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CASE REPORT

Cervical epidural abscess after cupping and acupuncture

Jun-Hwan Lee[a], Jae-Heung Cho[a], Dae-Jean Jo[b,*]

[a] Department of Oriental Rehabilitation Medicine, Kyung Hee University Hospital at Gangdong, Seoul 134-727, Republic of Korea
[b] Department of Neurosurgery, Kyung Hee University Hospital at Gangdong, Seoul 134-727, Republic of Korea
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KEYWORDS
Spinal;
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Acupuncture;
Adverse event

Summary
Study design: Retrospective case report.
Objective: Report of an uncommon complication of cupping and acupuncture.
Summary of background data: Epidural abscess after cupping and acupuncture therapies is quite rare. Only a few cases of epidural abscess after acupuncture have been reported. The present report describes a case of cervical epidural abscess that developed after cupping and acupuncture.
Methods: A 47-year-old woman presented with swelling and pain in the posterior nuchal region. Magnetic resonance imaging of the cervical spine revealed a well-enhanced epidural mass at the C1—C3 level that was determined to be an epidural abscess.
Results: The symptoms related to epidural abscess resolved after treatment with antibiotics.
Conclusion: Although a rare complication, epidural abscess is a possibility when applying cupping and acupuncture. Therapists need to be aware of human anatomy in the vicinity of the puncture and must give continuous attention to hygiene throughout the procedure.

Introduction

Spinal epidural abscess (SEA) is an uncommon but severe infection in the spinal epidural space, occurring less often at the cervical spine than at the thoracic and lumbar spine, which requires prompt recognition.[1,2] Without early intervention, an epidural abscesses can result in catastrophic and irreversible neurological deficits and, in severe cases, generalized sepsis and death.[3,4]

Magnetic resonance imaging (MRI) is useful in narrowing down the potential diagnoses and enabling prompt empirical therapy until a specific microbiological diagnosis is made.[4,5] Although neurosurgical decompression is still the treatment of choice in the majority of cases, less invasive procedures such as computed tomography (CT)-guided needle aspiration or antimicrobial treatment can be applied in select cases.[1] Effective interdisciplinary management can quickly establish an empirical antimicrobial treatment and decide the need for surgical interventions to prevent neurological sequelae.[4]

The present report describes a case of cervical epidural abscess that developed after cupping and acupuncture in the posterior nuchal and submandibular region. The abscess was successfully treated with antibiotics. To our knowledge, only

* Corresponding author. Tel.: +82 02 440 6147; fax: +82 02 440 7494.
E-mail address: apuzzo@hanmail.net (D.-J. Jo).

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Table 1 Clean wet-cupping technique.

1	Wear sterilized gloves
2	Find points for wet-cupping and indicate the sites by surgical marking pen
3	Swab with 10% potadine solution and put a disposable cap to auto-lancet
4	Punctuate 6 points along the marked site in 2 mm-depth and attach cups on the skin
5	Exhaust inner air of the cups with maximum negative pressure by manual pumping
6	Retain the cups for 5 min
7	Open the exhausting valve and remove the cup
8	Swab and stanch the treated sites with 10% potadine solution and apply bandages
9	Let the participant rest for 5 min

one case of cervical epidural abscess following acupuncture has been previously reported.

Case report

A 47-year-old woman was admitted with pain and swelling in the left posterior nuchal and submandibular regions. The medical history was unremarkable. Before admission, the patient had received outpatient cupping and acupuncture treatment for a persistent headache by a traditional Korean medical practitioner at our hospital. Cupping and acupuncture was applied to the patient's posterior nuchal region. Local acupoints GV 16, GB 20, BL 9, and BL 10 of posterior nuchal region were selected for relief of a persistent headache. The needles were inserted to a depth of 10—20 mm in the horizontal direction and remained in position for 15 min. Wet-cupping was administered on the posterior neck region below level C2 with a disposable small glass cup (40—50 mm) and lancet following clean wet-cupping technique (Table 1).[6]

One day after treatment, swelling and pain developed suddenly in the left posterior nuchal region. The patient visited the Department of Neurology in our hospital as an outpatient and received a CT examination of the salivary gland, which revealed an epidural high-intensity lesion from level C1—C3 (Fig. 1). As a cervical epidural abscess was diagnosed, the patient was admitted to the Department of Neurosurgery.

