

Comparing Transcranial Doppler and TEE in Diagnosing Residual Shunt After PFO Closure

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Background/Aims: The degree of residual shunt (RS) after patent foramen ovale (PFO) closure is a potent predictor for the recurrence of stroke. Evaluating the extent of residual shunt grade is thus essential. Currently, there is no gold standard on guidelines of how to evaluate RS. Although transesophageal echocardiography (TEE) is known to be most accurate in evaluating RS, it is not routinely performed due to its invasiveness and expensive costs. Conversely, the transcranial doppler (TCD) test is a less invasive convenient test for detecting RS. Accordingly, we sought to comparatively analyze the accuracy of TCD compared to TEE on assessing RS after PFO closure.

Methods: We analyzed patients who underwent PFO closure for cryptogenic stroke (CS), who received a TCD and TEE test within 1 year of procedure. All patients received TEE and TCD on the same day within one year (288±38 days) after PFO closure.

Results: We analyzed a total of 55 patients (age: 55.2 ± 11.1, male sex: 74.2%, PFO grade ≥ moderate: 83.6%, follow up duration: 28.9 ± 14.9 months). RS was confirmed in 24 (44%) and 23 (42%) of patients in the TCD and TEE test, respectively. The sensitivity and specificity of TCD was 0.77 and 0.96 for predicting the presence of RS, respectively. The predictive performance of TCD was consistent over age ≤65 (sensitivity 0.73, specificity 0.96) and RS≤mild (sensitivity 0.83, specificity 0.96) subgroups. Positive TCD (adjusted odds ratio 101.2; 95%CI, 9.5-1074.8; p<0.0001) was a highly significant independent predictor for the presence of RS.

Conclusions: We demonstrate for the first time that TCD may be a reliable non-invasive test for substituting TEE in evaluating RS. Physicians may be able to rule out the presence of RS and minimize the prescription of TEE when TCD test is negative due to the high specificity.

