Lumbar puncture for idiopathic intracranial hypertension diagnosis

- Association of ganglion cell-inner plexiform layer thinning with visual function in pediatric papilledema
- Diagnostic efficacy of radionuclide scintigraphy in detecting lumboperitoneal shunt obstructions in idiopathic hydrocephalus and intracranial hypertension
- Non-Invasive Detection of Recurrent Intracranial Pressure via Optical Coherence Tomography: A Case Report
- Atraumatic Cranial CSF Leaks
- Idiopathic Intracranial Hypertension in Pregnancy. A Systematic Review on Clinical Course, Treatments, Delivery and Maternal-Fetal Outcome
- Idiopathic Intracranial Hypertension With Papilledema and Iron Deficiency Anemia in a 14-Year-Old Female Patient: A Case Report of First Presentation in the Middle East
- Procedural and patient-related factors play differential roles in postdural puncture headache
- Incidence of temporal thumb sign in adult patients with idiopathic seizures with and without elevated opening cerebrospinal fluid pressure

Lumbar puncture is performed to measure the opening pressure, as well as to obtain cerebrospinal fluid (CSF) to exclude alternative diagnoses. If the opening pressure is increased, CSF may be removed for transient relief.

Lumbar puncture is performed routinely for diagnostic and therapeutic purposes in idiopathic intracranial hypertension, despite lumbar puncture being classically contraindicated in the setting of raised intracranial pressure. [1)].

It has been postulated that the reason herniation does not occur in this setting is a reduction in brain compliance due to persistently high ICP [2)]

A 30-year-old female with known idiopathic intracranial hypertension who had cerebellar tonsillar herniation following therapeutic lumbar puncture. Management followed guidelines regarding treatment of traumatic intracranial hypertension, including rescue decompressive craniectomy. Hoffman et al. hypothesize that the changes in brain compliance that are thought to occur in the setting of idiopathic intracranial hypertension are protective against further neuronal injury due to axonal stretch following decompressive craniectomy. [3)]

A 30-year-old woman with coexisting renal tubular acidosis and idiopathic intracranial hypertension (IIH), treated with acetazolamide, experienced coning (cerebellar tonsillar herniation) after a lumbar puncture (LP). Brain magnetic resonance imaging at initial diagnosis of IIH showed minor tonsillar descent and computed tomographic venography revealed hypoplasia of the left transverse sinus. The patient previously had three uneventful LPs, all of which showed high opening pressures and normal cerebrospinal fluid composition. In retrospect, it was noted that her serum bicarbonate had fallen to 9 mmol/L (normal: 22-28 mm/L) 1 week before the LP. We hypothesize that the combination of cerebral edema (due to worsening metabolic acidosis), poor venous drainage, and preexisting minor tonsillar descent contributed to her post-LP coning [4)].

Laboratory findings

The CSF is examined for abnormal cells, infections, antibody levels, the glucose level, and protein levels. In IIH, by definition all of these are within their normal limits.

The most frequent abnormal laboratory findings were elevated C reactive protein (CRP) (51 %), thrombophilia (31 %), increased plasma cortisol levels (29 %) and elevated lactate dehydrogenase (LDH) (20 %). Patients with elevated CRP and patients with thrombophilia had an unfavorable visual outcome. Increased cortisol levels and abnormal calcium correlated with a higher rate of recurrence. The visual outcome of patients with elevated LDH was better than those with normal LDH. It seems that certain metabolic, inflammatory and coagulation abnormalities may influence the course of IIH. If confirmed in further studies, these findings could contribute to elucidation of the etiology and prognosis of IIH. [5].

1)
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