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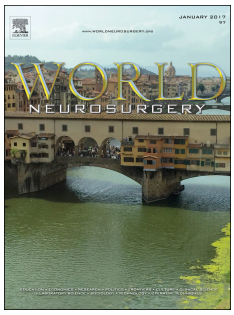


Uneven Distribution of Regional Blood Supply Prompts the Cystic Change of Pituitary Adenoma

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# Uneven Distribution of Regional Blood Supply Prompts the Cystic Change of Pituitary Adenoma

**Background** Previous studies have suggested that the cystic change of pituitary adenoma might be related to the blood supply and metabolism of the tumor; however, the exact pathological mechanism underlying the cystic change remains unknown. **Objectives** We aimed to assess the features of regional blood supply of pituitary adenoma and examine its relationship with the cystic change of pituitary adenoma. **Methods** Patients (N=79) with pituitary adenoma admitted to our hospital were divided into the parenchyma group (n=40) or the cystic change group (n=39). Dynamic contrast-enhanced magnetic resonance imaging (MRI) of the pituitary adenoma was conducted for the parenchyma group and the steepest slopes ($SS_{max}$; reflecting regional blood supply) at different areas were calculated. The location of cystic change of the pituitary adenoma was recorded and analyzed for the cystic change group. **Results** The parenchyma group showed an upper $SS_{max}$ of 2.52 ± 1.18, a lower $SS_{max}$ of 2.89 ± 1.46, a left $SS_{max}$ of 2.71 ± 1.31, and a right $SS_{max}$ of 2.66 ± 1.29. The difference between the upper and lower $SS_{max}$ was statistically significant ($p$<0.001), with no difference between the left and right regions ($p$ = 0.668). The location of cystic change of the pituitary adenoma was mainly in the upper region, accounting for 48.7% of cases. **Conclusions** Regional blood supply is unevenly distributed in the parenchymal pituitary adenoma, with reduced blood supply in the upper than the lower region. Cystic change mainly occurs in the upper region of pituitary adenoma.

**Keywords** Tumor blood supply, Dynamic contrast-enhanced MRI, Pituitary adenoma, Infarction, Cystic change