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Case Report

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Intracranial Sewing Needles as Foreign Bodies: A Report of Two Cases

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ABSTRACT

Penetrating brain injuries are usually the result of high-velocity accidents. However, intracranial foreign bodies can also rarely occur as a result of child abuse. Inserting a sewing needle into the brain through the sutures before the closure of fontanelles represents a particularly intriguing and relatively unknown form of attempted infanticide. In this study, we analyzed two adults who presented with an intracranial foreign body. Case 1: A 36-year-old woman presented with complaints of headache. Radiographic evaluation revealed a sewing needle lodged in her brain. Case 2: A 62-year-old man was admitted with seizures. Radiographic examination revealed three sewing needles in his brain. Both patients were managed conservatively due to the non-threatening nature of their symptoms. Several victims of needle insertion incidents go unreported. Survivors of such incidents may present with late complications. The needle is often incidentally detected during adulthood. A limited number of publications indicate that authors tend to refrain from treating asymptomatic patients. Furthermore, the related ethical concerns pose significant challenges for the physicians

KEYWORDS: Infanticide, Sewing needle, Intracranial, Foreign body, Adulthood

ABBREVIATIONS: AF: Anterior fontanel, **LS:** Lambdoid suture, **AED:** Anti-epileptic drugs, **ABT:** Antibiotherapy, **MRI:** Magnetic resonance imaging

INTRODUCTION

Intracranial foreign bodies are usually reported secondary to a traumatic event, especially following penetrating brain injuries. In under-developed countries, the insertion of a sewing needle through the cranial sutures before the closure of fontanelles, a method of attempted infanticide, is a very rare cause of intracranial foreign bodies (1). This entity represents a special class of intracerebral foreign bodies and a method of homicide. Because numerous victims die within several days without a diagnosis, this condition is usually reported incidentally in survivors in childhood or adulthood or due to symptoms from late complications (3).

We have observed a concentration of these cases, particularly in Turkiye and its neighboring countries. Thus, we conducted an analysis of the cases reported from Turkiye to understand the prevalence in the country, approach of clinicians, and clinical characteristics of the patients. Additionally, we have presented two of our cases within this study. We believe that this legal issue is also important in countries with an immigrant population.

CASE REPORTS

Case 1

A 36-year-old woman was admitted to the neurology department with complaints of a headache for 10 years. There was no history of vomiting or seizures. The headache was characterized as a tension-type headache. Her general physical and neurological examinations yielded normal results. Cranial computed tomography revealed a foreign object in the cranium (Figure 1). Radiograph of the skull revealed a sewing needle in the right frontal region, extending from the right frontal convexity to the deeper areas of the right brain (Figure 1). She

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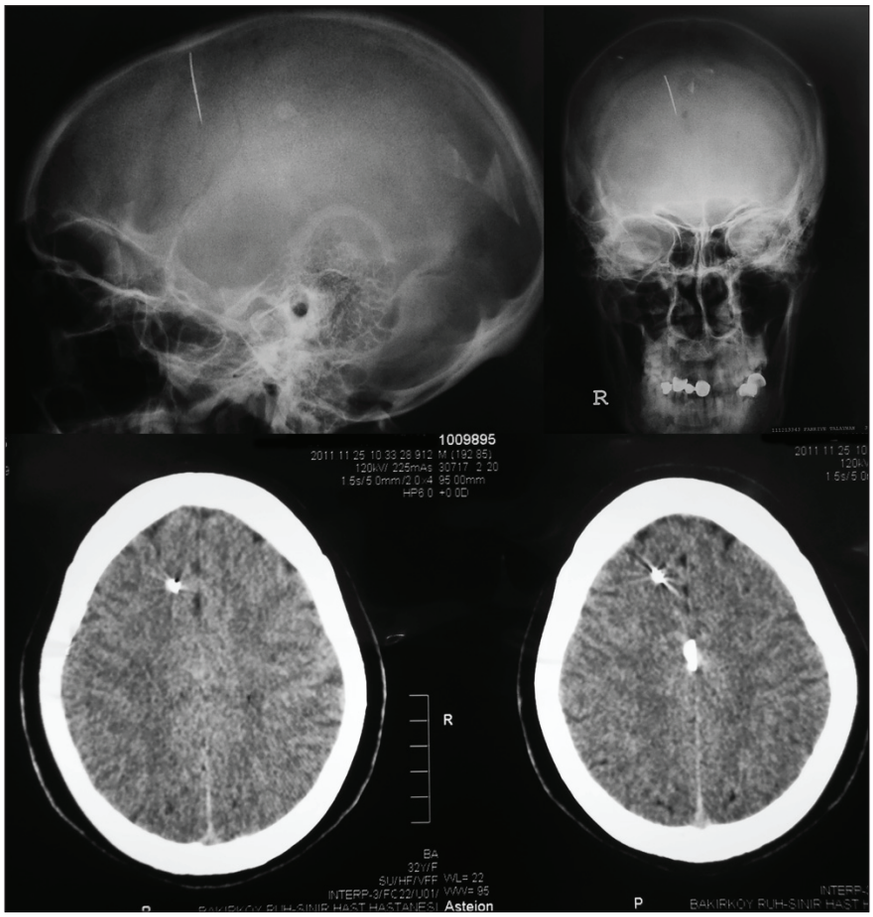

