Case Report

Intracranial Sewing Needles: Is an Unsuccessful Homicidal Attempt or The Result of an Accident?

Ramazan KAHVECİ¹, Kemal HAMAMCIÖGLU²

¹Ministry of Health, Kırkkağ High Specialization Hospital, Neurosurgery, Kırkkağ, Turkey
²Kayseri Acibadem Hospital, Neurology, Kayseri, Turkey

Summary
The insertion of a sewing needle through fontanel is a common method to kill an infant especially in eastern societies. Although it was first described by Meixner in 1914, this is an ancient practice cited in the non-medical literature. There are some single or serial case reports up to date in the literature. Soon after the insertion of sewing needle the victims usually die, but rarely the sewing needle can be detected incidentally after a long while. The authors reported a 20 years old male patient, who had two sewing needles in the left cerebral hemisphere and suffered from headache. The radiological appearance of the needles in his brain suggested that they must have been inserted into the cranium through the anterior fontanel of the calvarium during infancy, before the closure of the sutures, as a result of an unsuccessful homicide attempt or an accidental injury. The patient and his relatives did not know how the needles were introduced there.

Key words: Sewing needles; fontanel; infanticide

INTRODUCTION
Intracranial penetration of foreign bodies both accidentally or intentionally through the natural openings of the cranium are rare conditions. Although these generally occur due to penetrating trauma or surgical procedures, rarely also foreign bodies penetrate to the cerebrum during infancy via the natural openings of the cranium, such as fontanels, cranial sutures, orbits or ears as a result of homicidal attempt, called “infanticide”[1,2,6,8,10,11]. This last condition usually results in death of infant, but these foreign bodies may rarely remain dormant in the cranium for a long period of time.
Although yet unclear, this situation had been explained with several kinds of hypothesis by some authors for a few reported cases in the medical literature(1-4).

In the present report, we discuss a young male who had two needles in his brain, how the needles were introduced to his brain and remained there for a long period of time without any complications.

**CASE PRESENTATION**

A 20 year old, previously healthy man was admitted to the outpatient clinic complaining of headache for a few weeks. On examination he had stable vital signs and a normal neurological examination. He had also a normal physical exam with a dental implant. His laboratory tests were also normal. Cranial radiography was performed to rule out sinusitis that detected a left maxillary sinusitis and a hypoplastic right frontal sinus. Strikingly, A/P and lateral skull x-rays revealed that there were two sewing needles at the left frontal region of the brain (Fig. 1a,b). Afterwards, the patient was re-examined, but no fresh needle holes were seen on his scalp. A computed tomography (CT) of the cranium revealed that two sewing needles at the same direction were localized interhemispherically, slightly to the left side of the midline. The inferior end of the lower needle was close to the left choroideal plexus. There was no evidence of acute injury such as hematoma and/or edema around the needles (Fig. 2). The patient and his relatives did not know anything about when or how the needles were introduced there. The location and direction of the needles convincingly suggest that they might have been inserted through the anterior fontanel during infancy, before the closure of the sutures, maybe as a result of unsuccessful homicide attempt. Surgical intervention wasn't indicated, because the patient's headache was considered to be unrelated with the needles. He was discharged from the hospital with medication for sinusitis and an advice to remain under regular follow-up.

![Fig 1. a, b: A/P and lateral skull x-rays of the patient showing two sewing needles at the left frontal region with left maxillary sinusitis and hypoplastic right frontal sinus.](image-url)
DISCUSSION

Physical abuse to kill an infant is termed “infanticide”. This condition usually comes into existence by throttling, drowning, freezing etc. and results in death of infant. Embedding of a sewing needle to the brain through the natural openings of the cranium is an easy and secret way as a method of infanticide\(^2,3\). If this attempt doesn't result in death of infant at the first time, the insertion is usually repeated with a new needle for several times. Soon after that, the victim develops central nervous system complications and usually dies\(^2,3,5\). This condition is usually classified as sudden infant death syndrome. For this reason, reported cases in the literature may represent only the tip of an iceberg.

