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Detailed magnetic resonance imaging findings of the ocular motor nerves in Duane's retraction syndrome.

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Abstract

PURPOSE: To study the neuroanatomic characteristics of patients with Duane's retraction syndrome with high-resolution magnetic resonance imaging.

METHODS: The study included 11 consecutive cases, including five patients with type I, one patient with type II, four patients with type III, and one patient with inverse Duane's retraction syndrome. The patients underwent magnetic resonance imaging of the brain, brain stem, cavernous sinus, and orbits.

RESULTS: In 10 patients, the abducens nerve (cranial nerve VI) was absent or showed hypoplasia in the brain stem, cavernous sinus, and orbit. However, these findings were not seen in the patient who had inverse Duane's retraction syndrome. In two children, magnetic resonance imaging showed that the cavernous sinuses were smaller on the affected side. The inferior division of the oculomotor nerve (cranial nerve III) was traced to enter the lateral rectus muscle or had intimate continuity with the lateral rectus muscle in nine patients with type I and type III Duane's retraction syndrome. In one patient with type III Duane's retraction syndrome, the oculomotor foramen was significantly larger on the affected side than on the sound side. In the patient with type II Duane's retraction syndrome, the superior division of cranial nerve III was enlarged and had three branches. In the patient with inverse Duane's retraction syndrome, the inferior division of cranial nerve III sent two branches to the medial rectus muscle, and the patient had superior oblique muscle hypoplasia.

CONCLUSION: Neuroimaging findings showed that the absence of cranial nerve VI, hypoplasia in the brain stem, and an extra branch of the inferior division of cranial nerve III to the lateral rectus muscle is the most common presentation of Duane's retraction syndrome, but not the only one. The aberrant branches likely correspond to the abnormal eye movement seen in patients with this disorder.

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