At the time of admission, the patient had a low-grade fever, marked inflammatory swelling, and severe tenderness in the left posterior neck and left submandibular area. Neurological examination revealed marked nuchal tenderness and severe limitation of neck motion. The patient's respiratory function was normal. Urinalysis revealed moderate hematuria, proteinuria, and ketonuria. On hematological examination and blood chemistry, white blood cell count was increased by 18,300/mm^3 (normal range: 4000—10000/mm^3) with neutrophilia and mild hypoalbuminemia of 3.5 g/dl (normal range: 3.8—5.3 g/dl) was revealed. Fasting blood sugar was 121 mg/dl (normal range: <100 mg/dl). There were marked inflammatory reactions. Erythrocyte sedimentation rate was 66 mm/h (normal range: 0—15 mm/h) and C-reactive protein was 36.37 mg/dl (normal range: 0.0—0.5 mg/dl).

Blood cultures obtained throughout the clinical course were negative. T2-weighted MRI of the cervical spine performed on day 3 from onset revealed an epidural mass with high signal intensity around C1—C3 in the left anterior and posterior nuchal region (Fig. 2). The epidural mass appeared as a low signal intensity area on a T1-weighted image in the left side of spinal canal from C1 to C3. In addition, massive subcutaneous inflammation (cellulitis) of the posterior nuchal and paraspinal areas with a well-enhanced mass surrounding the high cervical regions was evident in the enhanced MRI.

Although no specific pathogen was identified, empirical antibiotic treatment with vancomycin was commenced in combination with the previous augmentin therapy following the recommendation of the infectious division in our hospital. Neck pain improved and inflammatory reactions diminished [erythrocyte sedimentation rate, 31 mm/h; C-reactive protein, 4.40 mg/dl)] by 4 weeks after admission.

A follow-up MRI done at day 30 did not reveal any signs of SEA (Fig. 3). The patient recovered from the neck pain and examination results returned to normal.

Discussion

Epidural abscesses can involve intercranial or spinal compartments, and can result in potentially devastating neurological injuries.[4] Although rare, the incidence of SEA is increasing as predisposing factors such as injected-drug use, chronic immunosuppression, and spinal surgery are becoming more common.[7]

Bacteria gain access to the epidural space by three mechanisms: (i) *per continuitatem* from a neighbouring infected structure, (ii) hematogenous dissemination from a remote focal infection, or (iii) iatrogenic inoculation.[1,8] Iatrogenic causes of SEA include various invasive procedures such as surgery, lumbar puncture, peridural anaesthesia, epidural analgesia, and nerve blocks, and are estimated to be responsible for up to 15% of all cases.[1,2,8]

In this case, there was no preceding infection. But, the patient had received cupping and acupuncture in the posterior nuchal region. Cupping and acupuncture are traditional treatments that are very widely used in East Asian countries for the relief of chronic pain or other chronic conditions such as headache, numbness, and weakness.[9,10] Abscess formation is a rare complication of acupuncture and cupping.[11] Only a single case of cervical spinal epidural abscess after acupuncture has been reported.[12] In this case, we suspect that wet cupping and/or acupuncture in poorly controlled hygiene might have led to the cervical epidural abscess. Especially, skin lesions associated with cupping immediately followed by acupuncture without hemostasis and additional sterilization might have increased the probability of infection by creating a contiguous port of entry for micro-organisms into the epidural space or leading to hematogenous seeding. In addition, the relatively deep insertion of the needle (10—20 mm) to the posterior nuchal region, because of narrower diameter of posterior neck muscles, might favor the development of cervical epidural abscess. Diabetes mellitus, intravenous drug use and