Interestingly, there were long intervals between the assumed age of the patients at the time of insertion and the onset of symptoms and most of the patients in the literature were diagnosed accidentally by skull x-ray examinations performed for other reasons. How is the sewing needle well tolerated by the brain tissue? It has been shown that metallic fragments are much better tolerated in the brain than other foreign bodies. A sewing needle is made of iron, which rusts when it is exposed to air. However, there is not enough air to be exposed in the cranium and although surface of the sewing needle is covered by irregular deposits of iron phosphate, this prevents corrosion\(^1,2\).

Another controversial issue is how the needles migrate. This situation had been tried to be explained by Ramesh et. al. with the greater specific gravity of the needle when compared to the brain matter, which enables the needle to sink down. Moreover, Ramesh et. al. also assumed that cerebral pulsations may also contribute to the movement of the needle\(^7\). In our patient, there were two sewing needles at the same direction localized interhemispherically, slightly to the left side of the midline. One of them was in a deeper position. Sometimes, while one needle is placed just under the inner plate of the calvarium, the others migrate to deeper regions in a patient with multiple intracranial needles. If we consider that the needles were inserted from the same point, it is possible that the first needle was pushed deeper by the second one.

Fig 2: A cranial CT revealed the two sewing needles at the same direction localized interhemispherically, slightly to the left side of the midline. There was no evidence of acute injury such as hematoma and/or edema surrounding the needles.
However, it is impossible to decide that the needles were inserted into the brain at the same time and at the same way. The needle might be able to remain buried in the brain matter, and gets a deeper position as the patient grows older. These questions are yet unclear and there is a great enigma.

In spite of the limited number of publications, some facts about this situation are well known. The victims are mostly orphans, and criminals are usually step-mothers. More than 50% of all patients are older than twenty years. Generally more than one needle was detected in the patients. The location and the position of the sewing needles usually indicate that they might have been inserted through the anterior fontanel during infancy, before the closure of sutures. Most of them were detected incidentally via cranial radiography. The headache and epilepsy were the most common complaints. Finally, the patient and related people have no idea about this situation\(^{(1-3,8,9,11)}\). Thirteen cases had been reported until 1979 and reviewed by Abbassioun et al. Another thirty cases have been reported since 1979 and are listed in Table 1. The summarized demographic features of these cases include age and sex of the patients, number of needles, criminals, symptoms of the patients, duration of the symptoms and the treatment modalities of all reported cases (including this case report).

Table 1. Demographic features of previously reported cases (from 1979 until now)

