

Trauma

Attempting homicide by inserting sewing needle into the brain Report of 6 cases and review of literature

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Abstract

Background and objectives: Child abuse with sewing needle is a rare but well-known homicide attempt threatening the life of victims. Information about diagnosis and treatment of such cases either in the acute or chronic phases is lacking and ambiguous in the literature. This study intends to report the experience of 6 victims of homicide attempt who presented to the authors in different decades of life and were managed in different ways. This may deliver some evidences to the literature regarding management of further cases encountered by neurosurgeons.

Material and methods: The authors had the chance of managing 6 patients referred to their trauma center harboring one or more sewing needles within their cranium. There were 3 male and 3 female patients, with 2 patients in their first decade of life, and the others, each in either decade of life. The youngest was 6, and the eldest 51 year old. The elder patients were having vague headaches, for which a plain skull x-ray or CT of the brain lead to the diagnosis of persisting intracranial foreign bodies. Chronic headache was the main complaint of the patients. Four patients underwent surgical removal of the sewing needle, and 2 are being followed.

Results: Among the 4 patients who underwent surgery, 1 died after a short period of ‘akinetic mutism.’ Headache and limb paresthesia improved 6 months after the operation in 2 cases, and the other 1 remained unchanged. The cases under observation have been doing well. Biochemical analysis of the rusted needle showed a composite of oxidant form of some of the elements of needle such as Fe, Mn, and Cr.

Conclusion: In spite of standard algorithms proposed for management of penetrating head wounds, selection of the best treatment in the victims harboring sewing needles in their brain needs close cooperation between neurosurgeons, pediatricians, psychiatrists, and social workers. Furthermore, there is no absolute indication for removing sewing intracranial needles detected in the later decades of life.

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Keywords:

Akinetic mutism; Headache; Iron rust; Penetrating head wound; Sewing needle

Abbreviations: Al₂O₃, aluminum oxide; AP, anteroposterior; CaO, calcium oxide; Ca₃(PO₄), calcium phosphate; Ca₁₀(PO₄)₆OH₂, pure hydroxyapatite; Cl, chlorine; CNS, central nervous system; Cr, chromium; Cr₂O₃, chrome oxide; CSF, cerebro spinal fluid; CT, computed tomography; Cu, copper; CVA, cerebral vascular accident; Fe, ferrous; Fe₂O₃, ferric oxide, iron oxide; ICP, intracranial pressure; ICU, intensive care unit; K₂O, potassium oxide; Mn, manganese; MnO₂, manganese dioxide; Ppm, part per million; P₂O₅, phosphorus pentoxide; SO₃, sulfur trioxide; Tin, Sn (Latin: stannum); XRF, x-ray fluorescent; Zn, zinc.

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1. Introduction

‘Child abuse’ is one of the overwhelming problems physicians are engaged with. The history of such offending behaviors goes back for more than centuries. One of the uncommon inventions for child abuse has been using sewing needles. This has been reported from different contexts such as Germany, United States, Turkey, Poland, Hungary, Yugoslavia, and Iran [1,2,4,6,7,9,12,13,16,18,20–27]. This kind of child abuse is well known in the Iranian community and even has been mentioned in one of the Iranian famous historian novels [14]. Insertion of sewing needles through the fontanel is a relatively easy attempt for child abuse, but the on-time diagnosis and appropriate management are rather problematic. Presenting 6 such cases, this study intends to make a thorough review regarding different aspects in management of similar cases.

2. Material and method

The demographic features of the cases are summarized in Table 1. There were 3 male and 3 female patients, all of them born in Iran, but 5 of 6 had been living in the northern part of the country wherein such kind of child abuse attempts had been reported previously. All were grown in a poor socioeconomic state. Their ages ranged from 6 to 51 years at the time of presentation. Four were diagnosed incidentally while being evaluated for chronic headache and paresthesia in the limbs lasting for several years. None of them presented in the acute stage of the illness (ie, just after being injured/abused).

Among these 6 cases, 4 underwent surgical operation and 2 were followed as outpatients (Table 2).

Surgical intervention were attempted only to remove the sewing needle because the patient wanted it to be removed. Small craniotomy was the procedure undertaken after localizing the location of the needle with marked skull x-rays taken in AP and lateral views (Fig. 1). No preoperative navigation and monitoring have been available. The same steps were undertaken for case 2 with the patient under general anesthesia and in supine position. A right posterior frontal paramidline craniotomy was performed. There were no stigma either on the parasagittal or medial frontal cortex indicating the passage of the needle. One of the most poster frontal gyri was opened, which gave a 20-mm

Table 2

The type of management and the outcome of the patients

Case	Approach to patient	Outcome
1	Surgery	Good
2	Surgery	Akinetic mutism and death
3	Surgery	Good
4	Surgery	Good
5	Follow up	Good
6	Follow up	Good

depth path. Making a 20 × 10-mm corticectomy at the bottom of the tunnel, the needle could be reached. Using a microscope, a fine gap could be made in the softer brain surrounding the proximal one third of the needle, which could be taken out with little manipulation thereafter. No bleeding or CSF leakage appeared.

3. Results

The findings are summarized in Table 3. The end of the inserted needle was located just underneath the skull flap, outside the dura in 1 case (Fig. 1), and with different distances lodged within the brain, inside the dura without any cortical presentation or demarcation in the others. The postoperative course was uneventful in 3 patients. One patient developed ‘akinetic mutism’ at the termination of anesthesia (Fig. 2). She opened her eyes and gained spontaneous breathing but did not obey commands even though she could withdraw limbs with painful stimuli. She had the same status the day after surgery in ICU. This continued for several days and lead to death of the patient after *demanding* assisted ventilation for 3 days ending in cardiac arrest. Postoperative CT scanning of this patient did not show any evidence compatible with major CVA, and autopsy was not allowed (Fig. 3). Headache improved 6 months after the operation in 2 cases, and the other one remained unchanged. The cases not choosing surgery have been followed for more than 10 years and have remained asymptomatic (Fig. 4).

4. Discussion

4.1. History

Insertion of sewing needles is performed through the patent fontanels for the purpose of child abuse, and the

Table 1

All the cities are located in the northern part of the country except Kerman, which is in the south

Case	Age	Sex	Rank	Nationality	City	Offender	Symptoms	Trauma
1	6	Female	2	Iranian	Kerman	Stepmother	Incidental	–
2	38	Female	3	Iranian	Babol	Unknown	Headache	–
3	25	Female	3	Iranian	Shahrood	Unknown	Incidental	–
4	42	Male	2	Iranian	Astara	Unknown	Paresthesia and headache	+
5	51	Male	5	Iranian	Meigoon	Stepmother	Incidental	–
6	7	Male	3	Iranian	Tabriz	Unknown	Incidental	–

Rank indicates number among the siblings of the family.

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