



Pathology Biology Section - 2012

G63 Eventual Suicide by Self-Inflicted Intracardiac Needle on the Eleventh Attempt

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After attending this presentation, attendees will be aware of the fatal complications due to intracardiac self-inserted needles.

This presentation will impact the forensic science community by illustrating a type of injury that is known but rare, showing how prompt surgical removal of the foreign body could be life-saving, preventing the complications related to the sharp nature of needles.

The migration into heart chambers can cause cardiac tamponade, infection, peripheral embolism, valve dysfunction, pneumothorax, and death.

Cardiac injuries produced by sharp penetrating foreign bodies are not uncommon. Bullets, acupuncture needles, fragments of Kirshner wires, and sewing needles represent the object usually inserted. Rarely the heart lesions result from an auto-aggressive behavior in patients with an underlying mental disorder or with opioids abuse. When injury is self-inflicted it's usually an expression of personality disorders, schizophrenia, major depression, mania, and gender identity disorders and can be associated with certain medical diseases or represents a suicide attempt. The major symptoms are chest pain and dyspnea, although patients may be asymptomatic.

Long-term survival with needles and other foreign bodies in the heart has been described in numerous cases. Furthermore there are reports of incidental findings on autopsy of needles embedded in the heart. Though immediate death is uncommon, the overall mortality exceeds 50%.

It is believed that needles should not be removed if the patient is asymptomatic, a conservative approach is also recommended for old wounds: with time most foreign bodies become securely encysted and do no damage. Instead, in the case of early diagnosis needle injury to the heart should be treated surgically, regardless of the presence of symptoms to reduce further myocardial damage and excluding complications including death.

A case is presented in which a young male prisoner who died due to cardiac tamponade after multiple self-inserted intracardiac needles.

The male prisoner was a psychiatric patient admitted to the Emergency Service because of sharp chest pain. The patient didn't disclose any suicidal behavior. However, clinical history was characterized by previous introduction of foreign objects in his chest left *in situ*. The man was oriented, his vital signs were stable, but his heartbeat rate was high. Electrocardiography disclosed no abnormality. Myocardial necrosis enzymes were slightly increased. PA- X-ray of the chest confirmed the presence of multiple intrathoracic and intracardiac metallic string-shaped objects.

The diagnosis was acute coronary syndrome. Nitrates and antiplatelets were administered and the man was immediately moved to the cardiology unit. Because of a worsening of the cardiorespiratory functions, and the suspicion of a pulmonary embolism, a scintigraphy was requested but not performed because of the urgency of the situation. In the Coronary Intensive Care Unit, the patient had a cardiopulmonary arrest that, despite several resuscitation attempts lead to death after 13 hours after admission.

During forensic examination, acupuncture signs were detected at the precordial region. The autopsy showed chronic constrictive pericarditis, cardiac tamponade, and copious partially coagulated blood in the left hemothorax.

A needle, 11cm in length, was found penetrating the pericardium with about 3cm of its length infixed in the left ventricle of the heart. Another 10 metallic objects were found embedded in the thorax surrounded by a thin fibrous lamina: one at the base of the left costal arch on the midclavicular line and under the subcutaneous fat, one at the peritoneal level inside a fibrous mass near the greater curvature of the stomach, one inside the omentum, five at the precordial level out of the sternal plastron, one in the second intercostal space and one in the third. Accessory tests were non-contributory.

This case is out of the ordinary for the forensic scientist because of the injury pattern found at autopsy, it also involves clinicians of the Emergency Department and cardiac surgeons who have to make an accurate assessment of psychiatric patients with penetrating foreign body for a proper management to reduce myocardial injury and avoid complications.

Intracardiac Needle, Suicide, Autopsy