Title

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Mirgaine Visual Aura with or without Headache: Association with Right to Left Shunt and Assessment Following Transcutaneous Closure

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Background: R to L shunting, usually caused by a patent foramen ovale (PFO), is associated with migraine headache (MH) with aura. There are patients who present with visual aura but deny headaches. It is unclear whether visual aura without headache is a form of migraine ("visual migraine") or is due to some other transient neurologic dysfunction. This study assesses the prevalence of right to left (R to L) shunt in patients presenting with visual aura and evaluates if aura resolves following closure of PFO.
Methods: Of 590 patients referred to UCLA for potential PFO related conditions, 225 patients had visual aura with or without MH. Patients were assessed for a R to L shunt with Transcranial Doppler. They were evaluated for the presence of MH and/or visual aura and then divided into three groups: 1) Group A (Aura + MH)- Aura during MH or within 60 minutes of MH; 2) Group B (Aura unrelated to MH)- Aura not during MH or within 60 minutes of MH; 3) Group C (Aura only)- visual aura without MH. The frequency of R to L shunt was compared to a control group of 200 unselected patients referred for diagnostic catheterization. 80 patients (approx. 1/3 per group) underwent PFO closure. Residual MH and visual aura were assessed 12 months after the procedure.
Results: The prevalence of R to L shunt in groups A, B, C and the control group were 96%, 72%, 67% and 18% respectively. The prevalence was similar in groups B vs. C ($p=0.66$), but higher in group A due to selection bias. When compared to the control group, the frequency of R to L shunt in all three groups was much higher ($p<0.0001$). 12 months after PFO closure, symptoms of visual aura were completely resolved in 52%, 75% and 80% of patients in groups A, B and C respectively (p=ns).
Conclusion: There is a strong correlation between PFO closure and improvement of aura (with and without MH) suggesting a causative association between the presence of PFO and the aura phenomenon. Since isolated visual aura has a similar prevalence of R to L shunt and responds the same to PFO closure, it is likely similar in pathophysiology to MH with aura.