Abducens Nerve Paralysis Following Spinal Anesthesia  
Spinal Anesteziyi Takiben Gelen Abdusens Sinir Paralizisi

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Abstract / Özet

Spinal anesthetization complications are numerous. Among them, 6th cranial nerve paralysis is the rarest of all cranial nerve paralyses. Sixth cranial nerve paralysis developing after spinal anesthesia was first defined by Hayman and Wood in 1942 (8). Nervous Abducens, a pure motor nerve, pulls the eyeball laterally by innerving the musculus rectus externus. With paralysis of the musculus rectus lateralis, the eyeball cannot move laterally. The patient’s head is turned towards the paralyzed side. The paralysis develops during or after the operation due to pressure on the cranial nerve. A 28 year old, female patient was admitted to the urology clinic with the diagnosis of kidney failure. A double j ureteral catheterisation procedure was planned. The female patient was preoperative evaluation and a preoperative blood test. An informed consent was obtained. Spinal anaesthetization was applied from the L₄-L₅ vertebra area utilizing the sitting position and a 26 Gauge Atrocan needle. Through the needle, 12.5 mg hyperbaric bupivacaine with 20 mcg fentanyl was injected. There were no complications during the procedure. The operation time was 25 minutes. On the 2nd postoperative day an occipitofrontal headache began. This was characterised as a postdural puncture headache. Neurologic, hemodynamic and vital parameters were all within normal ranges. The operation time and duration of hospital stay was shorter, and incidence of postoperative wound infection is less (2). Spinal anaesthesia is also popular for endoscopic urological surgery because of early recognition of symptoms caused by overhydration, transurethral resection of prostate syndrome or bladder perforation. Urethral stents have been successfully used for providing internal drainage since 1967 (3). Treatment of urolithiasis, genitourinary trauma, oncologic and reconstructive surgery are the main designated areas (4, 5). Nervous Abducens paralysis rarely occurs following spinal anesthetization. Headache and diplopia accompanied by the 6th cranial nerve paralysis developing after spinal anesthetization is seen in 0.012% to 0.020% of all blockages (6). Third (Oculomotor Nerve), 4th (T rochlearis) and 8th (Vestibulocochlear Nerve) cranial nerve paralyses are quite rare, while 5th (T rigeminal Nerve) nerve paralysis is more uncommon than the others (7). Sixth nerve (Abducens nerve) paralysis developing after spinal anesthetization was first defined by Hayman and Wood in 1942 (8). Nervous Abducens, a pure motor nerve, pulls the eyeball laterally by innerving the muscles of the extrinsic eye. With paralysis of the muscles of the extrinsic eye, the eyeball cannot move laterally. The patient’s head is turned towards the paralyzed side. The patients with paralysis of ocular motor nerves; N. Occulomotorius, N. Trochlearis and N. Abducens complain of diplopia, headache, fever, focal weakness and numbness; loss of taste and hearing may accompany these symptoms. We present a case in which Nervous Abducens palsy occurred following spinal anesthetization for double j ureteral catheter placement surgery.  

Key Words: Abducens nerve, spinal anaesthetization, diplopia, double j stent, complication

Introduction

Spinal anesthetization is typically used in several urological surgeries (1). There are many reasons for preferring spinal anesthetization to general anesthetization. Firstly, regional anesthetization offers advantages that include relative cheapness, patient satisfaction, reduced risk of respiratory complications, less bleeding, superior muscle relaxation, rapid restoration of bowel function and reduced incidence of coagulation disorders following surgery. The procedure is simple, duration of hospital stay is shorter, and incidence of postoperative wound infection is less (2). Spinal anesthetization is also popular for endoscopic urological surgery because of early recognition of symptoms caused by overhydration, transurethral resection of prostate syndrome or bladder perforation. Urethral stents have been successfully used for providing internal drainage since 1967 (3). Treatment of urolithiasis, genitourinary trauma, oncologic and reconstructive surgery are the main designated areas (4, 5). Nervous Abducens paralysis rarely occurs following spinal anesthetization. Headache and diplopia accompanied by the 6th cranial nerve paralysis developing after spinal anesthetization is seen in 0.012% to 0.020% of all blockages (6). Third (Oculomotor Nerve), 4th (T rochlearis) and 8th (Vestibulocochlear Nerve) cranial nerve paralyses are quite rare, while 5th (T rigeminal Nerve) nerve paralysis is more uncommon than the others (7). Sixth nerve (Abducens nerve) paralysis developing after spinal anesthetization was first defined by Hayman and Wood in 1942 (8). Nervous Abducens, a pure motor nerve, pulls the eyeball laterally by innerving the muscles of the extrinsic eye. With paralysis of the muscles of the extrinsic eye, the eyeball cannot move laterally. The patient’s head is turned towards the paralyzed side. The patients with paralysis of ocular motor nerves; N. Occulomotorius, N. Trochlearis and N. Abducens complain of diplopia, headache, fever, focal weakness and numbness; loss of taste and hearing may accompany these symptoms. We present a case in which Nervous Abducens palsy occurred following spinal anesthetization for double j ureteral catheter placement surgery.

