Inter and intraobserver variability in the echocardiographic measurement of vegetations in infective endocarditis

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Introduction and objectives: The indication for surgery to prevent embolism in infective endocarditis includes four clinical scenarios and three different echocardiographic measurements of the maximal vegetation diameter. These cut-off points are completely arbitrary and not evidence-based. Our hypothesis is that the vegetation diameter is not an appropriate surgical criterium. The goal of the study is to analyze the inter and intra-observer variability in this measurement and to compare the surgical indications agreement based on these parameters.

Methods: Two trained echocardiographers have measured the maximal vegetation diameter by transesophageal echocardiogram in 67 consecutive patients with definite infective endocarditis in an off-line workstation. The inter- and intra-observer variability was calculated by the interclass correlation coefficient and with the Bland-Altman analysis. The relationship between the strength of agreement for the cut-off points of 10 and 15 mm was also calculated.

Results: Intra and inter-observer interclass correlation coefficient in the measurement of the maximal longitudinal diameter of the vegetations were 0.872 (0.805–0.917) and 0.757 (0.642–0.839) respectively. The strength of agreement of the intra and inter-observer analysis for the cut-off point of 10 mm were 0.674 (0.485–0.862) and 0.533 (0.327–0.759). For the cut-off point of 15 mm they were 0.696 (0.530–0.862) and 0.475 (0.270–0.679).

Conclusions: The variability in the measurements of the maximal longitudinal diameter by transesophageal echocardiogram between two experimented echocardiographers is good. Nonetheless, surgical indications based on the cut-off points recommended in the European guidelines would have changed in an unacceptable high proportion of patients. Therefore, we suggest that these indications should be revised in the light of our results.