INTRAPULMONARY SHUNT IS A POTENTIALLY UNRECOGNIZED CAUSE OF ISCHEMIC STROKE AND TRANSIENT ISCHEMIC ATTACK

Poster Contributions
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Background: Ischemic stroke is a major cause of mortality and disability. Transient ischemic attack (TIA) is a harbinger of stroke. After an extensive evaluation, the etiology of stroke in as many as 40 percent of patients remains undetermined. It was hypothesized that intrapulmonary shunt is a potential independent facilitator of cerebrovascular accident (CVA) or TIA.

Methods: Patients scheduled for transesophageal echocardiography (TEE) which met inclusion and no exclusion criteria were prospectively enrolled. Inclusion criteria were age ≥ 18 years, sinus rhythm and clinically indicated TEE. Exclusion criteria included hemorrhagic CVA, non-embolic neurologic event, septal defect, oxygen saturation ≤ 90% and atrial fibrillation. Comprehensive multiplane TEE using second harmonic frequency imaging was performed and saline contrast done to assess for intrapulmonary shunt and patent foramen ovale.

Results: Five hundred twenty-three subjects with either non-hemorrhagic CVA (n= 424) or TIA (n=99) made up the “Stroke” group. Three hundred fifty-one patients without prior CVA or TIA had TEE for other indications and made up the “Control” group. The Stroke group was older than the Control group (61 ± 15 versus 54 ± 15 years, p<0.0001). Intrapulmonary shunt occurred more frequently in the Stroke (85/523) as compared to the Control (34/351) group (16% versus 9.7%, p<0.01). Among clinical and echocardiographic variables, advancing age, decreasing ejection fraction, hypertension, hyperlipidemia, poor right ventricular function and presence of intrapulmonary shunt were the multivariate predictors of CVA and/or TIA (p<0.0001). In subjects with intrapulmonary shunt, the shunt severity and number of pulmonic veins involved did not differ among the Stroke and Control groups.

Conclusions: These results suggest that intrapulmonary shunt is a potentially unrecognized facilitator of CVA and TIA. Future studies assessing the prognostic significance of intrapulmonary shunt on cerebral vascular event recurrence rate in patients after initial CVA or TIA would be of great interest.