Case Report

Massage-induced spinal epidural hematoma presenting with delayed paraplegia☆

Alissara Vanichkulbodee, MD a,c,⁎, Suwara Issaragrisil, MD b, Pholaphat Charles Inboriboon, MD, MPH, FACEP c

a Department of Emergency Medicine, Faculty of Medicine Vajira Hospital, Navamindradhiraj University, Samsen, Dusit, Bangkok, 10300, Thailand
b Department of Radiology, Faculty of Medicine Vajira Hospital, Navamindradhiraj University, Samsen, Dusit, Bangkok, 10300, Thailand
c Truman Medical Center, Department of Emergency Medicine, University of Missouri-Kansas City (UMKC) School of Medicine, Kansas City, Mo, USA

A R T I C L E   I N F O

Article history:
Received 11 January 2019
Accepted 12 January 2019

Keywords:
Spinal epidural hematoma
Post massage
Post chiropractic manipulation
Delayed paraplegia

A B S T R A C T

Background: Spinal epidural hematoma (SEH) is an uncommon but serious emergency condition rare cases of spontaneously or following a minor traumatic event without bony injury.

Objective: We report the rare case of SEH associated with traditional massage initially presenting with delayed lower paraplegia.

Case report: A 20-year-old man presented with bilateral lower extremity weakness and numbness 3 h prior to presentation. 3 days prior he was given a layperson Thai massage by a friend. Magnetic resonance imaging revealed a spinal epidural lesion suspicious for hematoma extending from C6 to T2 levels. Emergent surgical intervention for cord decompression was performed. An epidural hematoma with cord compression at C6-T2 levels was identified intraoperatively. No evidence of abnormal vascular flow or AV malformations was identified. Similar to chiropractic manipulation, massage may be associated with spinal trauma.

Conclusion: Emergency physicians must maintain a high index of suspicion for spinal epidural hematomas in patients with a history of massage or chiropractic manipulation with neurologic complaints, because delays in diagnosis may worsen clinical outcome.

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1. Introduction

Spinal epidural hematoma (SEH) is an uncommon but serious emergency condition. It accounts for less than 1.7% of all spinal injuries [1,2]. Most cases of SEH occur in individuals with epidural vascular malformations, spinal fractures, or medical or drug-induced coagulopathy [3]. In rare circumstance, the SEH may occur spontaneously or following minor traumatic events without bony injury [3].

2. Case report

A 20-year-old man presented to the emergency department (ED) with a complaint of bilateral leg numbness and weakness. The symptoms began during a 3-hour road trip. The patient denied any neck or back pain but reported a history of low grade fever and generalized malaise 3 days ago. He treated these symptoms with paracetamol and neck massage. He denied any prior trauma. He denied any urinary or bowel complaints. He was a regular alcohol drinker (2 bottles of beer a day), a regular smoker (10 cigarettes a day) for 2 years and reported regular oral use of amphetamine, tramadol and procyclidine. He denied any intravenous drug abuse.

Physical examination upon arrival revealed an alert and fully oriented young adult with normal vital signs. Contrary to the history he provided, his neck range of motion was limited due to pain. Minimal midline tenderness over the C-spine was noted. Upon arrival to the ED neurologic examination of both upper extremities were within normal limits with 5/5 motor power and good tendon reflexes. He was able to flex both ankles but within an hour of arrival his symptoms rapidly progressed. He developed complete weakness and sensation to both legs. Reexamination of lower extremities revealed 0/5 motor strength with decreased sensation below the T8 dermatome. Bilateral areflexia, absence of Babinski responses and absence of clonus were noted. Proprioception of the upper extremities was normal but was impaired in both lower extremities. Cerebellar function was intact with normal finger-to-nose test. Rectal examination revealed absence of bulbocavernous reflex and loose sphincter tone.

Laboratory investigations revealed normal complete blood count and blood chemistry. Urinalysis was normal. Urine drug concentrations were appropriate for alcohol and amphetamines. General chemistry, complete blood count, and prothrombin time were within normal limits.

Case discussion: In this case, the patient was massaged by a layperson with a layperson Thai massage technique. This technique involves deep pressure along the spine and may cause spinal trauma. The patient had bilateral leg numbness and weakness 3 hours prior to presentation. MRI revealed a spinal epidural hematoma extending from C6 to T2 levels. The hematoma was identified intraoperatively. There was no evidence of abnormal vascular flow or AV malformations. The patient had a history of low grade fever and generalized malaise 3 days prior to presentation. He denied any prior trauma. He denied any urinary or bowel complaints. He was a regular alcohol drinker (2 bottles of beer a day), a regular smoker (10 cigarettes a day) for 2 years.

Conclusion: Emergency physicians must maintain a high index of suspicion for spinal epidural hematomas in patients with a history of massage or chiropractic manipulation with neurologic complaints, because delays in diagnosis may worsen clinical outcome.

