Negative results - Cardiac general

Intramycocardial sewing needle extracted one year after insertion

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Abstract

The successful removal of a sewing needle from the heart of a 36-year-old female one year after penetration. © 2006 Published by European Association for Cardio-Thoracic Surgery. All rights reserved.

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1. Introduction

Sewing needles, albeit a rare case of penetrating cardiac injury, are potentially life-threatening by creating cardiac tamponade, infection, mural thrombus, peripheral embolism and valve dysfunction. The most common symptoms are dyspnea and chest pain, but penetrating cardiac injury can be asymptomatic [1]. We report the case of an intramyocardial sewing needle, successfully diagnosed and removed one year after penetration.

2. Case report

A 36-year-old woman referred to our cardiac clinic complaining of a nonspecific chest pain. After a detailed history taking, she confided that she had long been the victim of domestic violence and that her husband had inflicted a sewing needle into her chest wall one year previously. She had no hospital admission following the event. On examination, her vital signs were stable. There was a mark on her chest wall at the midaxillary line in the left 5th interscostal space, which she attributed to the entry wound of the needle. Apical impulse was normally palpable, and cardiac percussion was within normal limits. Heart sounds were normal, and no murmur was found. There was no abnormality on physical examination.

Chest radiography (posteroanterior view) revealed a needle within the cardiac silhouette at the left lateral border (Fig. 1a). Chest CT scan showed the needle lodged into the lateral wall of the left ventricle. No abnormality was demonstrated on electrocardiography. Transthoracic echocardiography showed a strong linear echo-reflecting structure (Fig. 1b), normal-sized left ventricle with normal systolic function and no regional wall-motion abnormality. Routine blood and urine analyses were normal. Surgical removal of the needle-shaped foreign body was planned. The most important factor in our surgeon’s decision to surgically remove the needle, apart from the possibility of the migration of the object, was the psychological state of the patient, who was adamant that she undergo surgery.

The patient was taken to the operating room, where midsternotomy was followed by the opening of the pericardial cavity. The patient’s apex had adhesion to the pericardium, which was released. Because the needle ends could not be seen or felt, epicardial echocardiography was carried out initially so that the foreign body could be exactly localized. It transpired that the entry site of the needle was the part of the apex which had adhesion to the pericardium. Thereafter, a stabilizer was utilized to diminish the motion of the anterior part of the heart. A small incision was made just above the apex, and the needle was successfully removed from the lateral wall of the left ventricle without the application of cardiopulmonary bypass (Fig. 2a). The needle was 4.5 cm long and 1 mm thick (Fig. 2b). Four hours after surgery, the patient was extubated and her post-operative recovery was uneventful. She was discharged 3 days later.

3. Discussion

Penetrating foreign bodies in the heart comprise a class of serious injuries. The objects usually include bullets, acupuncture needles, fragments of Kirchner wires, or even more rarely, sewing needles [2]. As an emergency, a foreign body in the heart should generally be removed as easily as possible by surgical or non-surgical procedures in order to avoid any complications [3].

In 1969, Schechter and Gilbert [4] reviewed 157 published reports of injuries in the heart and great vessels caused by pins and needles, most of them accidental (56%) or self-inflicted (33%) due to an underlying psychiatric illness. Such injuries have also been reported following angiographic procedures, intravenous injections and acupuncture, with retrosternal chest pain and dyspnea being the most frequent complaints.
Since 1977, only 16 cases of needles in the heart have been reported in the English medical literature [1,2,5–8]. Talwar et al. [2], having reviewed 15 cases of intracardiac needles, recently reported that all but one of their cases needed surgery and that the remaining individual required no intervention. Three of their patients had cardiac tamponade, two had mural thrombus formation and one had valve dysfunction, recurrent arterial embolism, chronic constrictive pericarditis and pneumothorax, while the rest of their patients were asymptomatic. Notably, 6 patients required cardiopulmonary bypass (CPB) for successful surgical extraction. Then they reported their case, of the sewing needle into the lateral wall of left ventricle, which was also operated without extracorporeal circulation after accurate localization using transesophageal echocardiography.

Although patients may be asymptomatic if left untreated, the sharp nature of needles enables them to migrate through the tissues rapidly [8,9], leading to such serious complications as cardiac tamponade, hemothorax and pneumothorax. Even in the absence of migration, the risk of mural thrombosis is still a threat. Moreover, in longstanding cases, infective endocarditis may develop. Thus, early treatment typically results in better prognosis.

The advent and refinement of CPB and myocardial preservation techniques may have rendered the removal of even small fragments a straightforward procedure [10], but since such cardiopulmonary bypass complications as systemic inflammatory response and brain injury cannot be ruled out, it is expedient that the needles that are accessible enough be removed while the heart is beating. Determining the exact location of the foreign body is, therefore, of utmost importance to the surgeon because the surgical approach is dependent upon it [10].

Our case is unique in that the patient referred to hospital after overcoming her initial fear of her violent husband’s reaction one year after the infliction without such serious complications as hemothorax, pneumothorax or cardiac tamponade despite the migration of the needle from the lateral wall of her chest. It is noteworthy that the direction of the needle in the patient’s heart was indicative of a subsequent rotation, i.e. from an initially longitudinal penetration to an eventually vertical placement. The migration of the needle from the chest wall to the heart apex and finally in the lateral wall of the LV and the patient’s insistence that the needle be removed prompted us to extract the needle without CPB after having pinpointed the object with epicardial echocardiography.

References