Migrating foreign body in mediastinum – intravascular Steinman pin

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Received 27 September 2010; received in revised form 4 January 2011; accepted 11 January 2011

Abstract

We report a case of migration of a Steinman pin to the innominate vein. A pin was used to fix a shoulder separation but a broken piece was left unattended at the time of removal of the pin. How this piece made its way into the innominate vein is puzzling. To our knowledge migration of fixation wires to the innominate vein has not been reported previously.

Keywords: Mediastinal foreign bodies; Steinman pin; Migrating foreign bodies

1. Introduction

Steinman pins and Kirschner wires are two of the many devices extensively used in orthopedics to achieve fixation of the bone fractures. Ironically some of these ‘fixating’ wires and pins prove not to be ‘fixed’ themselves and have been found to migrate, sometimes with catastrophic outcomes. Hitherto unknown is the migration of a Steinman pin to innominate vein and is therefore reported here.

2. Case report

A 31-year-old male sustained a shoulder separation and fractured ribs after a cow trampled over him approximately seven years before his current presentation. A Steinman pin used to fix the injury at that time was removed approximately one year later. Six years after the reported removal of the pin the patient presented to his general practitioner with pain in the chest. A multiradiograph showed a remnant of the pin in the acromioclavicular region and another similar metallic ‘foreign body’ approximately 5.3 cm (two inches) was reported in the anterior mediastinum. A computed tomography (CT)-scan reported the metallic foreign body lying anterior to the mediastinal vessels apposing the left pleural surface (Fig. 1a and b). The piece in acromioclavicular region was removed by the orthopedic surgeon before referring the patient to us to deal with the ‘foreign body’. However, the exact position of the foreign body could not be ascertained even in the three-dimensional (3-D) video of the CT-scan (Video 1) because giving contrast would have obliterated the image of the pin and the magnetic resonance imaging (MRI) was contraindicated for obvious reasons. An inverted T minimal-access sterno-

Fig. 1. Plain computed tomography-scan images showing Steinman pin in the innominate vein.

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Tomography was performed through the third intercostal space and the thymus was dissected and the pin was located in the innominate vein. The pin was extricated. The postoperative course and follow-up was unremarkable.

3. Discussion

Steinman pins have been reported to migrate from the immediate postoperative period to as long as 21 years postoperatively [1]. Many case studies have reported the pins or wires migrating to a multitude of organs like the spinal cord, trachea, esophagus and brachiocephalic artery, lung, pulmonary artery, aorta, pericardium and the heart [2–8]. Migration into a vein and specifically the innominate vein has not been described until now.

The presentation has been described from virtually asymptomatic, discovering the foreign body on routine radiographs, to catastrophic [9]. In the present case the patient presented with continuous pain chest. It is interesting how a fractured piece of the pin remained undetected after ‘removal’.

The stress and strains encountered during repetitive, normal or unaccustomed activity in some patients can be reasons enough for the stress fractures of the fixating devices. The mechanism of the migration has always been an enigma. Although Venissac et al. have endeavored to explain the occurrence by muscular activity in some patients, like ours, and to local bone resorption in the elderly. The migration into the thoracic cavities likewise can be explained by negative intrathoracic pressures and continuous respiratory excursions [10]. It is, however, interesting to note that although wires are universally used to close sternotomies and are not usually found to be fractured, their migration has not been reported, although the sternum is also under constant motion.

We reiterate the suggestion to use threaded fixators, radiological surveillance and their removal as soon as is appropriate as has been recommended by various workers previously [1].

References