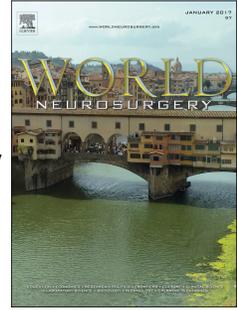


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Uneven Distribution of Regional Blood Supply Prompts the Cystic Change of Pituitary Adenoma

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3
4 **Background** Previous studies have suggested that the cystic change of pituitary adenoma might
5 be related to the blood supply and metabolism of the tumor; however, the exact pathological
6 mechanism underlying the cystic change remains unknown. **Objectives** We aimed to assess the
7 features of regional blood supply of pituitary adenoma and examine its relationship with the
8 cystic change of pituitary adenoma. **Methods** Patients (N=79) with pituitary adenoma admitted
9 to our hospital were divided into the parenchyma group (n=40) or the cystic change group (n=39).
10 Dynamic contrast-enhanced magnetic resonance imaging (MRI) of the pituitary adenoma was
11 conducted for the parenchyma group and the steepest slopes (SS_{max} ; reflecting regional blood
12 supply) at different areas were calculated. The location of cystic change of the pituitary adenoma
13 was recorded and analyzed for the cystic change group. **Results** The parenchyma group showed
14 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
15 right SS_{max} of 2.66 ± 1.29 . The difference between the upper and lower SS_{max} was statistically
16 significant ($p < 0.001$), with no difference between the left and right regions ($p = 0.668$). The
17 location of cystic change of the pituitary adenoma was mainly in the upper region, accounting for
18 48.7% of cases. **Conclusions** Regional blood supply is unevenly distributed in the parenchymal
19 pituitary adenoma, with reduced blood supply in the upper than the lower region. Cystic change
20 mainly occurs in the upper region of pituitary adenoma.

21
22 **Keywords** Tumor blood supply, Dynamic contrast-enhanced MRI, Pituitary adenoma, Infarction,
23 Cystic change

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