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Case study

Overlooked particle of a peripheral venous cannula presenting as a foreign body in the subcutaneous tissue

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SUMMARY

Accidental loss of a part of a peripheral intravenous cannula is an uncommon event. We report a case of an accidentally missed particle of a peripheral venous cannula presenting as a foreign body in the subcutaneous tissue, three months after the event that dislodged it. We explore this in terms of its diagnosis and management.

Keywords: Peripheral venous cannula, infection, subcutaneous, overlooked, foreign body

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INTRODUCTION

A cannula is a medical term defining a tube for insertion into a vessel, duct, or cavity. During insertion its lumen is usually occupied by a trocar; following placement, the trocar is removed and the cannula remains patent as a channel for the flow of fluids. Peripheral venous cannulation is a very common invasive daily practice procedure throughout most hospitals.¹ Accidental loss of a part of a peripheral intravenous cannula is an uncommon event.^{2,3,4,5} Once released into circulation, however, it can lead to devastating complications. The localization and retrieval of the particle is even difficult.⁶ Embolization of fragments from intravenous cannulas has been reported to cause damage to the heart, great veins and the lungs.^{5,6} Here, we report a case of an overlooked particle of a peripheral venous cannula presenting as a foreign body in the subcutaneous tissue.

CASE REPORT

Here, we report a case of a 24 year-old male who presented to our Accident and Emergency department with a five-hour history of two bleeding episodes from an ulcer on his left forearm. The patient denied any history of trauma to the area; he had experienced no bleeding from any other part of his body and had no similar condition in the past. The ulcer first appeared small following an introduction of an intravenous cannula three months prior. Since that time, he had the sensation of a foreign body in the same area. Then a swelling appeared over which the ulcer emerged. He was admitted for hours because of an attack of convulsions, and he was treated and discharged on phenytoin tablets. No obvious cause was found for the convulsions. He denied any forceful manipulation of the intravenous cannula, but he was apprehensive when it was introduced.

General examination of the patient was unremarkable. Local examination revealed a 1 by 1.5 cm ulcer on the proximal ventral part of the left forearm, with a black discoloration around it. The area around the ulcer was indurated, creating a border of about 2.2 cm. It was not tender and was firm to hard in consistency. It was not pulsatile, and no thrill was observed over it. There was no lymphadenopathy in the limb, and neurovascular examination was normal.

Laboratory work up showed a normal, complete blood count, normal serum electrolytes and a normal coagulation screen. However, X-ray of the left forearm showed a thin linear opacity in the proximal third of it.

A diagnosis of a foreign body of the left forearm was made, and the patient was taken to the theater for exploration under local anesthesia and tourniquet. Exploration revealed a subcutaneous area with dense fibrous tissue, surrounded by small blood vessels. Sharp dissection of the fibrous tissue revealed a 28 mm metallic foreign body. This was of the same caliber as a trocar of an intravenous cannula. The findings were consistent with the diagnosis of a lost fragment of the trocar from the previously inserted intravenous cannula. Fortunately, there were no other pathological findings; the wound was closed and the patient had a fine recovery course thereafter. Two weeks later, the wound healed with a non-complicated scar.

DISCUSSION

The occurrence of accidental loss of particles of peripheral venous cannulae is rare; however, fatal complications following this does occur.⁶ Overall mortality rates after embolization of intravenous catheters vary from 11 to 60%, but this is mentioned mostly in central venous cannulation.^{1,6,7} The most common cause of particle loss is accidental dislodgement or breakage during manipulation.⁶ In his case, Freiberg claimed that it is unlikely for this to happen in peripheral venous cannulation without a forceful attempt at removal, which is a common occurrence in patients in confused states.⁷ Dislodged particles from peripheral cannulas were reported to embolize to the great veins, right side of the heart and the lungs.^{2,5,6} Particles of arterial cannulas were reported to embolize distally, also. There may be a long interval between the incidence of embolization and the symptomatic complications.

In our case the missed particle did not migrate through the venous system and was found contained in dense fibrous tissue, adjacent to one of the antecubital veins in the ventral aspect of the left forearm. The venous system might be the cause of the bleeding as a result of breaching an adjacent vein by the foreign body. The three months time that elapsed between the incidence and the diagnosis coincides with what is mentioned in previous reports.

Different modalities of radiological studies were used in location of missed particles as plain X-ray, CT scan with and without reconstruction.^{2,3,7} In this case, it was easy to locate the radio opaque particle with plain X-ray.

To the author's knowledge, our case is the first one to report an overlooked particle of peripheral venous cannula that became lodged in the subcutaneous tissue.

Lessons to learn from the case are that cannulas should be secured as firmly as possible in uncooperative patients, and when removing or fixing an intravenous cannula, one should inspect the retrieved parts. This should be stressed in patients suspected to be prone to forceful manipulation of their cannulas. In cases of accidental loss of a particle, immediate application of tourniquet should be performed followed by the appropriate radiological attempts at localization.

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