Figure 1: A 36-year-old woman. A plain X-ray of the skull and cranial computed tomography reveals a sewing needle in the right frontal region, extending from the right frontal convexity into the deeper areas of the right brain.

was diagnosed with "tension-type headache." She was discharged and advised to follow up.

Case 2

A 62-year-old man with a headache and history of two generalized convulsions in the past week was admitted to the emergency unit. He had no significant medical history except for systemic hypertension for which he was consuming medications. The seizures were of the generalized tonic-clonic type, and his neurological examination yielded normal results. Cranial computed tomography revealed three sewing needles extending from the frontal convexity to the left ventricle (Figure 2). A plain radiograph of the skull was obtained to identify skull defects (Figure 2). The patient and his family did not report a history of needle insertion. The seizures were controlled with carbamazepine (800 mg/day) for a year. However, subsequently, he began to experience intentional tremors and rigidity of movements.

DISCUSSION

Objects traveling at a low velocity may cause penetrate the natural calvarial foramina such as the orbit, ears, and foramen magnum, typically resulting in isolated traumas (6). The presence of an isolated intracranial sewing needle following trauma is highly unusual.

Intracranial foreign bodies, although a rare occurrence, can result from child abuse. In developing countries, illiterate parents or relatives are often the main perpetrators. However, in well-developed countries, stepmothers, stepsisters, and babysitters may be involved (1). Infanticide is an extreme form of abuse, manifesting differently across cultures. One particularly unusual method involves inserting sewing needles into the brain before the fontanelles close. This form of infanticide was first described in Germany in 1914. Since then, fewer than 50 cases have been reported (3,18,19,20,22-24). The majority of these reports are from Iran and Turkiye, with significant series published by Abbasioun and Amirjamshidi in 1979 and 2009, respectively (1,3). Notably, the Iranian writer Sadegh Hedayat (1902-1951) described a case in which a child died following the insertion of a pin into the open fontanelles, indicating that this method of infanticide is known in the northwestern region of Iran.

Victims are often unwanted children or stepchildren, with girls being particularly vulnerable in some cultures. Other risk factors include being illegitimate, hyperactive, or mentally challenged children. The perpetrators are usually mothers or stepmothers. However, stepsisters, babysitters, and relatives may also be involved. Most victims die shortly after pin insertion due to complications. Survivors may suffer from late complications such as seizures, brain abscesses, and movement

