CASE STUDY.

102. A Diagnostic Gray Zone: Isolated Left Oculomotor Nerve Palsy in the Setting of Hyperhomocysteinemia, Sphenoid Sinusitis, and Rathke's Cleft Cyst

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Rathke's Cleft Cyst (RCC) is a benign, epithelium-lined cyst arising from remnants of Rathke's pouch, typically located in the sellar or suprasellar region, and is a documented cause of oculomotor nerve palsy via compressive mechanisms. The sphenoid sinus lies adjacent to the cavernous sinus, through which the oculomotor nerve passes, making inflammatory spread from sphenoidal sinusitis a potential but uncommon cause of cranial nerve involvement. Hyperhomocysteinemia, defined as elevated plasma homocysteine levels, is an established independent risk factor for endothelial dysfunction, prothrombotic states, and small-vessel ischemia, and has been implicated in cranial neuropathies. We report a case involving all three of these factors contributing to isolated oculomotor nerve palsy. A 26-year-old right-handed woman presented with progressive left-eye diplopia for two months, worse on near and right gaze, along with recurrent headaches and blurring of vision in the right eye. She denied trauma, slurred speech, limb weakness, or dysphagia. Neurological examination revealed isolated left oculomotor nerve palsy: restricted adduction, elevation, and depression, with ptosis and pupil sparing. Visual acuity was 5/6 bilaterally; other cranial nerves, motor, and sensory systems were normal. Labs showed elevated homocysteine (83.9 µmol/L) and low vitamin B12 (205 pg/mL). MRI revealed a Rathke's cleft cyst in the sellar region and left sphenoidal sinusitis. The patient responded well to a short course of corticosteroids, with resolution of diplopia and ptosis. This improvement supports an inflammatory or microvascular ischemic etiology rather than a purely compressive one. Previous studies associate hyperhomocysteinemia with microvascular cranial neuropathies, RCCs with compressive oculomotor palsy, and sphenoidal sinusitis with inflammatory extension to cranial nerves. Our case is unique in presenting all three concurrently, contributing to a diagnostic grey zone. Steroid responsiveness highlights a probable inflammatory and ischemic mechanism.

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