Imaging

SEMI-AUTOMATED DETECTION AND QUANTIFICATION OF AORTIC ATHEROMAS FROM 3D TRANSESOPHAGEAL ECHOCARDIOGRAPHY

Poster Contributions
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Background: Aortic atherosclerosis is an important risk factor for embolic cerebrovascular events. Quantification of descending aorta atheromas with 2D transesophageal echocardiography (TEE) is time-consuming and likely underestimates the 3D plaque burden. We aimed to assess the feasibility and accuracy of a novel semi-quantitative program to identify and quantify descending aortic atheromas obtained from 3D TEE.

Methods: Three-dimensional TEE (Philips, USA) of the descending aorta, using single-beat, wide-angle acquisition mode, was performed on 58 patients undergoing a clinically indicated study. Semi-automated, custom software was used to analyze the 3D TEE datasets (FIGURE). Plaque thickness was color-coded as mild (1-2 mm), moderate (2-4 mm) or severe (>4 mm) grade. Results were compared to an expert reader using multi-planar reconstructions from the 3D datasets. Agreement and Kappa values were calculated.

Results: Analysis was possible in all patients. Overall agreement to the absolute presence or absence of plaque per patient was 95%. In total 162 plaques were identified by the expert reader. Agreement with respect to the number of plaques per patient and plaque severity was high (TABLE). No plaque differed by more than one grade in severity.

Conclusions: This is the first study to show that semi-automated analysis of 3D TEE datasets of the descending aorta for atheromatous plaques is feasible and accurate. This technique will improve assessment of descending aorta atheromatous disease.

	Agreement	Kappa
Plaque presence	94.8%	-
Plaque number	94.5%	0.89
Plaque severity	92.4%	0.71