

Abducens Nerve Palsy As a Complication of Spinal Anesthesia Following Knee Arthroscopy

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Citation

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Abstract

Neuroaxial blocks (spinal, epidural and caudal blocks) are commonly used procedures in anesthesia. Dural puncture was first introduced by Quincke. Bier proposed that leakage of cerebro spinal fluid (CSF) through the dural puncture side exceeds the rate of CSF production and results in low CSF pressure. This leads to intracranial hypotension causing traction of the cranial nerves^(1,2). The nervus abducens is most frequently affected because of its long intracranial course⁽²⁾. We report a case of abducens nerve palsy following spinal anesthesia.

INTRODUCTION

Neuroaxial blocks (spinal, epidural and caudal blocks) are commonly used procedures in anesthesia. Dural puncture was first introduced by Quincke. Bier proposed that leakage of cerebro spinal fluid (CSF) through the dural puncture side exceeds the rate of CSF production and results in low CSF pressure. This leads to intracranial hypotension causing traction of the cranial nerves^(1,2). The nervus abducens is most frequently affected because of its long intracranial course⁽²⁾.

We report a case of abducens nerve palsy following spinal anesthesia.

CASE REPORT

A 42-year old man with no previous medical history, known drug usage and known drug allergy enrolled surgery for meniscopathy. The physical examination and laboratory tests were normal. 0.9% isotonic solution was given prior to initiation of spinal anesthesia. A 22-gauge pencil-point spinal needle was then inserted at the L3-4 interspace into the subarachnoid space in the third attempt. After that, 15 mg of plain bupivacaine 0.5% was injected. Both the sensory level of analgesia and vital signs remained stable during the operation.

On the first postoperative day, the patient complained of severe headache. The headache originated from the neck and spread to the occipital and temporal region of the cranium. The pain was aggravated by sitting. Oral fluid intake of the patient was approximately 3000 ml for the day. Nonsteroidal

anti-inflammatory medications were started orally.

On the second day, the patient complained of severe headache. This headache did not respond to standard nonsteroidal anti-inflammatory medication and hydration. On the second day, the patient experienced nausea and vomiting. The nausea and vomiting did not respond to antiemetic medication. On the third postoperative day, headache, nausea and vomiting ceased completely but the patient complained of diplopia. His vital signs and neurological status were normal. Examination revealed bilateral strabismus with bilateral abducens nerve palsy. After ophthalmology consultant, bilateral abducens nerve palsy was diagnosed but the optic disc and field of vision were normal. Computerized tomography and magnetic resonance imaging were normal. The patient was given nonsteroidal anti-inflammatory medication and steroids to decrease neural edema. The patient's diplopia was minimized at the end of 1 month. His strabismus had resolved completely after 6 months.

DISCUSSION

Any breach of the dura may cause decreasing intracranial pressure as cerebrospinal fluid leaks from the dural defect at a greater rate than it is being produced. Magnetic resonance imaging has confirmed that this leads to shifting of the brain and traction of the cranial nerves. This may result in post dural puncture headache (PDPH) and cranial nerves dysfunction^(4,5). Larger series indicate that the incidence of PDPH and other side effects of the lumbar puncture is

related to needle size, needle type, young age, female sex, multiple insertions and pregnancy^(5,6). Cutting point needles are associated with a higher incidence of PDPH than pencil point needles of the same gauge. The lowest incidence would be expected with an elderly male using a 27 gauge pencil point needle ($< 1\%$). In our patient we used a 22 gauge pencil point needle. We had to use a 25 or 27 gauge pencil point needle. Also multiple insertions is another risk factor.

Differential diagnosis of the sixth nerve palsy includes neoplasms, infiltrative, inflammatory lesions, infection and vascular lesions⁽⁷⁾.

Besides diagnostic LP, epidural and spinal anesthesia, myelography, and ventricular shunting for hydrocephalus may also lead to abducens nerve paralysis⁽⁷⁾.

The incidence of abducens palsy varies from 1:300 to 1:8000^(3,4). Abducens palsy after lumbar puncture can be unilateral or bilateral⁽⁸⁾. Signs of sixth cranial nerve palsy after spinal puncture are rare before the fourth day and the mean presentation time is 10 days. Although two thirds of patients show complete resolution within 1 week after diagnosis, up to 25% may remain symptomatic for more than 1 month. In 10% of the cases, palsy may persist for more than 3 months^(9,10). In our case the duration is approximately 6 months.

Treatment of the cranial nerve palsy is as follows: recumbent positioning, analgesics, intravenous or oral fluid administration, caffeine usage and epidural blood patch⁽⁵⁾.

Neurological examination and ophthalmic examination must occur regularly.

CONCLUSION

Abducens palsy following spinal anesthesia is a rare and reversible complication. To avoid of this complication; the anesthetist must use the smaller size pencil point needle and inform the patient before. If this complication occurs the patient must be informed about the reversibility of the palsy.

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