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STUDIUM PRZYPADKU / *CLINICAL VIGNETTE*

An adult patient with patent ductus arteriosus: multimodality diagnostic approach

Przetrwały przewód tętniczy u osoby dorosłej: multimodalne podejście diagnostyczne

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A 20 year-old man was admitted to the hospital with exertional dyspnoea (NYHA class II). Auscultation of his chest revealed a harsh, grade 3/6 continuous murmur which was loudest at the second left intercostal space; there were no signs suggestive of volume overload, ventricular failure, or raised pulmonary pressures. Chest X-ray demonstrated mild cardiomegaly with normal pulmonary vasculature, and electrocardiogram revealed normal sinus rhythm with no features of ventricular strain or atrial enlargement.

Transthoracic echocardiography (TTE) (IE33 Matrix probe, Philips Medical Systems, Bothell, WA, USA) revealed a mean left ventricular ejection fraction of 60%. Left heart chambers and pulmonary artery were dilated. Initial TTE showed the presence of a large (1.65 cm^2) window-like patent ductus arteriosus (PDA) in the suprasternal notch view. Colour floor M-mode echocardiography demonstrated a continuous left to right shunting from the aorta into the left pulmonary artery (Figs. 1A, B). Two-dimensional (2D) transoesophageal echocardiography (TEE) revealed a large window-like PDA (Figs. 1C, D). A subsequent real-time 3D TEE (3D RT TEE) revealed the presence of a large PDA (1.65 cm^2) (Figs. 1E, 2A–D). Contrast enhanced thorax computed tomography (CT) demonstrated a large PDA with no additional cardiac abnormality (Figs. 3A, B). Ambulatory Holter recordings were normal. The patient was referred to cardiac surgery.

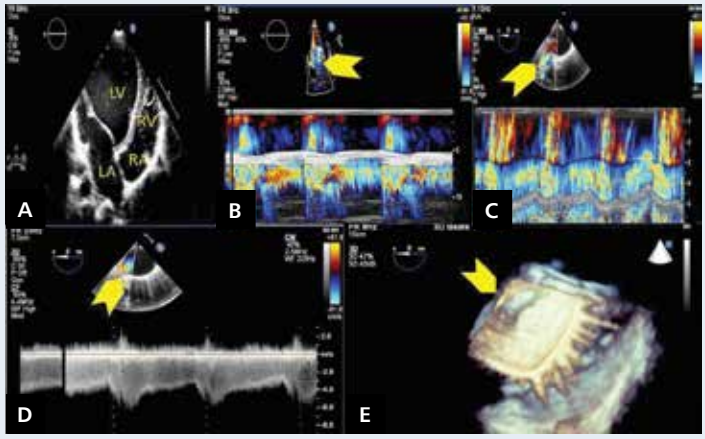

Figure 1. **A**. Apical four-chamber window of TTE demonstrating dilated left heart chambers; **B**. Colour flow M-mode TTE image: continuous left to right shunting from the aorta into the left pulmonary artery; **C**. Colour flow M-mode TEE image from 0° upper oesophageal level: a large PDA; **D**. Continuous Doppler TEE image from 0° upper oesophageal level: continuous left to right shunting from the aorta into the left pulmonary artery; **E**. 3D RT TEE: the entry of the PDA from the aortic perspective; LA — left atrium; Lv — left ventricle; RA — right atrium; RV — right ventricle

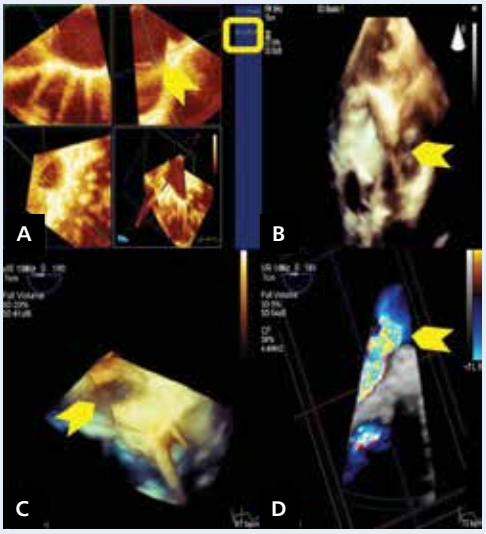

Figure 2. **A**. Post-processing analysis of the reconstructed 3D images. Image with red frame: a large, window-like PDA (1.65 cm^2); **B**. 3D RT TTE from the suprasternal notch: a large PDA; **C**. Reconstructed 3D images from 3D RT TEE: a large PDA; **D**. 3D RT TEE colour flow: continuous flow into PDA

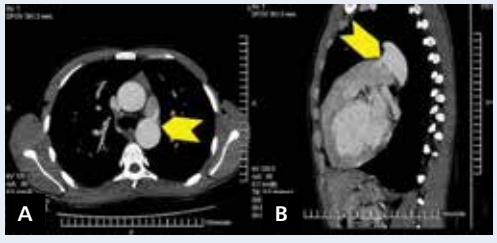

Figure 3. **A**. CT revealed the enlarged calibre of pulmonary artery and a large PDA between aorta and the left pulmonary artery; **B**. CT from oblique cross-section: markedly enlarged pulmonary artery and a large PDA

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Conflict of interest: *none declared*