pain relief to 80% for pancreatic cancer pain relief.3,15-18 Although less invasive than thoracotomy or open surgery, the complication rate of these transcutaneous techniques is quite high: pain, hypotension, impotence, diarrhea, hematuria, pneumothorax, paraplegia, kidney punctures, urinoma, and aortic pseudoaneurysm have been reported. Therefore, especially in younger patients, a splanchic block often is preferred.15 Also because of sympathetic regeneration after alcohol blocks, pain will recur sooner or later, and most often within 1 year after the procedure. Therefore, complete anatomic interruption by thermocoagulation of the splanchic nerves may offer longer lasting pain relief. This technique, especially when delivered via a minimally invasive thoracoscopic approach, should be considered the treatment of choice in (younger) patients with chronic pancreatitis (in whom life expectancy in general exceeds 1 year).15 Recently, various authors have reported successful thoracoscopic splanchicectomy procedures.5,5,11 Patient and procedure characteristics are summarized in Table 2. All procedures were performed by surgeons, using surgical techniques (VATS), eg, pleural incision, dissection, and transection of the splanchic nerves, etc. Reported operating times as a consequence are rather high (90 to 90 min),8,11 and chest drains may have to be left in place.4,8,11 Following a simplified “neurological” thoracoscopic upper dorsal T2 to T3 sympatheticolyis technique for the treatment of essential hyperhidrosis,12 a comparable simplified (single lumen intubation, electrocautery without dissection of the nerves) thoracoscopic procedure for splanchic interruption (“splANCHICOlysis”) was developed. Using this technique, adequate and persistent pain control was obtained in the majority of patients with chronic pancreatitis after a left-sided only or a bilateral intervention (5 of 7 [71%]). Advantages of this reported technique include a short intervention time (20±8 min), a short hospital stay (2 days), absence of morbidity associated with double-lumen intubation, no need for chest tube drainage, and an uncomplicated course. Therefore, this technique represents a valuable alternative in the difficult approach to alleviating pain in patients suffering from chronic pancreatitis pain that is refractory to conventional medical or surgical treatment.

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Self-Inflicted Intramyocardial Injury With a Sewing Needle*

A Rare Cause of Pneumothorax

Francis P. Janilla, MD, and Larry C. Casey, MD, PhD

An unusual case of a self-inflicted intracardiac injury with a sewing needle caused a pneumothorax. Fewer than ten cases of needles in the heart have been reported in the recent medical literature; none of these cases was associated with presence of a pneumothorax. The literature regarding self-inflicted injury with needles in the heart is reviewed.

(CHEST 1998; 113:531-34)

Key words: intracardiac foreign body; needle; pneumothorax; self-mutilation

The occurrence of a pneumothorax after chest wall penetration with needles during diagnostic and therapeutic procedures is not an uncommon complication.

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Pneumothorax may occur not only from pulmonary procedures, such as pleural and lung biopsies or thoracentesis, but also from procedures as diverse as nerve blocks, acupuncture, epidural anesthesia, cholangiography, electromyography, and nerve conduction studies.3 Pneumothorax caused by self-injury with a needle is very uncommon. There has been only one reported case of pneumothorax resulting from self-injury with a needle, and in this case, the needle was inserted into the neck and then migrated to the lungs, thus causing a pneumothorax.2

Intracardiac injuries with needles, though rare, have been described.3–11 The majority of the cases were the result of self-injury and were associated with a variety of sequelae that required their removal. This is the first reported case of self-injury with a sewing needle leading to both cardiac penetration and development of a pneumothorax.

CASE REPORT

A 42-year-old man presented to the emergency department with a 12-h history of pleuritic pain in the upper area of the left side of the chest and dyspnea that began after a fistfight during which he sustained a “punch” to the chest wall; he was otherwise evasive about further details of this event. The patient had a history of abdominal surgery for gunshot wounds and of alcohol abuse. He denied illicit drug use.

