



# SIXTH CRANIAL NERVE PALSY REVEALING INTRACRANIAL HYPOTENSION: A CASE REPORT

Lekbich Sophia, Moutei Hassan, Chraibi Fouad, Abdellaoui Meryem, Benatiya Andaloussi Idriss  
Department of Ophthalmology, Hassan II University Hospital of Fez, FES, Morocco

**Abstract:** Background: Abducens nerve palsy is a common manifestation of intracranial hypertension but remains an unusual presentation of intracranial hypotension. Case presentation: We report the case of a 26-year-old woman who developed acute binocular diplopia following spinal anesthesia for hysterectomy. Clinical examination revealed an isolated right sixth nerve palsy associated with postural headache and vomiting. Brain MRI demonstrated diffuse pachymeningeal enhancement and slit-like ventricles consistent with intracranial hypotension. The patient was successfully treated with an epidural blood patch, leading to complete resolution of symptoms. Conclusion: Although rare, intracranial hypotension should be considered in the differential diagnosis of acute diplopia, particularly after spinal anesthesia. Prompt recognition and treatment ensure excellent prognosis.

**Index Terms** - Intracranial hypotension, Abducens nerve palsy, Spinal anesthesia, Diplopia, Epidural blood patch.

## I. INTRODUCTION

Acute abducens nerve palsy is most often linked to elevated intracranial pressure, whereas its occurrence in intracranial hypotension (IH) is far less recognized. IH typically results from cerebrospinal fluid (CSF) leakage following dural injury, trauma, or spinal procedures. The downward displacement of the brainstem can stretch the sixth cranial nerve, resulting in diplopia. We describe a rare case of post-spinal anesthesia intracranial hypotension revealed by an isolated abducens nerve palsy.

## II. CASE REPORT

A 26-year-old woman presented with sudden binocular diplopia, severe orthostatic headaches, and vomiting unresponsive to analgesics. Symptoms appeared six days after hysterectomy for endometrial tumor performed under spinal anesthesia. Neurological examination showed an isolated right abducens nerve palsy (figure 1). Visual acuity and ocular fundus were normal. No sensory or motor deficit was noted. Brain CT was unremarkable. MRI revealed diffuse pachymeningeal enhancement, slit-like ventricles, and mild descent of the brainstem—findings consistent with intracranial hypotension (figure 2). A diagnosis of post-spinal intracranial hypotension presenting with sixth nerve palsy was made. The patient underwent an epidural blood patch, resulting in rapid and complete recovery within a few days.



Figure 1: right abducens nerve palsy

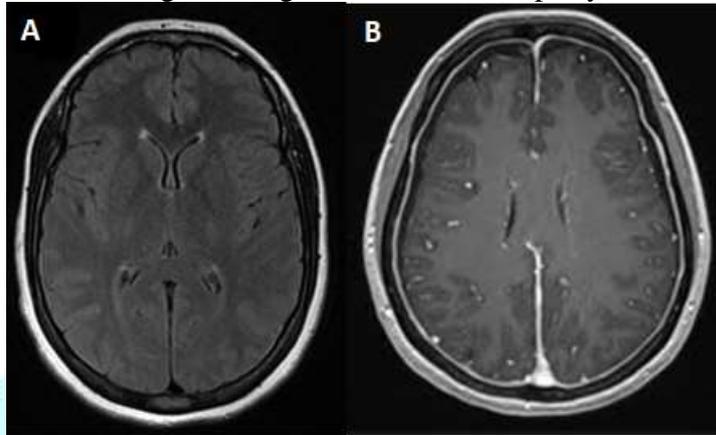


Figure 2: Brain MRI, axial view — FLAIR sequence (A) and contrast-enhanced T1 sequence (B) showing slit-like ventricles and diffuse pachymeningeal enhancement

### III. DISCUSSION

Intracranial hypotension most often results from CSF leakage after lumbar puncture, spinal anesthesia, or trauma (1). Less frequently, it occurs spontaneously without identifiable cause. The condition is characterized by orthostatic headache typically worsening in the upright position and relieved by lying down and may occasionally present with cranial nerve palsies, particularly of the sixth nerve (2). The sixth cranial nerve has the longest intracranial course, passing over the petrous ridge before entering the cavernous sinus, making it highly susceptible to traction caused by brainstem descent in IH (3). Although the incidence of sixth nerve palsy after spinal anesthesia is low, it is likely underdiagnosed due to variable latency between the spinal procedure and the onset of diplopia. MRI is the imaging modality of choice (4). Typical findings include diffuse pachymeningeal enhancement, venous sinus engorgement, subdural fluid collections, and downward displacement of the cerebellar tonsils (“pseudo-Chiari”). Direct measurement of CSF pressure (<6 cm H<sub>2</sub>O) confirms the diagnosis but is rarely required (5). Management is primarily conservative bed rest, hydration, and caffeine. The epidural blood patch remains the most effective treatment, providing rapid closure of the dural leak and symptom relief (6). Prognosis is generally excellent; most patients recover fully within three months. Orthoptic rehabilitation and prisms may help alleviate transient diplopia during recovery (7).

### IV. CONCLUSION

Abducens nerve palsy secondary to intracranial hypotension after spinal anesthesia is an uncommon but important diagnostic consideration. Recognition of the postural pattern of headache and timely MRI confirmation are essential. The epidural blood patch remains the treatment of choice, leading to rapid and complete resolution in most cases.

## V. REFERENCES

1. Ben Amor S, Maeder P, Gudinchet F, Duc C, Ingvar-Maeder M. Spontaneous intracranial hypotension syndrome. *Rev Neurol (Paris)*. 1996;152:611–614.
2. Brugières P, Meyrignac C. MRI features of intracranial hypotension. *Rev Neurol (Paris)*. 2000;156:318–319.
3. Dinakaran S, Desai SP, Corney CE. Sixth nerve palsy following radiculography. *Br J Radiol*. 1995;68:424.
4. Hotton J, Hummel MO. Oculomotor palsy after spinal anesthesia. *Cah Anesthesiol*. 1986;34:613–615.
5. Mokri B, Piepgras DG, Miller GM. Syndrome of orthostatic headaches and diffuse pachymeningeal enhancement. *Mayo Clin Proc*. 1997;72:400–413.
6. Narchi P, Veyrac P, Viele M, Benhamou D. Post-dural puncture auditory symptoms: relief after epidural blood patch. *Anesth Analg*. 1996;82:1303.
7. Vial F, Bouaziz H, Adam A, Buisset L, Laxenaire M, Battaglia A. Oculomotor palsy and spinal anesthesia. *Ann Fr Anesth Reanim*. 2001;20(1):32–35.