<table>
<thead>
<tr>
<th>Author/Years and Publication</th>
<th>Sex/Age</th>
<th>Criminal</th>
<th>Number of needles</th>
<th>Symptoms</th>
<th>Duration of Symptoms</th>
<th>Treatment Modalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barlas et al., 1983</td>
<td>M/29, F/4 month</td>
<td>Unknown</td>
<td>1-1</td>
<td>Headache</td>
<td>Unknown</td>
<td>Follow-up</td>
</tr>
<tr>
<td>Rahimizadeh et al., 1987</td>
<td>3F/3 M (n:6) 9-55 yr</td>
<td>Stepmothers in 5 cases</td>
<td>Unknown</td>
<td>Headache, Seizure, TIA, Head injury</td>
<td>51 years</td>
<td>Surgical intervention in 3, follow-up in 3 cases</td>
</tr>
<tr>
<td>Buzzı et al., 1987</td>
<td>F/54</td>
<td>Unknown</td>
<td>3</td>
<td>Head injury</td>
<td>Hypothalamic syndrome Headache</td>
<td>Unknown</td>
</tr>
<tr>
<td>Sener et al., 1997</td>
<td>M/20</td>
<td>Unknown</td>
<td>3</td>
<td>Headache</td>
<td>A few months</td>
<td>Follow-up with medication</td>
</tr>
<tr>
<td>Meng et al., 2001</td>
<td>F/27</td>
<td>Unknown</td>
<td>2</td>
<td>Head injury</td>
<td>A few hours</td>
<td>Follow-up</td>
</tr>
<tr>
<td>Unal et al., 2005</td>
<td>F/10</td>
<td>Unknown</td>
<td>1</td>
<td>Head injury, Headache</td>
<td>1 hour</td>
<td>Follow-up with medication</td>
</tr>
<tr>
<td>Sucu et al., 2006</td>
<td>M/29</td>
<td>Unknown</td>
<td>1</td>
<td>Head injury, Headache</td>
<td>A few hours</td>
<td>Follow-up</td>
</tr>
<tr>
<td>Teegala et al., 2006</td>
<td>F/4</td>
<td>Unknown</td>
<td>2</td>
<td>Head injury</td>
<td>A few hours</td>
<td>Follow-up</td>
</tr>
<tr>
<td>Tun et al., 2006</td>
<td>M/45</td>
<td>Unknown</td>
<td>1</td>
<td>Head injury</td>
<td>A few hours</td>
<td>Follow-up</td>
</tr>
<tr>
<td>Yolas et al., 2007</td>
<td>M/9</td>
<td>Unknown</td>
<td>1</td>
<td>Seizure</td>
<td>Unknown</td>
<td>Surgical intervention in 3, follow-up in 3 cases</td>
</tr>
<tr>
<td>Tuncer et al., 2007</td>
<td>M/32</td>
<td>Unknown</td>
<td>1</td>
<td>Seizure</td>
<td>A few hours</td>
<td>Follow-up with medication</td>
</tr>
<tr>
<td>Yılmaz et al., 2007</td>
<td>M/10</td>
<td>Stepmother</td>
<td>5</td>
<td>Fever, headache, vomiting (due to brain abscess)</td>
<td>3 days</td>
<td>Follow-up with medication</td>
</tr>
<tr>
<td>Ashrafi et al., 2007</td>
<td>M/42</td>
<td>Unknown</td>
<td>2</td>
<td>Headache</td>
<td>4 months</td>
<td>Follow-up with medication</td>
</tr>
<tr>
<td>Balak et al., 2007</td>
<td>F/10</td>
<td>Unknown</td>
<td>1</td>
<td>Seizure</td>
<td>A few hours</td>
<td>Surgical intervention in 3, follow-up in 3 cases</td>
</tr>
<tr>
<td>Amirjamshidi et al., 2009</td>
<td>3 F/3 M (n:6) 6-51 yr</td>
<td>Stepmothers in 2 cases</td>
<td>1-4</td>
<td>Headache (n:1), Paresthesia and Headache (n:1), Incidental (n:4)</td>
<td>Several years</td>
<td>Surgical intervention in 4, Follow-up in 2</td>
</tr>
</tbody>
</table>
Treatment modalities were still controversial in these cases. In our patient, headache was relieved by medication for sinusitis and surgery was considered unnecessary. For this reason, firstly the exact cause of the symptoms should be searched by the physician. According to previous literature, if it is necessary, surgical treatment improves the symptoms\(^{(1,2,4,5,11)}\). In our opinion, if the patient's status is healthy under medical treatment, surgery is unnecessary. Consequently, if we suspect child abuse, whole body roentgenogram of the patient must be performed. We should explain this situation as an accident without any further information of infanticide.

Correspondence to:
Ramazan Kahveci
E-mail: kahveci.drramazan@gmail.com

Received by: 16 October 2012
Revised by: 22 January 2013
Accepted: 26 February 2013

The Online Journal of Neurological Sciences (Turkish) 1984-2013
This e-journal is run by Ege University Faculty of Medicine, Dept. of Neurological Surgery, Bornova, Izmir-35100TR as part of the Ege Neurological Surgery World Wide Web service.

Comments and feedback:
E-mail: editor@jns.dergisi.org
URL: http://www.jns.dergisi.org
Journal of Neurological Sciences (Turkish)
Abbr: J. Neurol. Sci.[Turk]
ISSNe 1302-1664

REFERENCES