

# Neck Imaging in the Medical Workup of Elevated Intracranial Pressure

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**P**apilledema is the combination of increased intracranial pressure and swollen optic discs [1]. Sixth nerve palsy is the most common cranial nerve palsy in cases of increased intracranial pressure. The combination of papilledema and sixth cranial nerve palsy is indicative of increased intracranial pressure. Medical investigation for possible etiologies is indicated in such cases [2]. The main tool used in to determine this condition is brain imaging [3].

## PATIENT DESCRIPTION

We report a healthy 13 year old boy who complained of headache, vomiting, sleepiness, and diplopia for a month prior to his hospitalization. The diplopia was binocular and horizontal, and intensified when gazing to the right.

On examination, visual acuity was 6/6 in both eyes. Right eye abduction limitation and diplopia was consistent with right sixth cranial nerve palsy. The anterior segments and the intraocular pressure were normal in both eyes. Fundus examination revealed bilateral swollen discs. The retinas were otherwise normal.

Neurological examination was normal without meningeal signs or fever.

Brain computerized tomography and magnetic resonance imaging (MRI) were both normal. The intracranial pressure measured through lumbar puncture was high (40 mmHg). Lumbar puncture eased the headache.

Cerebrospinal fluid was analyzed and contained nine cells with six lymphocytes per microliter. Glucose level was normal and protein level was mildly elevated. Gram stain and cultures as well as polymerase chain reaction for herpes and enterovirus were all negative.

According to the clinical presentation and imaging tests, the working diagnosis was idiopathic intracranial hypertension (pseudotumor cerebri) and the child was treated with acetazolamide 500 mg three times daily. Under this treatment the patient found relief of all symptoms and signs for 2 weeks, but experienced drastic exacerbation thereafter. On repeated questioning, the patient reported that his headache was associated with neck pain. Neck MRI demonstrated an intramedullary space occupying lesion in the right cervical spinal cord, at the level of C4–C5 with leptomeningeal involvement.

Histologic characterization of the lesion revealed a disseminated oligodendroglial-like leptomeningeal tumor of childhood. This is an uncommon new tumor entity of the spinal cord consisting of oligoid tumor cells with diffuse leptomeningeal spread without a primary mass lesion [4]. The child was treated using a ventriculoperitoneal shunt, chemotherapy, and radiotherapy with clinical improvement.

## COMMENT

Reasons for the increased intracranial pressure in cases of spinal cord neoplasms include:

- Elevation of the proteins concentration in the cerebrospinal fluid (CSF) caused by a tumor. The elevated protein concentration reduces the CSF resorption
- Blockage of the foramen magnum
- Intraspinal subarachnoidal tumor hemorrhage
- Subarachnoidal tumor seeding [5]

## CONCLUSIONS

This case highlights that neck pathology is one possible cause of increased intracranial pressure.

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**“Success is the ability to go from one failure to another with no loss of enthusiasm”**

Sir Winston Churchill, (1874–1965), British politician