

Case Report

Upper limb gangrene following intramuscular diclofenac: a rare side effect

Ranendra Hajong*

Department of Surgery, NEIGRIHMS, Shillong, India

*Correspondence address. Department of Surgery, NEIGRIHMS, Mawdiangdiang, Shillong, Meghalaya, 793018, India;
Tel: +91-36-42-53-8131;
Fax: +91-36-42-53-8003; E-mail: ranenhajong@gmail.com

Received 3 October 2012; revised 8 October 2012; accepted 19 November 2012

Diclofenac is a very commonly used analgesic medication. Diclofenac is a non-steroidal anti-inflammatory drug and acts by inhibiting COX (cyclo-oxygenase) 1 and 2. It has both analgesic and anti-pyretic effects. It can be administered both orally and parenterally. Among the many side effects of diclofenac, extensive gangrene of the extremities is never reported as one of the probable complications. Extensive PubMed and other literature searches did not reveal any previously reported case reports, hence the reporting of this case.

INTRODUCTION

Gangrene of limbs developing after injecting diclofenac intramuscularly may be a rare complication that has not been reported earlier. I have attended to a patient who developed gangrene of the left hand and forearm following diclofenac injection given intramuscularly in the left deltoid region. The patient ultimately ended up losing his limb.

CASE REPORT

A 56-year-old male patient presented to the emergency department of this hospital with the complaint of severe pain and blackish discoloration of the left hand and forearm. The patient gave history of attending one local hospital 2 days before coming to our hospital, with the complaint of mild pain on the left side of the abdomen for which an injection of diclofenac was given intramuscularly in the left deltoid region. Soon after getting the injection, the patient developed severe pain in his left hand. He also noticed some pale discoloration of his hand. Gradually the whole of the left hand and part of the forearm turned blackish in colour (Fig. 1). The patient had a known case of left renal calculi and had earlier undergone ureteroscopic retrieval of the calculi. The patient also had a Double J stent placed *in situ*, following stone retrieval.

Urgent Doppler scanning of the upper limb vessels was done, which revealed complete occlusion of both the radial and ulnar arteries on the injected side. Injection of heparin was started immediately, but the patient's limb could not be salvaged. Below elbow amputation was done for the patient. There were no signs of arteriopathy in any other parts of the body as evidenced by clinical and Doppler study. All routine blood investigations, including lipid profile and serum CK levels, were found to be within normal limits. Antinuclear antibodies, C-reactive proteins and rheumatoid factors were all within normal ranges.

DISCUSSION

Non-steroidal anti-inflammatory drugs (NSAIDs) are frequently prescribed as analgesics. Known side-effects include peptic ulcer, bronchospasm, liver and renal toxicities. The development of skin, subcutaneous and even muscle tissue necrosis are rare but serious complications of intramuscular injections. Tissue necrosis as a serious complication of intramuscular drug injection was first discovered in the 1920's by Freudenthal and Nicolau after administration of bismuth salts for syphilis treatment and has been referred to since then as Nicolau's syndrome, livedo-like dermatitis or embolia cutis medicamentosa [1]. The necrosis may involve the skin, subcutaneous tissue and muscular layer. Recovery



Figure 1: The gangrenous left hand and forearm.

usually occurs over a few months, often leaving an atrophic scar [2]. Complications, such as neurological injury, extensive necrosis, limb ischaemia, sepsis due to superimposed infection and even death in children, have been reported. In

addition to bismuth salts, injection of several other drugs has been reported to cause necrosis including NSAIDs, local anesthetics, corticosteroids, antihistamines, penicillin and other types of antibiotics, interferon, vitamin B complexes, iodine and several vaccine preparations [2, 3].

The pathogenesis of post-injection necrosis is not completely understood; however, damage to an end artery by massive inflammatory reaction induced by intra-arterial or para-arterial drug injection seems to be the leading hypothesis. Allergic, immunologic and mechanical vascular occlusion theories have been disproved [4, 5].

In our patient, according to the patient's version, injection was given in the lower part of his arm and the injection might have been accidentally pushed into the brachial artery causing simultaneous occlusion of both radial and ulnar arteries leading to the gangrene of his hand and part of the forearm.

REFERENCES

1. Kohler LD, Schwedler S, Worrest WI. Emlia cutis medicamentosa. *Int J Dermatol* 1997;**36**:197.
2. Faucher L, Marcoux D. What is this? Nicolau syndrome. *Pediatr Dermatol* 1995;**12**:187–90.
3. Corazza M, Capozzi O, Virgilit A. Five cases of livedo-like dermatitis (Nicolau's syndrome) due to bismuth salts and various other non-steroidal anti-inflammatory drugs. *J Eur Acad Dermatol Venerol* 2001;**15**:585–8.
4. Lie C, Leung F, Chow SP. Nicolau syndrome following intramuscular diclofenac administration: a case report. *J Orthop Surg* 2006;**14**:104–7.
5. Luton K, Garcia C, Poletti E, Koester G. Nicolau syndrome: three cases and review. *Int J Dermatol* 2006;**45**:1326–8.