Transsellar intracavernous intercarotid collateral artery associated with agenesis of the internal carotid artery

Case report

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A 28-year-old woman with systemic lupus erythematosis was found to have a transsellar intracavernous intercarotid anastomosis with agenesis of the left internal carotid artery.

KEY WORDS • transsellar collateral artery • internal carotid artery • anastomosis • agenesis • carotid cavernous sinus

The most common source of collateral circulation in cases of agenesis of the internal carotid artery (ICA) is via the circle of Willis. In these cases the basilar artery and opposite ICA supply the middle cerebral and anterior cerebral arteries on the side of the absent ICA.\(^3\)

Lie\(^1\) and Smith, \textit{et al.},\(^3\) reported cases of agenesis of the ICA with collateral supply from large carotid-cavernous anastomoses, the former posterior to the clivus and the latter at the level of the dorsum sellae. The present case is believed to be the first reported instance of carotid cavernous anastomosis through the sella.

Case Report

This 28-year-old woman was admitted in April, 1975, for evaluation of paraplegia. She had a 6-year history of systemic lupus erythematosis with development of transverse myelitis in June, 1974. A myelogram at that time was negative. In December, 1974, she progressively lost her vision and on admission she was able to see only shadows.

On May 1, 1975, bilateral carotid arteriograms were done via retrograde femoral catheter injections. The right common carotid injection showed that the right intracranial circulation filled normally, including both anterior cerebral arteries. The left middle cerebral artery filled via a horizontal vessel arising from the intracavernous right ICA. This artery crossed the floor of the sella turcica, continued as the intracavernous ICA on the left (Fig. 1), and supplied the distribution of the left middle cerebral artery. The left common carotid artery terminated in a normal external carotid with agenesis of the ICA. No intracranial abnormality was shown other than the anomalous transsellar artery. The patient was discharged with dense paraplegia and no change in her visual status.

Discussion

Parkinson,\(^2\) in a study of 200 cadaver dissections, showed that the meningohypophyseal artery gave rise to the dorsal meningeal artery and the inferior hypophyseal artery, which formed a circulus arteriosus around the root of the dorsum sellae. He also described capsular arteries as one or two branches of the intracavernous ICA arising 2 or 3 mm further along from the meningohypophyseal trunk or from the inferior hypophyseal artery and running directly across the floor of the sella where they anastomosed with their opposite counterpart.

The anomaly in the case presented in this report is thought to arise from anastomoses of the inferior hypophyseal or capsular arteries. Knowledge of the
Fig. 1. Subtraction arteriograms, arterial phase, showing the anomalous intercarotid artery connecting the intracavernous internal carotid arteries by crossing the floor of the sella turcica. Arrowheads mark the floor of the sella turcica. **Left:** Frontal view. **Right:** Lateral view.

Presence of this variation is important when considering pituitary or cerebrovascular surgery.

References


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