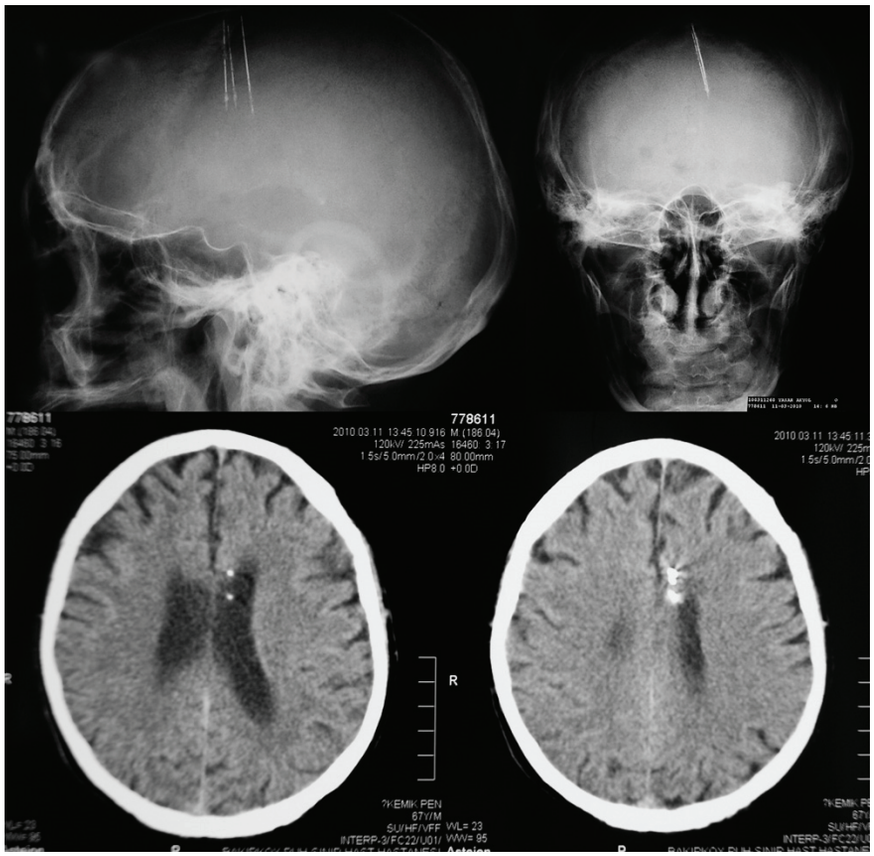

Figure 2: A 62-year-old man. A plain X-ray of the skull and cranial computed tomography show three sewing needles extending from the frontal convexity into the left lateral ventricle.

disorders (1,3,16,20,23,24). Seizures and headaches are common symptoms, whereas motor weakness is rarely reported in the late phase. Several patients are incidentally found to have foreign bodies during the evaluation of non-specific symptoms (1,18,19,22). Our first patient was found to have a sewing needle in the brain during the evaluation of a non-specific headache. She was diagnosed to have a tension-type headache, which resolved after 2 weeks of appropriate medical treatment.

Surgical removal of the needles via craniotomy, endoscopic, or stereotactic methods is recommended if diagnosed early. However, this decision is more complex in asymptomatic patients or those with minor symptoms. Asymptomatic patients are often managed conservatively, with clinical and radiological follow-up (18,19,20,22). Amirjamshidi's report on six patients, four of whom underwent surgery, demonstrated mixed outcomes (3).

A significant number of cases involving intracranial foreign bodies have been reported from Turkiye (Table I). In addition to our two patients, 19 cases of suspected infanticide by intracranial needle insertion have survived until adulthood. Most of the cases reported from Turkiye have been male patients (14 males, 5 females, and 3 not specified). Although unwanted children, particularly girls, are generally undesirable, the predominance of male cases is noteworthy. In patients that reach adulthood, needles are often incidentally detected, with headaches being the most common complaint. However, it is difficult to attribute the headaches to the presence of needles, as headaches are common in the general population. In six of the 22 patients, seizures were the presenting symptom. Intracranial needles can cause seizures because of they are foreign in nature. Although electrophysiological evidence is insufficient to confirm this in every case, the needles are most likely the cause of seizures. Two patients presented with an intracranial abscess and involuntary movements. The presence of needles raises a debate regarding the appropriate treatment approach. The needles typically start superficially, but they extend deep into the brain tissue. In patients with incidentally found foreign bodies, there may be a long-term risk of infection or seizures. However, it is challenging to predict this risk in asymptomatic patients, and surgery is not typically preferred in these patients. Only four of the 22 patients underwent surgery. These patients had presented with refractory epileptic seizures. Seizure control was achieved after resection of the foreign body. In patients in whom the needle was retained, diagnostic magnetic resonance imaging (MRI) poses a risk. Thus, patients should be cautioned regarding this.

When an intracranial foreign body is discovered in an adult, the legal process should be promptly initiated, and the findings reported to the relevant authorities. The process typically involves forensic examination, documentation of radiological evidence, and a thorough investigation into the patient's medical and familial history. Legal authorities may involve law enforcement officials to conduct an investigation, because such cases often fall under statutes related to child abuse, even if

Table I: Distribution of Cases Reported in Turkey According to the Literature. We Conducted Comprehensive Searches in PubMed, Cochrane Library, Google Scholar, and Trdizin Databases Using the Search Terms 'Intracranial', 'Sewing', 'Needle', 'Fontanel', 'Insertion', 'Infanticide', 'Foreign Body', 'Dikiş Iğnesi', 'Intrakraniyal', 'Yabancı', 'Cisim', and 'Infantisid'. Studies Not Uploaded by Academic Institutions in Turkey were Excluded, and Duplicate Reports were Omitted to Ensure the Uniqueness of Each Case

