The characters of Blood blister-like aneurysms in plateau area: a study based on Chinese Tibetan patients

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Blood blister-like aneurysms (BLAs)

- Account for only 0.3%-6.6% of all intracranial aneurysms
- Predilection to a non-branching dorsal part of the internal carotid artery (ICA)
- Extremely fragile thin walls lead to severe perioperative rebleeding events (33% - 80%)
- Studies of BLAs in the plateau area remain elusive

Typical images of BLAs
Tibetan population

- Himalayan Plateau area, with an average elevation exceeding 4,500 metres (14,800 ft)
- Low barometric pressure and oxygen-thin air plateau atmosphere


Tibetan people
Methods

• Comparing the characters of BLAs between Tibetan patients and Han patients in our center
• 19 Tibetan patients and 34 Han patients were enrolled in this study from January 2012 to January 2016
Results

- The characters of BLAs in Tibetan patients comparing with Han patients

- Significantly higher constitutional ratio of all cerebral aneurysms (19.6% (19/97) vs 3.2% (34/1071), p<0.001).
- Significantly higher Incident of atypical located BLAs (26.3% vs 2.9%, p=0.034),
- Significantly higher risk of cerebral infarction (63.2% vs 11.8%, p<0.001).
- Significantly greater number of patients with unfavorable outcomes at 6 months after discharge (57.9% vs 23.5%, p=0.028).
Hypothesis

• High incidence of cerebral infarction could be related to their high serum hemoglobin level.
• Several previous studies have provided evidence for an increase of blood viscosity due to high hemoglobin levels.
• High blood viscosity could lead to the tiny thrombosis formation

A. Herrmann and P. Muller: Correlation of the internal microviscosity of human erythrocytes to the cell volume and the viscosity of hemoglobin solutions. Biochim Biophys Acta 885(1):80-87, 1986
“High Plateau Red” lead to the cerebral infarction
Conclusions

Tibetan BLA patients presented with high risk of occurrence with atypical locations and high incidence of cerebral infarctions with poor prognoses.
Thank You