Case Report

A 28 year old, female patient was admitted to the urology clinic with the diagnosis of kidney failure. Preoperatively the patient was informed about spinal anesthetization for ureteral double j catheterisation procedure. She had no neurological deficiency before the surgical procedure. The spinal anesthetization was applied from the Lumbar 4-5th intervertebral area utilizing the sitting position and a 26 Gauge Atrocan needle. Through the needle, 12.5 mg hyperbaric bupivacaine with 20 mcg fentanyl was injected. There were no complications during the blockade and the urological operation. Neurologic, hemodynamic and vital parameters were all within normal ranges. The operation time was 25 minutes. On the 2nd postoperative day an occipitofrontal headache began. This was characterised as a postdural puncture headache and nonsteroidal anti-inflammatory drugs, oral hydration and caffeine were administered. The patient’s complaints were reduced in the following days, then left eye abduction deformity and diplopia was manifested in the 5th postoperative day (Fig. 1). Sixth cranial nerve injury was determined by ophthalmologic consultation. Intracranial mass and infection were eliminated by cranial magnetic resonance imaging (MRI). Oral steroid treatment was initiated at a dose of 40 mg per day. The symptoms were diminished by the end of the 1st month and she was able to work unassisted at the end of the 2nd month (Fig. 2).
Discussion

Nervous Abducens passes into the subarachnoid space by leaving the pedunculus at the pontomedullary junction and heads towards the clivus vertically (9). Nervous Abducens paralysis is the most common type of all cranial nerve paralysis because of its long and curly shape (10, 11). As this complication is reversible, there is no need to choose general anaesthesia instead of spinal blockage. However, the use of pencil point spinal needles may be increased for preventing postdural puncture headache. Isolated paralysis of N. Abducens may be seen in both pons lesions and high intracranial pressure circumstances (12, 13). Haemorrhages, infectious diseases, sarcoidosis and infiltrations such as leukaemia and lymphoma also cause 6th cranial nerve paralysis. Follow up therapy is recommended in focal paralysis. Steroids are effective by reducing the neuronal oedema. In addition to MRI, cerebrospinal fluid sample analysis is essential when other neurological symptoms accompany 6th nerve paralysis (14, 15). Differential diagnosis should be reviewed if the symptoms persist. Therefore we have obtained MRI in spite of regression of the symptoms. On the other hand, Nervous Abducens paralysis may occur as a complication of epidural anaesthesia (16). Much the same as the case report of Vial et al. (17), regression of symptoms might take up to eight months. Sometimes, 4th cranial nerve palsy accompanies 6th nerve palsy, as reported in the case of King et al. (18) On account of this, it must always be remembered that cranial nerve palsies may not occur alone. Intracranial subdural hematoma and cerebellar haemorrhage has been reported previously as a rare complication of spinal anaesthesia (19, 20).

Merino et al. (21) described the causes and treatment of sixth cranial nerve palsy in a series of paediatric patients under 14 years of age, and neoplasms were the most frequent cause for their occurrence. Double vision may arise from ocular, neurologic, or extra ocular muscle disorders (22). Intracranial hypotension, infection or myasthenia gravis must be included in the differential diagnosis of diplopia.

Conclusion

Nervous Abducens paralysis is the most common type of all cranial nerve paralysis because of its long and curly shape. Intracranial complications of spinal anaesthesia are quite rare, but as the use of spinal anaesthesia in urological procedures is common, it must be recognised.

Conflict of Interest

No conflict of interest was declared by the authors.

References

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