The patient appeared anxious and in mild respiratory distress, but his vital signs were stable. Breath sounds were decreased in the upper area of the left side of the chest; there was no subcutaneous crepitus or sign of an entry wound, though the anterior chest wall was tender below the left nipple. Cardiac sounds were distinct and not displaced. The patient’s abdomen was marked with multiple irregular keloidal scars along the midline.

A chest radiograph showed a left-sided pneumothorax and a narrow linear metallic density along the left border of the heart (Fig 1). A chest CT scan showed presence of a left-sided pneumothorax (Fig 2, top), a pleural effusion, and a linear density in the left ventricular myocardium (Fig 2, bottom).

The patient refused to explain the presence of a needle in his chest. Closer questioning elicited a history of major depression, suicide attempts, and self-mutilation. Radiographs of the abdomen showed multiple paper clips and needles embedded in the abdominal wall (Fig 3). In addition, a needle was present in the neck adjacent to the cervical vertebra. The patient nonetheless denied having inflicted his present injury on himself. The psychiatry department was consulted, and the patient was observed for suicide attempts.

A 20F tube placed in the chest drained bloody fluid; a sample of that bloody fluid yielded a hematocrit value of 5%. The hing expanded fully, and there was no further air leak. Two-dimensional echocardiography was performed and confirmed the location of the needle in the left ventricular myocardium without extension into the ventricular cavity. There was no thrombus or pericardial effusion. An ECG disclosed no abnormalities. The cardiovascular surgery department was consulted, and no surgical intervention was indicated or suggested at that time.

The chest tube eventually was removed, and the patient was discharged from the hospital. He failed to report for follow-up examinations in the medical clinic but was readmitted to the psychiatry service 6 months later because of suicidal thoughts. At this time, he had no cardiorespiratory symptoms, and the needle was no longer visualized on a chest x-ray film. No search was performed, however, for the possible location of the needle.

DISCUSSION

The only report of a pneumothorax caused by self-injury with a needle involved a patient using intravenous drugs
who broke off a needle while trying to inject heroin into his external jugular vein. Three months later, a left-sided pneumothorax developed, and the needle was present in the upper area of the left lung. The needle eventually was removed through a thoracotomy.

In 1969, Schechter and Gilbert reviewed 157 published reports of injuries owing to pins and needles in the heart and great vessels. In 56% of the cases, the trauma was accidental while approximately 33% were the result of self-injury. Presenting symptoms were primarily retrosternal chest pain and dyspnea. Dyspnea usually was associated with an enlarging pericardial effusion. No cases of pneumothorax were reported. Partly embedded needles seemed to create the most trauma to the pericardium owing to repeated laceration secondary to motion of the needle with each cardiac contraction. If delivered with great force, the needle would be pushed into the myocardium quickly, thus minimizing the damage to the myocardium and pericardium and decreasing the likelihood of a hemopericardium. Immediate death was unusual, but overall mortality reached 54% and was caused by cardiac tamponade, infection, iatrogenic errors, and the underlying moribund condition of the patients. Perhaps the majority of these deaths could have been avoided through

Table 1—Reported Cases of Intracardiac Needles From 1977 to 1995

<table>
<thead>
<tr>
<th>Source, Year</th>
<th>History</th>
<th>Injury</th>
<th>Location of Needle</th>
<th>Effect</th>
<th>Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>McCormack &amp; Knapper, 1977</td>
<td>? psychiatric history</td>
<td>Self, migration</td>
<td>Pericardium</td>
<td>None</td>
<td>Removal</td>
</tr>
<tr>
<td>Portek &amp; Wright, 1981</td>
<td>Depression</td>
<td>Accident</td>
<td>Left ventricle; partly intracavitary</td>
<td>Recurrent arterial embolism</td>
<td>Removal</td>
</tr>
<tr>
<td>Sakai et al, 1984</td>
<td>Schizophrenia</td>
<td>Self</td>
<td>Left ventricle; partly intracavitary</td>
<td>Thrombus</td>
<td>Removal</td>
</tr>
<tr>
<td>Keogh et al, 1988</td>
<td>Mental retardation; prior self-injury</td>
<td>Self</td>
<td>Pericardium, ascending aorta</td>
<td>Constrictive pericarditis</td>
<td>Pericardiectomy</td>
</tr>
<tr>
<td>Dwivedi et al, 1991</td>
<td>Schizophrenia</td>
<td>Self</td>
<td>Right ventricle; partly intracavitary</td>
<td>Thrombus</td>
<td>Removal</td>
</tr>
<tr>
<td>Jagneet et al, 1992</td>
<td>Schizophrenia</td>
<td>Self</td>
<td>Right ventricle; partly intracavitary</td>
<td>Valve dysfunction</td>
<td>Removal</td>
</tr>
<tr>
<td>Tveskov &amp; Angelo-Nielsen, 1993</td>
<td>Schizophrenia</td>
<td>Self</td>
<td>Pericardium</td>
<td>Tamponade</td>
<td>Removal</td>
</tr>
</tbody>
</table>