Authors	Year	Patients	Age	Gender	Number of Needles	Clinical history	Neurological Examination	Insertion Way	Treatment	Outcome
Barlas and Gokay (5)	1983	2	29 y; 4 mo.	N/A; N/A	1; 1	Headache; Acute accidental insertion	Normal; Normal	AF; AF	No; ABT	good after 8y; good after 6mo.
Sener (15)	1997	1	20 y	N/A	3	incidental	Normal	AF	No	
Unal et al. (21)	2005	1	10 y	F	1	incidental	Normal	LS	No	
Tun et al. (19)	2006	1	45 y	M	1	incidental	Normal	AF	No	
Sucu and Gelal (17)	2006	1	29 y	M	1	incidental	Normal	AF	No	
Tuncer et al. (20)	2007	1	32 y	M	1	Seizure	Normal	LS	AED	No Seizure
Yilmaz et al. (23)	2007	1	10 y	M	5	Abscess	Papillar edema, Meningeal irritation	AF	ABT	No symptom
Yolas et al. (24)	2007	1	9 y	M	1	Seizure	Normal	AF	Surgical Resection	No seizure with AED
Balak et al. (4)	2008	1	10 y	F	1	Seizure	Normal	AF	Surgical Resection	No Seizure
Guven et al. (9)	2008	2	20 y; 21 y	M; M	1; 1	Seizure; Headache	Normal; Normal	AF; AF	Surgical Resection; No	No Seizure (?);
Alp et al. (2)	2009	1	20 y	F	2	Hemichorea	Choreiform movements (Left arm, leg)	AF	No	
Ilbay et al. (10)	2011	1	16 y	M	4	Headache	Normal	AF	No	
Kazanci et al. (13)	2012	1	37 y	M	2	Incidental	Normal	AF	No	
Pelin and Kaner (14)	2012	1	22 y	M	3	Headache	Normal	AF	No	
Karadas et al. (12)	-	-	-	-	-	-	-	-	-	Article Removed
Kahveci and Hamamcioglu (11)	2013	1	20y	M	2	Headache	Normal	AF	No	
Gencpinar et al. (8)	2014	1	14y	M	1	Seizure	Normal	AF	Surgical Resection	No Seizure with AED
Ucler and Yucetas (21)	2016	1	48y	M	1	Headache	Normal	AF	No	
Erdogan et al. (7)	2022	1	78y	F	1	Incidental	Normal	AF	No	
Present study	2024	2	36y; 62y	F; M	1; 3	Headache; Seizure	Normal; Normal	AF; AF	No; AED	No Seizure with AED

***AF:** Anterior Fontanel, **LS:** Lambdoid Suture, **AED:** Anti-Epileptic Drugs, **ABT:** Antibiotherapy.*

the incident occurred several years ago. Given the sensitive nature of these cases, healthcare professionals play a key role in initiating this process. They are obligated to provide a forensic report, which includes all the medical findings, as well as details about the patient's current condition. In several countries, these types of cases may also require mandatory reporting under child protection laws, regardless of the patient's age at the time of diagnosis.

Providing psychological support for the patient is essential, because informing them of the historical abuse can have significant emotional and psychological impacts. Therefore, a multidisciplinary approach involving legal, medical, and psychological professionals is recommended in managing such cases.

CONCLUSION

Insertion of a needle into the cranium of infants is a rare and unusual form of homicide. The literature suggests that the reported cases are just the tip of the iceberg. Ethical challenges exist in informing patients with late complications regarding the potential abuse, where legal action may be futile. However, informing patients about intracranial foreign objects is crucial, particularly regarding the risks associated with MRI scans.

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Disclosure and Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this case report. Signed informed consent was obtained from all patients included in the study. Ethical approval was not required for this study as it is a case report.

Declarations

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Availability of data and materials: The datasets generated and/or analyzed during the current study are available from the corresponding author by reasonable request.

Disclosure: The authors declare no competing interests.

AUTHORSHIP CONTRIBUTION

Study conception and design: OH, BE
Data collection: BE
Analysis and interpretation of results: OH, BE, BT
Draft manuscript preparation: BE, BT
All authors (OH, BE, BT) reviewed the results and approved the final version of the manuscript.

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