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Patent ductus arteriosus: Generally an anomaly of childhood, but is it always? Clinical implications in an adult patient

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Patent ductus arteriosus: Generally an anomaly of childhood, but is it always? Clinical implications in an adult patient

Short communication: Clinical implications of patent ductus arteriosus in an adult patient

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Patent ductus arteriosus (PDA) is a remnant from fetal life that connects the aorta to the pulmonary artery. PDA closes physiologically after birth, however, when it does not happen, pharmacological treatment or interventional closure is implemented. When the shunt volume is small it does not cause symptoms at an early age, so the patent vessel may be diagnosed not until the adult age [1].

We present the case of a 39-year-old male patient, previously without comorbidities, with history of drug use, who was referred to the hospital because of heart failure symptoms such as significant deterioration of exercise tolerance, resting dyspnea and lower limb oedema that occurred de novo. The patient had been treated for an upper respiratory tract infection with antibiotic therapy (doxycycline) without clinical improvement.

Laboratory tests revealed elevated concentrations of: C-reactive protein (CRP, 76.2 mg/l), leukocytes, N-terminal prohormone of brain natriuretic peptide (NT-proBNP 16656.0 pg/ml), D-dimer (5.43 mg/l) and a slightly elevated troponin T concentration. Chest X-ray showed an enlarged cardiac silhouette, right pleural fluid and inflammatory lesions of the right lung. Electrocardiogram (ECG) recorded sinus tachycardia with heart rate 120/min, negative T-wave in leads V5–V6 and QTc of 481 ms. Due to the high level of D-dimer, Computed Tomography

(CT) pulmonary angiogram was performed excluding pulmonary embolism, but raising the suspicion of PDA. Prior to further diagnostics, the patient experienced sudden cardiac arrest in the monitor-recorded torsade de pointes mechanism (TdP), which was terminated by an effective defibrillation. QTc prolongation to 600 ms was observed in subsequent ECG (Figure 1A–C). Transthoracic echocardiography (TTE) revealed: global left ventricular hypokinesis with reduced left ventricular ejection fraction (LVEF) of 29%, left ventricular end-diastolic diameter enlarged to 77 mm, a severe mitral regurgitation, a dilated pulmonary trunk and a blood flow from the aorta to the pulmonary trunk visible in color Doppler. Systolic pulmonary arterial pressure (SPAP) was 31 mm Hg, without features of pulmonary hypertension (PH) in TTE. Transesophageal echocardiography confirmed the PDA with permanent left-to-right shunt (Qp/Qs ratio 1.7). The patient did not have an audible Gibson murmur typical of PDA [2]. Coronary CT Angiography did not show any narrowing in coronary arteries but highlighted the exact anatomy of the PDA (Supplementary material, *Figure S1A–D*).

After stabilization of the clinical status the patient was qualified for the percutaneous closure of the PDA. The procedure was performed with a good result with an implanted device Amplatzer Duct Occluder 10 mm (Supplementary material, *Figure S2A–B*).

During the follow up performed 2 months after the surgery, the patient feels well, QTc length is normal, and TTE shows: a good long-term outcome of the procedure, normokinesis of the inferolateral wall with LVEF of 30%, mild mitral regurgitation.

We cannot exclude the involvement of drug use in the aetiology of heart failure in this case, but PDA seems to be the key cause of this condition. On the basis of this case, it is important to assess the heart echocardiographically for various congenital defects even in old age. Due to the increased frequency of premature infants in recent years, detection of congenital heart defects has raised, including PDA in adult patients [3]. PDA should be suspected in adults with an audible characteristic machine murmur. Also, when no other cause of heart failure, right ventricle overload or PH is found, congenital defects such as PDA should be actively searched for. Transcatheter closure of PDA remains an internationally recognized method in both children and adults with symptoms of heart failure. The procedure is safe when up-to-date devices are used [4].

Supplementary material

Supplementary material is available at https://journals.viamedica.pl/kardiologia_polska.

Article information

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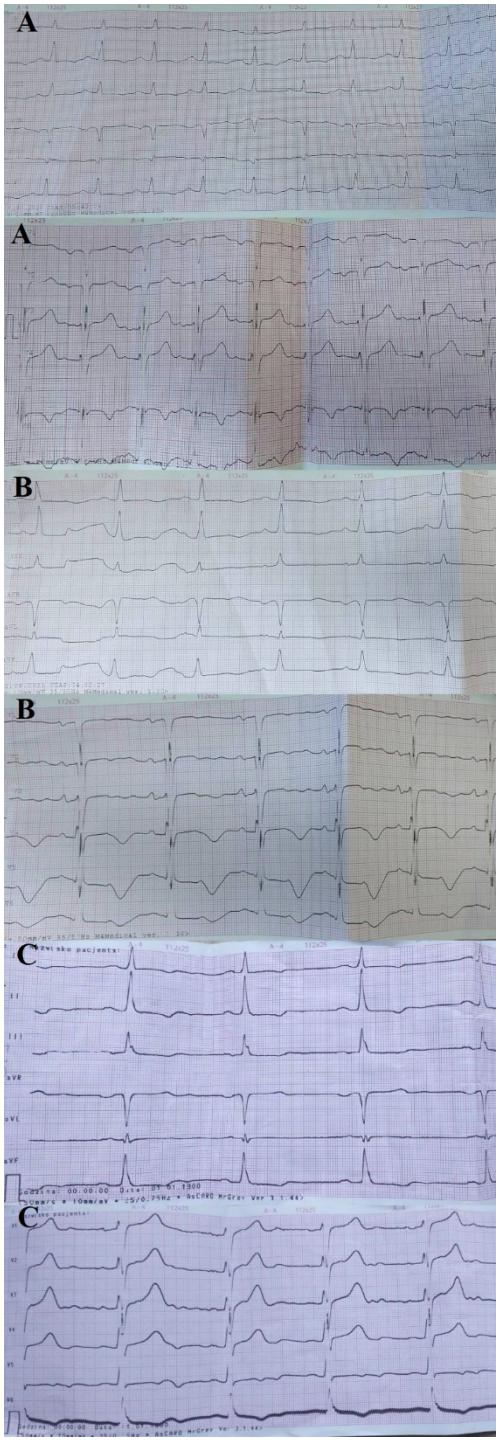

Figure 1. Electrocardiography. **A.** On admission. **B.** After effective defibrillation. **C.** Two months after the patent ductus arteriosus closure procedure