INTRODUCTION

Acupuncture, defined as insertion of specific needles to certain points of the body for therapeutic purposes, is popular and is used for treatment of musculoskeletal pain. Although degenerative cervical spine disease is managed according to the stepwise evidence-based guidelines, several lines of evidence suggest that acupuncture is effective in reducing cervical pain in patients with musculoskeletal neck pain.2-3 Several injuries in the cervical region as complications of acupuncture have been previously reported in the literature, including cord and medulla oblongata injuries, subdural empyema, and cervical hematoma.4-5 Spinal cord subdural hematoma is a rare condition mainly associated with coagulopathy, trauma, and iatrogenic procedures. We herein report an acute cervical subdural hematoma after cervical acupuncture for neck and shoulder pain.

CASE REPORT

A 74-year-old woman presented to our emergency department with progressive neck pain for several years without response to medical therapy. Thus, she had undertaken an acupuncture course for neck and shoulder pain. During the procedure, she had felt an electric-like shock in her 4 extremities, immediately after insertion of a needle at the Tenchu point. The needle was immediately removed. The stainless steel needle used for the procedure measured 80.0 mm in length and 0.46 mm in diameter. After several hours, the patient developed progressive weakness of the left upper extremity, which extended to the left lower extremity and right lower extremity. On physical examination, the patient had quadripareisia (muscle powers: 3/5 for left upper and lower extremities and 4/5 for right lower extremity) along with left hemisensory loss. She had hyperreflexia and her Hoffman reflex was found to be positive. Her sphincter tones were normal. Cervical magnetic resonance imaging was performed and showed subdural lesion located on the left side from the C4 to C6 level that appeared hyperintense on T1-weighted images and hypointense on T2-weighted images, compressing the cervical cord toward the anterolateral aspect (Figure 1). The patient was diagnosed as having an early subacute cervical subdural hematoma after acupuncture. Emergency laminectomy from the C3 to C7 level was carried out. A pinpoint hematoma was found at the C4 level, which was the site of needle piercing. After the dura was opened, an organized clot was encountered at the left dorsolateral aspect of the cervical cord measuring 5 × 0.9 × 0.5 cm extending from the C4 to C7 levels (Figure 2). The hematoma was removed and the thecal sac was grafted. The patient tolerated the operation and had an uneventful hospital course. The neurologic examination improved significantly immediately after the operation, and on the 6-month follow-up visit, the patient had minimal neurologic deficit in the left upper extremity compared with the baseline. On 6-month follow-up, all the muscle powers were 5/5 except for the left upper extremity, which was 4/5. She had generalized hyperreflexia and the Hoffman reflex was still positive.

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An Acute Cervical Subdural Hematoma as the Complication of Acupuncture: Case Report and Literature Review

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Key words
- Acupuncture
- Cervical
- Complication
- Subdural hematoma

Abbreviations and Acronyms
CT: Computerized Tomography
MRI: Magnetic Resonance Imaging
SDH: Subdural hematoma

BACKGROUND: Several injuries in the cervical region as complications of acupuncture have been previously reported in the literature, including cord and medulla oblongata injuries, subdural empyema, and cervical hematoma. Spinal cord subdural hematoma is a rare condition mainly associated with coagulopathy, trauma, and iatrogenic procedures. We herein report an acute cervical subdural hematoma after cervical acupuncture for neck and shoulder pain.

CASE DESCRIPTION: A 74-year-old woman presented with progressive quadripareisia and sensory deficit after receiving acupuncture in the neck and shoulder. Magnetic resonance imaging of the cervical spine showed a subdural lesion that was a hyperintense mass in the T1-weighted and hypointense in T2-weighted images at the C4-C6 level, which proved to be an early subacute subdural hematoma. After surgical evacuation of the hematoma, the patient had significant neurologic improvement.

CONCLUSIONS: Although rare, cervical spinal cord hematomas are disastrous complications of cervical acupuncture. These procedures should be performed under direct observation of trained physicians with appropriate knowledge of cervical anatomy to avoid these complications.
The sphincters were intact. She had a good general condition.

DISCUSSION

Acupuncture is a traditional East Asian medical technique that has become a popular alternative medicine worldwide. Its efficacy in short-term relief of neck pain has been shown in several meta-analyses.\(^2,3\) Complications of acupuncture in the cervical region have been previously reported.\(^4,5,12\) Miyamoto et al.\(^12\) reviewed 25 cases of cervical cord and medulla oblongata injuries after acupuncture. The acupuncture needles are extremely fine and made of stainless steel, enabling them to penetrate the anatomic weak points of the cervical spine. Nuchal acupuncture is performed at Tenchu and Fuchi, which are located in the nucha between the trapezius muscle and the mastoid process. This is an anatomically weak point, consisting of muscles and tendons.\(^13\) The needles can easily pass through the paraspinal muscles and penetrate the dura and cervical cord through the cervical vertebra lamina in a flexed neck. The needle used in the current report was 8 cm long and 0.46 mm thick, enabling it to easily pierce the muscles and ligaments to enter the dural sac. The needle did not reach the spinal cord and there was no direct injury to the neuronal tissue. It is recommended to apply a self-stopper in such needles to avoid injury to vital organs such as the spinal cord. The incidence of adverse events in acupuncture is approximately 8.6%, 2.2% of which require medical or surgical treatments.\(^14\)

Acupuncture-related penetrating injuries to the cervical cord may lead to direct neural tissue injury\(^4,12\) and related hematomas such as epidural\(^5\) or subdural hematomas\(^7\) or infections.\(^5,15,16\) Most of

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**Figure 1.** Sagittal T1-weighted (A), T-2 weighted (B), and axial T2-weighted magnetic resonance imaging of cervical spine showing a subdural lesion located on the left side at the dorsolateral aspect with compression effects in favor of an early subacute subdural hematoma.

**Figure 2.** Intraoperative image of cervical cord showing an organized clot was at left dorsolateral aspect of the cervical cord measuring 5 × 0.9 × 0.5 cm extending from C4 to C7 levels before (A) and after (B) surgical removal.
the reported cases have been managed surgically,\(^8,9,12\) whereas others have been managed conservatively.\(^6,7,11\) Only 2 reports of cases of epidural and subdural hematomas after acupuncture exist in the literature, both of which have been managed surgically with acceptable neurologic outcomes.\(^6,7\) In this study, we reported a case of acute subdural hematoma as the complication of acupuncture. We removed the hematoma surgically, which resulted in dramatic neurologic improvement. Lee et al.\(^11\) reported a case of acute subdural hematoma after vigorous back massage: a case report and literature review. Spine (Phila Pa 1976). 2006;31:E184-E187.

Although rare, cervical spinal cord hematomas are disastrous complications of cervical acupuncture. These procedures should be performed under direct observation of trained physicians with appropriate knowledge of cervical anatomy to avoid these complications.

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