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Case report

Morning Headache and Ocular Pain in a 16-year-old male patient: A Case of Medulloblastoma Presenting with Papilledema

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Summary

Headache is a common complaint in primary care; however, when it is associated with ocular pain and morning aggravation, it warrants evaluation for increased intracranial pressure (ICP). A 16-year-old male presented with a one-month history of constant headache and ocular pain, worse in the morning and exacerbated by bending forward. He complained of nausea but no vomiting. Ophthalmic examination showed a best-corrected visual acuity (BCVA) of 0.7 in both eyes, alternating exotropia, and normal intraocular pressure. Fundoscopy indicated bilateral optic disc edema. Visual field testing proved enlargement of the blind spot. Neuroimaging via MRI showed a posterior fossa mass, later diagnosed as medulloblastoma. This case demonstrates the pivotal role of a thorough history and ophthalmic examination in diagnosing medulloblastoma presenting with papilledema. In young patients with headache and signs of increased ICP, prompt neuroimaging is critical to rule out malignancy.

Keywords: Medulloblastoma, Papilledema, Fundoscopy, Intracranial pressure, Posterior fossa tumor

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Introduction

Headache is one of the most prevalent neurological symptoms in children and adolescents. However, most often benign, the presence of red flags, e.g., morning worsening, nausea, and pain exacerbated by Valsalva maneuvers (e.g., bending over), suggests elevated intracranial pressure (ICP).[1] Papilledema, or optic disc swelling owing to elevated ICP, is a major ophthalmic sign that necessitates urgent examination.[2] Posterior fossa tumors, such as medulloblastoma, are a common reason for increased ICP in the pediatric population owing to obstruction of cerebrospinal fluid (CSF) flow and mass effect.[3] Hereby, we present a case of a 16-year-old male whose presenting symptoms of headache and ocular pain led to the diagnosis of medulloblastoma.

Case Presentation

A 16-year-old male was examined in the ophthalmology clinic due to complaints of headaches and bilateral ocular pain lasting over a month. He described the pain as constant, but it was notably worse in the morning upon waking. The pain was aggravated by bending over or moving his head. A review of his systems revealed nausea, but he reported no vomiting. His past medical history was unremarkable, and he was not taking any regular medications.

Visual acuity measurements were 0.7 in both eyes (OU), approximately equivalent to 20/30. The best-corrected visual acuity (BCVA) was also 0.7 (OU). Refraction results indicated -1.00 sphere in the right eye (OD) and plano with -0.5 x 75 in the left eye (OS). There was no relative afferent pupillary defect (RAPD) detected in either eye. Color vision testing was normal for both eyes (OU). Intraocular pressure (IOP) readings were 12 mmHg in the right eye (OD) and 10 mmHg in the left eye (OS).

Slit Lamp Examination (SLE): Normal anterior segment (OU). Fundoscopy: Fundus examination showed bilateral optic disc edema (papilledema) (Figure 1a, b). Neuroimaging via MRI showed a posterior fossa mass, later diagnosed as medulloblastoma (Figure 1c, d). The discs appeared hyperemic with blurred margins, and peripapillary flame-shaped hemorrhages were evident, consistent with acute papilledema. Visual Field Testing: Humphrey visual field testing demonstrated bilateral enlargement of the blind spot. Eventually, the patient was referred to neurosurgery. A gross total resection of the tumor was carried out. Histopathological examination demonstrated the diagnosis of medulloblastoma. Post-operatively, the patient was managed for hydrocephalus and referred to pediatric oncology for adjuvant chemotherapy and/or radiation therapy.

Discussion

We present a case of a 16-year-old male whose primary symptoms of morning headache and ocular pain resulted in a diagnosis of medulloblastoma. This case highlights the importance of recognizing the clinical manifestations of elevated intracranial pressure (ICP). Papilledema is