*Self = self-inflicted.
earlier diagnosis and intervention. It is not clear how the patient reported here inserted the needle into his heart. His story that he had been punched in the chest during a fight was not consistent with the evidence. The presence of numerous needles in his body, particularly in his abdomen and neck, suggested that they had been intentionally inserted and that the sewing needle also had been intentionally inserted into his heart.

There are few reports of self-inflicted injuries from needles in the heart in more recent medical literature. Eight cases of intracardiac injuries with needles have been reported in the past 20 years; the salient features of these reports are summarized in Table 1. Six of the eight cases were the result of self-injurious behavior. Seven of the eight cases were associated with serious complications including arterial embolization, mural thrombus formation, valvular dysfunction, cardiac tamponade, and constrictive pericarditis. In all of the cases, the needles were removed. In none of the cases was the needle completely intramyocardial in location or associated with the development of a pneumothorax. A retrospective study on more than 200 intracardiac bullets and shrapnel included 23 cases in which the foreign bodies were fully intramyocardial; of these 23 cases, only 1 underwent surgery, an unsuccessful attempt at removal of the bullet. There were no deaths reported. The only complications included one case of pericarditis and the development of a fistula between the right coronary artery and the right ventricle in the patient in whom surgery was attempted. In a 1969 review, Schechter and Gilbert, however, emphasized that while needles which remain within the myocardium may remain clinically silent, their shape, in contrast to other foreign bodies such as bullets, also allows for rapid migration through tissues; there were three cases of the needles being extruded from the heart into the pleural space, but these cases were not associated with development of a pneumothorax.

A thorough discussion of the psychiatric aspect of this case is beyond the scope of this review, but it is of interest to note that self-mutilation does not appear in the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders as a distinct entity. Self-mutilation can be observed in certain medical diseases, including the Lesch-Nyhan, de Lange, and Gilles de la Tourette’s syndromes and mental retardation, and can be associated with a variety of psychiatric conditions, such as personality and depersonalization disorders, schizophrenia, major depression, mania, and gender identity disorders. Self-mutilation is a diagnostic criterion in the borderline personality disorder and may be a component of factitious disorders. Alcohol and drug use increase the probability of such behavior. Self-mutilation can be thought of as an attempt on the part of the patient to relieve pathologic symptoms through multiple possible mechanisms. Such acts may reduce anxiety and tension especially when the patient is experiencing racing thoughts and varying emotions. These acts may also allow a cathartic release of anger, relieve depressive thoughts, remedy feelings of badness, and function as a means of drawing attention.

Although the patient may achieve the desired effects through self-mutilation, the underlying pathologic condition is not addressed, the relief provided is transient, and the resultant morbidity, if not mortality, is still a problem.

CONCLUSION

The case presented herein appears to be the only case of self-injury with a needle causing both a pneumothorax and cardiac penetration. This patient is most fortunate in that he did not suffer from any serious cardiac dysfunction on his initial presentation and in that he continues to do well from a medical standpoint despite apparent migration or embolization of the sewing needle.

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Lung Transplantation for Williams-Campbell Syndrome*

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Williams-Campbell syndrome is a rare disorder characterized by a deficiency of cartilage in subsegmen-