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https://doi.org/10.1016/j.ajem.2019.01.017
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screen demonstrated presence of amphetamines. Chest x-ray was unremarkable. Provisional diagnosis was acute paraplegia from cord injury or transverse myelitis. Emergency non-contrast computed tomography of the brain showed no abnormalities, but cervical computed tomography (CT) scan showed an extradural hyperattenuating lesion at the dorsal surface of the thecal sac at the C6-C7 spinal levels, consistent with recent spinal epidural hematoma compressing the spinal cord (Fig. 1). There was extension of the hematoma to the right neural foramen at C6/C7 level, contributing pressure effect to the right C7 exiting nerve root and no detectable fracture or subluxation of the cervical spine. However, the CT scan could not evaluate the degree of spinal cord edema or myelopathy.

Given the high degree of suspicion for a cervical lesion, magnetic resonance imaging (MRI) was performed. A 9-mm fluid accumulation, with slight hyperintense signal on T2 weighted imaging (Fig. 2a and b), hypointense signal on sagittal T1 weighted imaging (Fig. 2c) along posterior aspect of the thecal sac, C6-T2 vertebral levels were noted on MRI.

The radiologist impression was hematomyelia with moderate degree of spinal cord compression, more pronounced on the left. There was also noted slight hyperintensity of the overlying soft tissue at cervical region on T2 weighted images, likely the result of post traumatic edema.

Neurosurgery was emergently consulted and cord compression was performed to prevent further cord injury. An epidural hematoma with cord compression from C6-T2 levels was identified. No evidence of vascular malformations was identified. Evacuation of epidural hematoma with laminoplasty was done without operative complications. Two weeks postoperatively, MRI with spinal magnetic resonance angiography (MRA) revealed cord contusion. The patient was transferred to an inpatient rehabilitation program for management of his residual motor deficit of lower extremities.

3. Discussion

Spinal epidural hematoma is an uncommon condition, but an important cause of cord compression. Most cases of SEH are spontaneous or associated with anticoagulation and/or thrombolytic therapy [3]. Underlying vascular malformations such as arterio-venous malformation (AVM), hemangioma were also reported [3]. Traumatic SEH (TSEH) is less common. Previously reported traumatic causes include vertebral fractures, obstetrical birth trauma, lumbar punctures, epidural anesthesia, and missile injuries [4]. Chiropractic manipulation has been associated with post-traumatic SEH but the post massage spinal epidural hematoma remains rare [5].

In many Asian countries, including Thailand, massage is commonly practiced, either recreationally or as a part of traditional medicine [6]. Massage therapy has a variety of techniques that utilize gentle to vigorous force (Fig. 3) [7]. Some of these spinal manipulations are similar to chiropractic manipulation, which is a known risk factor for SEH [5]. Even when trauma occurs during massage, it can be difficult to elicit from history taking (Fig. 3).

Early recognition of SEH is crucial to preventing or minimizing cord injury. Severe pain is a typical presentation of SEH, but is not always present, as was the case in our patient [3,8]. Obtain imaging studies in patients with neurologic deficits concerning for a spinal lesion. CT scan can diagnose bony disorders but it is suboptimal for identifying soft tissue abnormality. MRI is utilized to detect the small or soft tissue lesions, it can further elucidate cord signal change, cord pathology extension, and myelopathy as well.

Fig. 1. a: Contrast-enhanced computed tomography scan shows extradural hyperattenuating lesion along dorsal surface of the thecal sac at C6-C7 spinal levels that compressing the associated spinal cord. b: Contrast-enhanced computed tomography scan shows extension of the hematoma to right neural foramen at C6/C7 level, compressive pressure effect to the right C7 exiting nerve root.
Surgical intervention should be considered as soon as the diagnosis of SEH is confirmed. Surgical decompression with evacuation of hematoma can prevent or minimize neurologic deficits. In rare cases, traumatic SEH may be treated with conservative treatment. Previously, a 13-year-old girl with a traumatic cervical SEH recovered without surgical decompression [4]. She fell and landed on her right shoulder and neck from trampoline and had a minimal right hemiparesis 4 h later. Her MRI showed an acute SEH at C4-C7. However, given some neurological improvement re-examination, she was treated conservatively. After 4 days, her neurologic exam returned to normal.

4. Conclusion

In summary, Spinal epidural hematoma is an uncommon but serious emergency condition. Emergency physicians must maintain a high index of suspicion for spinal epidural hematomas in patients with history of massage or chiropractic manipulation with neurologic complaints, because delayed diagnosis to other medical conditions may worsen outcome. Moreover, the SEH could be presented in delayed phase as this case from 3 days up to a month as previous case [9].

Funding support

None.

Conflicts of interest

None.
Author contributions statement

AV drafted the manuscript, and all authors contributed substantially to its version. AV takes responsibility for the paper as a whole.

References


Fig. 3. Neck massage by foot, different traditional massage style.