AbstractID: 8008 Title: Retrospective study of Magnetic Resonance Imaging Based Arteriovenous Malformation Delineation without Conventional Angiography

This study aimed to assess the feasibility of arteriovenous malformation (AVM) delineation without conventional angiography and to correlate factors that may affect AVM delineation. A series of 70 consecutive patients with AVMs treated with gamma knife radiosurgery from Aug 1994 to Dec 2000 were studied. The mean AVM volume was 2.8 cm^3 with a median of 1.7 cm^3 (range: 0.04 to 22 cm^3). All AVMs were delineated on the original MR images by a vascular neurosurgeon without assistant of convention angiography and then compared to the actual AVM delineation for treatment. Univariate correlation analysis was used to determine the relationship between AVM coverage, size, diffuse, embolization, and hemorrhage parameters. The median percentage of AVM overlap between treatment and study volumes was 58% for diffused and 87% for non-diffused AVMs (p=0.0005). At AVM volume > 2 cm^3, the median percentage of the overlap was 63% for embolized AVMs and 83% for non-embolized AVMs (p=0.0315). On the other hand, the median percentage of delineation over-cover was 57% for AVM > 2 cm^3 vs. 25% for AVM < 2 cm^3 (p=0.0012). In general, the percentage of the overlap was inversely related to that of the over-cover while both AVM volume at study and the overlap volume were proportional to AVM volume at treatment. In conclusion, MRI based AVM delineation without conventional angiography may be feasible only for selected patients, such as those with non-diffused AVMs.