand (arrow head).

[Figure 1b]. Three weeks later, the patient developed gangrene over the tip of the ring and little fingers with a clear line of demarcation between affected and non-affected parts of the fourth and fifth digits [Figure 1c], which was shed off and replaced by scar tissue in the next 6 weeks [Figure 1d].

IM injection is a technique of injecting a drug directly into the muscle to improve its efficacy and for rapid onset of action. As compared to an IV injection, it is easy to administer and is the most frequently performed medical procedure.<sup>2</sup> Intra-arterial cannulation can rarely occur if proper guidelines for IM injection have not been adhered to. We are reporting a case of accidental intra-arterial injection, with isolated ulnar artery involvement leading to gangrene of the fingertips of the fourth and fifth digits and sensory neuropathy of the ulnar nerve.

In our case, intra-arterial cannulation occurred while attempting IM injection (Diclofenac) on the medial aspect of the forearm, which is not an ideal site for IM injection. The deltoid, ventrogluteal and vastus lateralis are ideal muscles for IM injection as these are present at a safer distance from

major vessels and nerves, while having sufficient bulk to accommodate the volume of the drug administered. This usually happens when Benzyl alcohol-based preparations of diclofenac are administered by IV/intra-arterial route. So, it is equally essential to have knowledge about the composition of the drug and the route of administering the same.<sup>3</sup>

Dermatological findings like bluish discoloration of the digits, presence of purpurae with prior history of any injectable can help in clinching the diagnosis. There are very few case reports of such a clinical presentation, particularly the presence of purpura.<sup>4</sup>

One of the important differential diagnoses of this condition is Nicolau syndrome, in which ulceration and necrosis are usually present at the site of injection. But in the present case, the gangrenous changes were seen at a distant site. There are no exact treatment guidelines to manage this condition. Both conservative and surgical modalities (embolectomies/fasiotomies) have been tried with variable success rate.<sup>5</sup> Conservative management includes drugs like opioids, corticosteroids and anticoagulants, and vasodilators such as reserpine, iloprost and papaverine, hyperbaric oxygen and regional nerve blocks.

From this case report, we want to convey that there should be more emphasis on strengthening of institutional set-ups and appropriate training of all healthcare providers. Adequate knowledge about the composition of the drug, the route of administering the medication and early identification of signs and symptoms of accidental intra-arterial drug administration can help in preventing this dreaded complication and reduce patient morbidity.

#### **Declaration of patient consent**

The authors certify that they have obtained all appropriate patient consent.

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#### **Conflicts of interest**

There are no conflicts of interest.

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# Sarcoidosis presenting as a non-healing leg ulcer: A rare occurrence

Dear Editor,

Sarcoidosis is a multisystem granulomatous disease of unknown aetiology that most commonly involves the lungs, eyes, lymph nodes and skin. Cutaneous involvement occurs in 25–30% of patients with systemic sarcoidosis, and isolated cutaneous manifestations affect only 10% of patients.<sup>1</sup> We report a case of ulcerative sarcoidosis, a rare morphological variant, presenting as a non-healing leg ulcer.

A 52-year-old diabetic, hypertensive woman presented with a gradually enlarging ulceration of 2 months duration on the medial aspect of the right leg. She denied any constitutional or systemic symptoms. She had previously undergone 3 weeks anti-tubercular therapy without any improvement. Cutaneous examination revealed a solitary ulcerated plaque of size 3 × 3 cm on the medial aspect of the lower third of the right leg, with purulent deposits on the floor, sloping edge, indurated margin and erythema over the surrounding skin. In addition, multiple satellite atrophic papules were also noted [Figure 1]. Other mucocutaneous, general and systemic examinations were within normal limits. Differential diagnoses of erythema induratum of Bazin, venous leg ulcer and ulcerative necrobiosis lipoidica were considered. Histopathology from the ulcer edge revealed multiple non-caseating, naked epithelioid granulomas in the dermis and subcutaneous tissue [Figures 2a and 2b]. Polarised light examination of the haematoxylin and eosin-stained section did not reveal any refractile material, ruling out granuloma



**Figure 1:** Solitary ulcerated plaque on the right leg with multiple satellite atrophic papules.

formation due to a foreign body. Her serum angiotensin-converting enzyme was elevated (86, reference range: 08–65 U/L). The pulmonary function test did not reveal any abnormality. High-resolution computed tomography of the thorax showed bilateral hilar lymphadenopathy and multiple

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