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Case Report

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A rare complication of spinal anesthesia: Intracranial subdural hemorrhage

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ABSTRACT

Spinal (subarachnoid) anesthesia (SA) is a widely used general-purpose anesthesia. Postdural Puncture Headaches (PDPHs) represent one of the principal complications of spinal anesthesia. A 21-year-old man underwent inguinal herniorrhaphy and orchiectomy using spinal anesthesia. Postoperatively, our patient started to have a headache with nausea. The patient received symptomatic therapy, but the severe headache persisted even in the supine position, with his vital signs and neurological examination being normal. Cranial MRI showed a bilateral subdural hematoma from his frontal to temporal region. A postdural puncture headache is a frequent complication after spinal anesthesia. However, serious complications, such as an intracranial subdural hemorrhage, can rarely occur.

Key words: *Spinal anesthesia, headache, subdural hemorrhage, complication*

Introduction

Spinal (subarachnoid) anesthesia (SA) is a widely used general-purpose anesthesia. Postdural Puncture Headaches (PDPHs) represent one of the principal complications of spinal anesthesia. Such headaches are most commonly posture-dependent and can be accompanied by nausea, vomiting, dizziness, and more rarely by hearing loss, scalp paresthesias, pain in the limbs or paresis of the cranial nerves [1,2]. Pain is generally mild and relieved by bed rest, hydration, classical analgesics, and caffeine. However, serious complications such as an intracranial subdural hemorrhage rarely occur [3]. The incidence of an intracranial subdural hemorrhage after spinal anesthesia has been reported to be one in 500,000 [4].

Case presentation

A 21-year-old man underwent inguinal herniorrhaphy and orchiectomy. He had no surgical history. He wasn't receiving any medications. He had no history of trauma, headache or coagulation abnormalities. Spinal anesthesia was conducted by puncturing the L4-5 space with a 22-gauge spinal needle and injecting 3 mL of 0.5% bupivacaine. The puncture was successful on the first attempt, and the course of anesthesia was without incident. During surgery, right inguinal hernia repair and right orchiectomy were performed. His intraoperative vital signs were normal, and the surgery was completed uneventfully. The operation time was 40 minutes. There were no symptoms of a postdural puncture headache, and the postoperative period was

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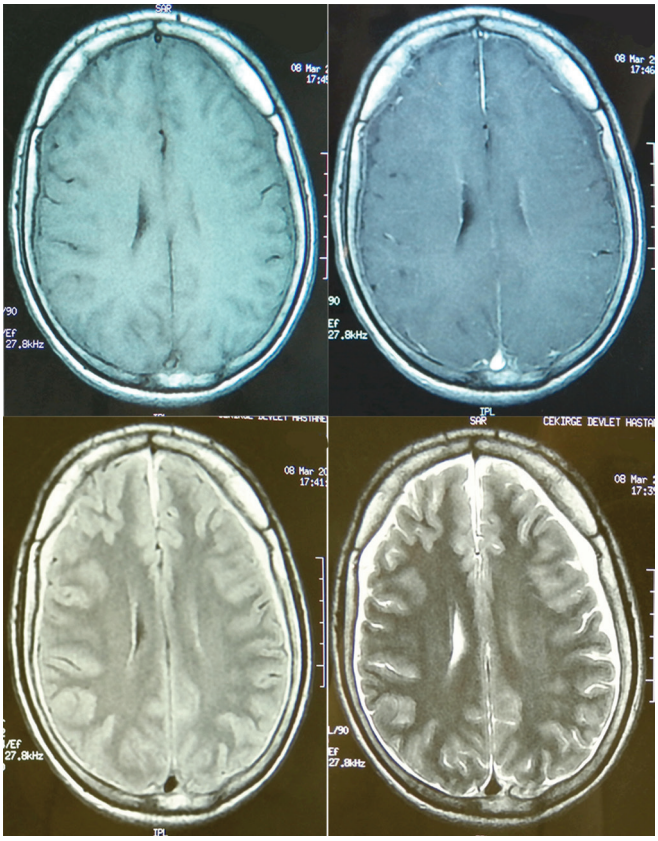

Figure 1. Brain MRI scan 6 days after spinal anesthesia showing bilateral subdural haematoma.

uneventful. On the second postoperative day, our patient started to have a headache with nausea while going to the toilet. The severe headache persisted even in the supine position, and his vital signs and neurological examination were normal. The intravenous hydration with 0.9% NaCl (1000 cc), as well as paracetamol (500 mg) and caffeine (65 mg) orally, was given twice a day. On the fifth postoperative day, his headache improved in the supine position, but continued when standing. Cranial MRI showed a bilateral subdural hematoma from his frontal to temporal region. The greatest thickness of the hematoma was 4 mm on the right and 5 mm on the left (Figure 1). We continued the oral analgesic and intravenous hydration therapy for two weeks. After two weeks the patient, with his declining signs in cranial tomography and complaints ending, was discharged with no problems.

Discussion

Postdural puncture headache is a frequent complication after spinal anesthesia. The symptom may be aggravated by standing and is accompanied by other symptoms such as nausea, vomiting, and vertigo [5]. Additional symptoms may include neck pain, interscapular pain, photophobia, diplopia, hearing changes, visual blurring, cranial nerve palsies, and radicular upper extremity symptoms [6].

PDPH is more frequent when Quincke spinal needles of large sizes are used (20-22 gauges, 20-40% and 24-27 gauges, 5-12% incidence). Lower incidences of PDPH of up to 5% have been reported with the use of Whitacre and Sprotte spinal needles. The high cost of these needles, compared to the Quincke needle, makes them unaffordable for many centers [7]. The patient in this paper received spinal anesthesia by a 22G Quincke needle, which is a relatively big needle.

Persistent, non-postural and more severe headache may be due to subdural hematoma formation. Intracranial subdural hematoma is rare, but is a potentially lethal complication that can occur after lomber puncture (LP) [8]. The probable mechanism for the development of an intracranial hematoma after SA is the loss of cerebrospinal fluid (CSF) with low CSF pressure, leading to traction and tearing of the intracranial subdural veins [9]. Excessive leakage of CSF through the dural puncture (>250 ml) may cause caudal displacement of the intracranial structures, which may result in subdural hematoma formation [10]. Cerebral atrophy, aneurysm, arteriovenous malformations, pregnancy, dehydration, anticoagulant use, and excessive CSF leakage associated with multiple dural punctures and large dural holes are thought to be contributing factors in the pathogenesis of subdural hematomas [11]. We did not find any etiological factors related to a subdural hemorrhage.

The real incidence of subdural hematoma after dural puncture is not known. Non-postural headache and vomiting could be warning signs. In addition, changes in headache characteristics (untreatable retro-orbital or frontal headache) were observed in most cases. Increased intracranial pressure due to subdural hematoma can cause convulsions, hemiplegia, disorientation, and more serious neurological symptoms. Distinguishing intracranial hypotension and subdural hematoma with neurological signs and symptoms is difficult. Most of the patients with headaches after LP are probably treated without further evaluations. It's well known that small subdural hematomas resolve spontaneously, but may sometimes cause deaths. Thus, the true incidence of subdural hematoma after spinal anesthesia

may be more than is known.

In patients with a persistent severe headache following dural puncture, with the headache persisting even in the supine position or nausea occurring, the possibility of subdural hematoma should be considered. In these patients, CT or MRI of the brain should be performed and early neurologic or neurosurgical consultation is recommended. An early diagnosis of the hematoma may allow conservative treatment. The thickness of the spinal needle is important in the prevention of complications due to spinal anesthesia.

Conflict of interest statement

The authors have no conflicts of interest to declare.

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