

Patent foramen ovale as a cause of sudden death

Foramen oval permeable como causa de muerte súbita

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There are many causes of sudden cardiac death, including ischemic heart disease (acute coronary syndrome, secondary ventricular fibrillation), primary cardiac arrhythmias (long and short QT syndromes, Brugada syndrome), hypertrophic and dilated cardiomyopathies, heart failure and heart valve disease, among others; but patent foramen ovale (PFO) is a rare cause. This atrial septal defect (ASD) can be associated with embolic events, stroke (cryptogenic stroke), platypnea-orthodeoxia syndrome and, to a lesser extent, with atrial arrhythmias and infective endocarditis. Archival echocardiogram images are shown (Department of Cardiology, *Hospital General de Fuerteventura*, GE Vivid S70 echocardiograph) of a 71-year-old woman with atrial septal aneurysm (**Panels A y B** [arrow]). Right-to-left

interatrial shunt could not be detected by color Doppler (**Video 1, supplementary material**). So it was decided to use saline contrast (agitated saline solution), thus allowing to verify the passage of microbubbles from right atrium to left chambers (**Panels C y D**) which can be clearly seen in **video 2, supplementary material**. A patent foramen ovale is present in nearly 25% of general population. Those affected may also suffer from atrial septal aneurysm (septal displacement > 10 mm, with a base diameter of ≥ 15 mm). Diagnosis is generally a finding since most patients are asymptomatic. The possible mechanisms involved with sudden death in PFO patients are those that generate coronary artery embolism due to: a) paradoxical embolism, b) thrombus formation within the PFO canal or aneurysm wall, c) or in the atria as a consequence of arrhythmias associated with shunting. Other authors raise the possibility of hypercoagulability states related to PFO or vasoactive substances escaping pulmonary degradation. These images are very important since they show one of the rarest causes of sudden cardiac death while demonstrating the importance of echocardiography in its detection.

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