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Insights on Intracranial Hypotension Caused by an Anesthetic Modality

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Introduction

Spontaneous intracranial hypotension (SIH) is a rare syndrome, but it is extremely disabling, with a wide range of presentation and prognosis. Acute orthostatic headache is the most common symptom, but other clinical manifestations such as neck pain or stiffness, nausea, tinnitus, or photophobia can also occur. Despite its rarity, increased access to and development of neurological imaging examinations, such as spine magnetic resonance imaging (MRI) and computed tomographic myelography, identify an increasing number of recognised cases. Although the exact cause of SIH is unknown, which has led to a number of misconceptions, it is thought to be caused by a cerebrospinal fluid (CSF) leak or a low CSF pressure [1-3].

Despite a thorough and targeted diagnostic workup, there is occasionally no evidence of CSF leak in patients with well-defined SIH symptoms and typical cranial imaging findings. A pathological cranial-to-spinal shift without overt CSF leak has been advocated in these cases. This could be because of increased spinal compliance, which causes downward displacement of cranial structures and clinical manifestations of SIH. If conservative therapy fails to relieve the patient's symptoms, an epidural blood patch (EBP) with an anesthesiologist is used as the mainstay of treatment.

Description

CSF leaks may be amenable to surgical treatment in some cases, such as dural tears, ruptured meningeal diverticula, or CSF-to-venous fistulae. SIH is frequently misdiagnosed due to a lack of awareness or consideration of the diagnosis. We present a case series of three patients with a variety of clinical features of SIH; they complained not only of a headache, the classic and most common symptom of the syndrome, but also of dizziness that they couldn't tolerate. The findings on the MRI confirmed the provisional diagnosis of SIH. Following that, the patients were successfully treated with an EBP and remained asymptomatic on follow-up. This case series aims to highlight that SIH is still a cryptic diagnosis; it can present with a wide clinical spectrum of symptoms, diagnosis is primarily based on the severity of the patient's clinical features, and magnetic resonance imaging of the brain and spine completes the diagnostic procedure. It can cause subdural hematoma (SDH), and if conservative treatment fails, an EBP remains the mainstay of therapy.

SIH is a rare syndrome with an annual incidence of about 5 per 100,000 people, peaking in the fourth or fifth decade of life and being slightly more common in women [4,5]. The clinical presentation is characterised by symptoms of a debilitating occipital or frontal positional diffuse headache that worsens upon resumption of upright posture, improves when recumbent, and is relieved within 15-30 minutes of lying down or other manoeuvres that increase intra-abdominal pressure. However, orthostatic headache is not always present. Other symptoms may include nausea, vomiting, posterior neck pain or stiffness, diplopia, blurred vision, photophobia, tinnitus, other subjective hearing disturbances, and, in rare cases, a comatose state similar to encephalopathy. The onset of headache is frequently abrupt, and patients can recall the precise time when their symptoms began. There are two possible mechanisms for the emergence of headache in SIH: First, CSF leakage through the dural tear and brain sagging stretch and stimulate pain-sensitive sensory cranial nerve fibres due to the brain's downward shift.

Conclusion

As a result, any decrease in CSF volume should result in a compensatory increase in cerebral blood volume in the face of unchanged intracranial volume. The beneficial effect of vasoconstrictor medications such as caffeine and theophylline adds to this mechanism. Our patients' main complaint was not only a headache, but also intense dizziness, which is an unusual clinical presentation of the syndrome. Although the true pathophysiology is unknown, it is likely that a tear in the dura matter allows CSF leak and subsequent intradural CSF hypovolemia in the majority of patients. Symptoms can appear without a clear cause (previous trauma, history of central neuraxial block, iatrogenic causes), and theories about connective tissue disorders, malnutrition, short stature, or female predominance due to hormones are unproven. Although it was once thought that low CSF pressure was a major cause of the syndrome, it is now believed that in most cases, the pressure is normal, implying that insufficiency of CSF volume, rather than low CSF pressure, is the underlying mechanism.

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Conflict of Interest

There are no conflicts of interest by author.

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