VOXEL BASED CALCULATION OF ANEURYSM VOLUME AND MORPHOLOGICAL CHARACTERISTICS

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Introduction Various embolization techniques are available for intracranial aneurysms. The volume of an aneurysm is of interest for the device selection and delivery of a variety of embolization techniques, such as: coils, liquid embolics, flow disruptors, and flow diverters. Accurate aneurysm sizing and volumetric information can help interventionalists assess flow and stability pre-treatment, and assess potential remnant or recanalization risks post-treatment.

Materials and Methods This research project applies voxel-based volume calculations, from patient MRI medical imaging data, to determine accurate 3-D aneurysm volume calculations. Additionally, the application can display clinically relevant parameters, such as aneurysm neck diameter, dome height and midline-dome width (for dome: neck (D:N) ratio calculations. To develop the calculations, formalin-fixed canine aneurysms model samples are measured with a Bruker 7T® MRI and reconstructed in 3-D.

Results Out of a total of 138 patients that met the inclusion criteria, 16 (12%) were taking both omeprazole and clopidogrel. The average age for the omeprazole patients was significantly higher than those not taking omeprazole (69±10 vs 57 ±14) (p=0.001). A significantly higher P2Y12 reactivity (decreased platelet inhibition) was observed in patients taking omeprazole (PRU=250) versus those not taking omeprazole (PRU=110) (p<0.001). Furthermore, a higher number of patients were found to have a P2Y12 level >180 PRU in the omeprazole (N=14, 88%) vs no omeprazole (N=24, 20%) patients (p<0.001, OR 29; 95% CI 6-134). There were no significant differences in the rates of ischemic strokes, FDD stenosis, or hemorrhagic complications between the two groups.

Conclusion Omeprazole significantly increases the P2Y12 reactivity levels in intracranial aneurysm patients on clopidogrel treated with a FDD. However, omeprazole did not increase the risk of ischemic events and/or device stenosis. Nonetheless, given the significant association between omeprazole and decreased clopidogrel efficacy, omeprazole should not be administered to neuroendovascular patients treated with a FDD taking clopidogrel.


Abstract E-217 Figure 1  Left: 2D MRI longitudinal section of a surgically anastomosed canine sidewall aneurysm (1 month after creation), Middle: Decomposition of the 3D MRI by grouping values of equal brightness, Right: 3D reconstruction of the aneurysm sac.