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Letter to the Editor

## Heart injury and endocarditis caused by a needle migrated from the left arm

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Injury to the heart by a needle is usually caused by direct penetration through the chest wall. We report a very unusual case in which a needle migrated to the heart from the left forearm.

A 27-year-old male was admitted because of high fever and pleuritic chest pain. Chest X-ray revealed a foreign body superimposed on the cardiac silhouette. History was significant for low-grade fever for 5 months. Antipsychotic drugs had been prescribed for chronic schizophrenia. He admitted self-mutilation by thrusting needles in his left forearm. There were scars on the left forearm and a fragment of needle was palpated in the subcutaneous tissue of left forearm. Transesophageal echocardiography revealed a 2 cm mobile vegetation on the tricuspid valve and a large amount of pericardial effusion, which was drained. *Staphylococcus aureus* was cultured in the blood. Chest computed tomographic (CT) scan demonstrated a foreign body at the junction of the inferior vena cava (IVC) and the right atrium (RA). After 2-week intravenous antibiotic treatment the patient underwent surgery.

The pericardium was markedly thickened. The needle (3 cm), penetrating the right atrial wall at the IVC junction, was removed. Through a right atriotomy, a vegetation was removed from the commissural area of anterior and posterior leaflets. The resultant defect was repaired by a partial De Vega annuloplasty. The postoperative course was unremarkable, and the patient was discharged to another hospital on day 5 for 2-week intravenous antibiotic treatment. Vegetation and pericardial fluid were negative for bacteria.

A needle reaches the heart by various routes. The most frequent entry route was the chest wall (82%). Its penetration also occurred across the alimentary tract, or across the respiratory tract. Very rarely a needle reached the heart across the diaphragm, or by being transported from a distant site [1,2]. Thirteen additional cases have been reported since the review of 160 cases with heart injury caused by needles by Schechter and Gilbert in 1969 [1]. The right ventricle (46%) was most frequently affected, followed by the left ventricle (32%), interventricular septum (10%), right atrium (9%) and left atrium (5%).

This case is very unusual in that a 3 cm needle reached the heart from the distant peripheral region. This could happen either by direct penetration of the foreign body into a blood vessel, or indirectly by eroding into a venous circulation after migration within the subcutaneous tissue. In this case, it is assumed that the foreign body reached the RA after entrance to the peripheral vein, and lodged in the Eustachian valve of the IVC. The needle fragment irritated the anteroposterior commissural area of the tricuspid valve. This resulted in damage to the endocardium and subsequent vegetation formation on the valve. The atrial contraction gave incessant stimulation of the tip of the needle to the right atrial wall, which was injured and infected, and finally penetrated to the pericardial space. Chest pain may have been caused by penetration of the foreign body and its stimulation of the pericardium and the right parietal pleura.

### References

- [1] Schechter DC, Gilbert L. Injuries of the heart and great vessels due to pins and needles. *Thorax* 1969;24:246–253.
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