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## CONGENITAL AND OTHER STRUCTURAL HEART DISEASE

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### TCT-738

#### The Degree of Right-to-Left Shunt is Associated with Visual Aura Due to Migraine

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**BACKGROUND** Cardiac or pulmonary right-to-left shunt (RLS) is associated with aura with or without migraine headache. A quantitative relation between visual aura and degree of RLS is not completely established. The aim of this study was to assess the relationship between the degree of RLS and visual aura with migraine.

**METHODS** Patients referred to the UCLA Interventional Cardiology program and received a transcranial Doppler (TCD) examination for assessment of patent foramen ovale (PFO) related conditions prior to any intervention were enrolled in this study. The study population was divided into two groups according to the frequency of visual aura with their migraine headache: migraine headache with frequent ( $\geq 50\%$ ) visual aura (frequent aura group); and migraine headache with occasional ( $< 50\%$ ) or no visual aura (occasional or no aura group). Patients who had visual aura without migraine headache were classified into the frequent aura group. The degree of RLS was quantified by TCD using the Spencer grade scale at rest and post-Valsalva. Patients who had migraine events more than one time per month and who also received PFO closure were assessed for improvement of migraine headache or visual aura symptoms at 3 months after PFO closure.

**RESULTS** Of 141 subjects with migraine, 81 (57%) were classified into the frequent aura group and 60 (43%) were classified into the occasional or no aura group. TCD grade in the frequent aura group was significantly greater than those in the occasional or no aura group both at rest and post-Valsalva (Table). Of 54 patients who received PFO closure, those in the frequent aura group had a significantly higher frequency of migraine improvement than those in the occasional or no aura group ( $p = 0.02$ ).

	Frequent aura group (n = 81)	Occasional or no aura group (n = 60)	p value
Age, yrs	48 ± 15	50 ± 13	0.55
TCD grade at rest, n = 140*	3.2 ± 1.5	2.1 ± 1.6	< 0.01
TCD grade post-Valsalva, n = 126*	4.3 ± 1.0	3.8 ± 1.3	0.01
Increase in TCD grade, n = 125*	1.3 ± 1.2	2.0 ± 1.3	< 0.01
PFO closed, n**	32	22	-
Migraine improved, n (%)	23 (72%)	9 (41%)	0.02
Migraine resolved, n (%)	10 (31%)	5 (23%)	0.55

PFO: patent foramen ovale; TCD: transcranial Doppler.

\*There were 15 patients who had TCD only at rest and 1 patient who had TCD only post-Valsalva. \*\*The number of patients who had migraine more than 1 time per month and also received PFO closure.

**CONCLUSIONS** Migraineurs who have frequent visual aura with or without headache have a greater degree of RLS than migraineurs with infrequent visual aura. Migraine with frequent visual aura ( $> 50\%$ ) may have a greater potential to improve after PFO closure compared to migraine with infrequent visual aura.

**CATEGORIES STRUCTURAL:** Congenital and Other Structural Heart Disease

**KEYWORDS** Patent foramen ovale, Right-to-left shunt, TCD