

Abstract

Intracranial aneurysms are dilations of the cerebral arteries that may rupture, leading to severe hemorrhages. Currently, the decision to treat an aneurysm is based on a set of factors, including its size and location. However, predicting the risk of rupture remains a challenge. In this context, the present study aims to investigate the relationship between morphological metrics of saccular aneurysms, particularly curvature-based metrics of the aneurysm wall, and the risk of rupture. A dataset of 100 aneurysms available in the Aneurisk repository will be used. Shape and curvature metrics will be calculated and a statistical analysis will be performed to identify which metrics best discriminate ruptured cases. The results of this study may assist in selecting more reliable rupture prediction metrics for intracranial aneurysms, enabling their integration into computational tools for risk assessment, supporting neurosurgeons in decision-making regarding the treatment of specific aneurysm cases.

Key words: Intracranial aneurysm. Rupture. Morphological metrics. Curvature. Statistical analysis.