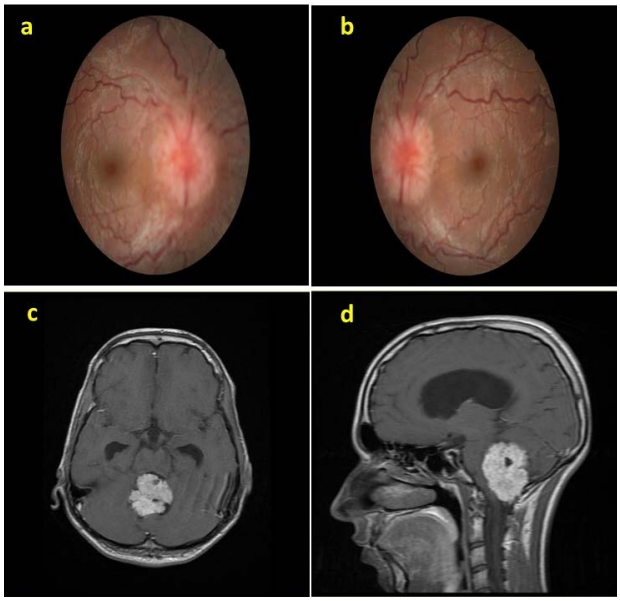

Figure 1. a-b. Fundoscopy showed bilateral optic disc edema (papilledema). c-d. MRI indicated a posterior fossa mass, later diagnosed as medulloblastoma

referred to as optic disc swelling secondary to increased ICP.[4] The pressure from the intracranial subarachnoid space is transmitted to the optic nerve sheath, resulting in stasis of axoplasmic flow within the retinal nerve fibers. This causes axonal swelling and leakage of fluid and blood into the optic disc tissue.[5] Clinically, acute papilledema presents with hyperemia of the optic disc owing to dilation of surface capillaries, telangiectasia of surface and peripapillary vessels, and flame-shaped hemorrhages and cotton-wool spots.[6]

Although visual field testing showed an enlargement of the blind spot, central visual acuity and color vision remain normal until the late stages.[2] Our patient exhibited both of the fundoscopic signs (hyperemia, hemorrhages) and the classic visual field defect (enlarged blind spot), confirming early-stage papilledema. It is critical to discriminate true papilledema from pseudopapilledema (e.g., from optic disc drusen). In pseudopapilledema, the disc appears elevated, and borders are blurred, but the retinal vessels remain clearly visible as they cross the disc margin, and there are no microvascular abnormalities like hemorrhages.[7]

Posterior fossa tumors account for 54-70% of all brain tumors in children.[8] Medulloblastoma, a highly malignant primary neuroectodermal tumor, is one of the most common types in this age group.[9] The clinical presentation relies on the tumor's location and rate of growth. Headache is the most common symptom, often worse in the morning due to hypoventilation and increased pCO2 during sleep, which causes cerebral vasodilation and further elevates ICP. Nausea and vomiting are often projectile and unrelated to meals, due to direct stimulation of the area postrema in the brainstem or increased ICP. Strabismus or diplopia may occur due to compression of the sixth cranial nerve (which has a long intracranial course) or, less commonly, the third and fourth nerves, leading to cranial nerve palsies.

In our patient, the presence of alternating exotropia may indicate involvement of the oculomotor (CN III) nerve or a disturbance in the binocular fusion mechanism due to increased ICP. Truncal or gait ataxia is common in midline tumors like medulloblastoma involving the cerebellar vermis.[10] In this patient, the absence of RAPD and the preservation of normal color vision and central visual acuity (0.7) suggested early-stage papilledema. The diagnosis of an intracranial mass was confirmed by MRI, which is the gold standard for imaging the posterior fossa.[8] The definitive management for medulloblastoma typically involves maximal safe surgical resection followed by risk-adapted radiotherapy and chemotherapy.[11]

Conclusion

This case demonstrates the prominence of a systematic approach to headache in young patients. We suggested that clinicians should focus on the diagnostic role of ophthalmic examination and the risk of delayed diagnosis in common headache presentations. In addition, many similar patients are misdiagnosed or diagnosed late. The combination of morning headaches, nausea, and ophthalmologic symptoms should prompt a vital fundoscopic examination to rule out papilledema. Early recognition and urgent neuroimaging are vital, as a delay in diagnosis of posterior fossa tumors may lead to irreversible visual loss, herniation, and death. Ophthalmologists play a key role as the first line of defense in identifying life-threatening intracranial pathology.

Competing Interests

The authors have no conflicts of interest to declare.

Ethical Approval

Written informed consent was obtained from the participant for anonymized patient information to be published in this article.

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Intelligence Use Disclosure

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