Short Report

Needle Embolisation to the Right Ventricle: Multiple Complications in a Complex Patient

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ABSTRACT

Introduction: The communal and repeated use of injection needles predisposes injecting drug users to several complications.

Report: This case report describes uncommon cardiac and pulmonary complications in a 44-year old male, injecting drug user. The retention of fractured injection needles in the groin, and the subsequent embolisation to the right ventricle, predisposed to recurrent systemic infections, and cavitating pulmonary septic emboli and pleural empyema as well as local complications. Years later, the needle was completely embedded in the wall of the right ventricle and not suitable for transvenous removal.

Discussion: Continuing intravenous drug abuse with injections into the groin result in infective complications, commonly pseudoaneurysms of the distal common femoral artery requiring triple femoral ligation. The embolisation of a fractured injection needle to the RV is a clinical rarity.

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Introduction

Intravenous drug abuse predisposes injecting drug users to several local and systemic complications. The commonly reported is infective endocarditis. Migration of a fractured needle to the right ventricle has very seldom been reported in injecting drug abusers. We report and discuss the presentation and management of complications in a single intravenous drug abuser.

Case Report

A 47-year old Caucasian male, known current Intravenous Drug Abuser (IVDU) on a Methadone programme, was admitted in 2009, with an extensive past medical history involving multiple traumatic stab wounds and groin sepsis requiring incision and drainage secondary to intravenous drug abuse (2002).

Despite this, he continued abuse of intravenous drugs and on this admission presented with a painful, swollen right leg and thigh, with no respiratory symptoms. Examination confirmed pyrexia of 38.6 °C and tachycardia (100 beats/minute) and a markedly swollen, discoloured leg and thigh. His foot was well perfused, with palpable pedal pulses and he had no respiratory signs. Haematological investigations revealed White Cell Count (WCC) of 13.8 x 10^9/L and C-Reactive Protein (CRP) of 348 mg/l. Viral serology showed Hepatitis C RNA (PCR) 6200 IU/mL but Hepatitis B and HIV 1&2 negative.

The patient was commenced on broad spectrum intravenous antibiotics (Amoxicillin, Metronidazole, Gentamicin). Duplex ultrasound revealed no pseudoaneurysm and no collection, but extensive ilio-femoral vein thrombosis. Chest X-ray (CXR) was unremarkable. To identify the source of sepsis a contrast enhanced CT (arterial/venous phase) was performed. This showed bilateral cavitating pulmonary lesions, consistent with septic emboli and a 2 cm, thin metallic object, consistent with a fractured needle in the right ventricle (RV), (Fig. 1a). Even though it was missed on CXR retrospective review confirmed its presence (Fig. 2). This was discussed with Cardiothoracic surgery who felt that the risks of attempting to remove this needle outweighed leaving it in situ. The patient was commenced on a three-month course of therapeutic Dalteparin for the DVT.

CT scan showed bilateral multiple pulmonary cavities (Fig. 1b). Over time the patient developed a complex left sided pleural effusion on ultrasound. This was drained via ultrasound guidance, with 300 ml of foul smelling pus drained. Microbiology of this fluid revealed copious growth of Enterococcus faecalis, sensitive to Amoxicillin. The patient gradually recovered following a 45-day hospital stay.

He was admitted one year later with a painful swelling in his right groin. On examination the patient had a painful, pulsatile swelling in his right groin with surrounding erythema. Duplex ultrasonography confirmed a pseudoaneurysm of the distal...
common femoral artery. The diagnosis of an infected pseudoaneurysm was confirmed at operation, requiring triple vessel ligation. Following the procedure his leg remained viable and the groin wound was left to heal by secondary intention. At presentation there was no signs of respiratory or generalised sepsis secondary to the already embed needle fragment.

Discussion

Intravenous drug abuse is associated with severe life threatening complications. Manipulation of the needle to gain intravenous access for drug use at different sites through heavily scarred tissue can cause it to fracture. The development of DVT in the same leg can be explained by impaired venous return that can result from chronic inflammation and induration. The embolisation of a fractured injection needle to the RV is a clinical rarity. Di Carlo and Kaushik and et al. have reported the embolisation of a fractured implantable venous catheter and a 0.38 calibre bullet to the right atrium, respectively. A review of the literature has demonstrated very few reported cases of needle embolisation associated with intravenous drug use. Kulaylat et al. reported nine cases of central embolisation of needle fragments in 1993 all associated with intravenous drug abuse dating back to 1983 as the first, Thorne (1998) reported the tenth, and finally Ngaage and Cowen (2001) reported an eleventh case. A forensic pathological study showed an incidental finding of an embedded needle fragment in the right ventricular myocardium of a 49-year old male that died of an overdose.

Chronic local inflammatory response coupled with the contractile motion of the RV probably contributed to incorporation of the needle into the RV wall. This clearly poses a management dilemma with balancing of the risks of open heart surgery with great difficulty in removing it with minimal iatrogenic trauma versus leaving a potential source of sepsis in a patient with potentially life threatening complications. Ngaage and Cowen advocated removing their fragment although the patient refused.

In this case there was a multitude of management challenges displayed on every admission in forms of local, systemic, infective and cardio-respiratory complications in a single, current intravenous drug abusing patient and with a massive burden this places on an already overstretched health service.

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References