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Case report

When is it too late for a correction of an atrial septal defect secundum type in an adult patient?

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ARTICLE INFO

Article history:
Received 10 May 2015
Received in revised form
9 June 2015
Accepted 19 June 2015
Available online 15 July 2015

Keywords:
Atrial septal defect secundum type
Adults
Correction

ABSTRACT

Atrial septal defects (ASD) are among the most commonly recognized congenital cardiac anomalies presenting in adulthood, characterized by a defect in the interatrial septum allowing blood from the left atrium to pass to the right atrium. In this article we present a clinical case of a 39-year-old female patient with uncorrected ASD secundum type, diagnosed in adulthood after cardiac morphologic and functional changes have been developed. At the time of presentation, clinical symptoms required exclusion of life-threatening complications such as infective endocarditis, located at the interatrial defect. After careful evaluation, surgical approach was chosen for our patient and the defect was closed using pericardial patch with rapid patient's recovery and significant clinical improvement.

Introduction

Congenital heart defects (CHD) are the most common types of birth defects, and most babies born with these conditions are nowadays living longer and healthier lives. Data from the European Surveillance of Congenital Anomalies central database for 29 population-based congenital anomaly registries in 16 European countries show that the average total prevalence of CHD is 8.0 per 1000 births [1–3]. The prevalence of some CHD, especially mild types, is increasing, while this one among the other types has remained stable [1–6].

Congenital heart defects cause high morbidity and mortality among infants and affect the quality of life during childhood and adulthood, depending on the progression of the disease [2–4]. While some newborns with a cardiac disorder are symptomatic and identified soon after birth, many others are not diagnosed until the disease progresses into a severe stage. Data from the Northern Region Pediatric Cardiology database suggest that around 1 in 4 cases of congenital heart disease in the UK are diagnosed later in childhood or adulthood [1–6].

Atrial septal defects (ASD) are one of the more commonly recognized congenital cardiac anomalies presenting in adulthood, characterized by a defect in the interatrial septum, allowing pulmonary venous return from the left atrium to pass directly to the right atrium [1,3,7]. Depending on the size of the defect, size of the shunt, and associated anomalies, this can

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http://dx.doi.org/10.1016/j.crvasa.2015.06.004

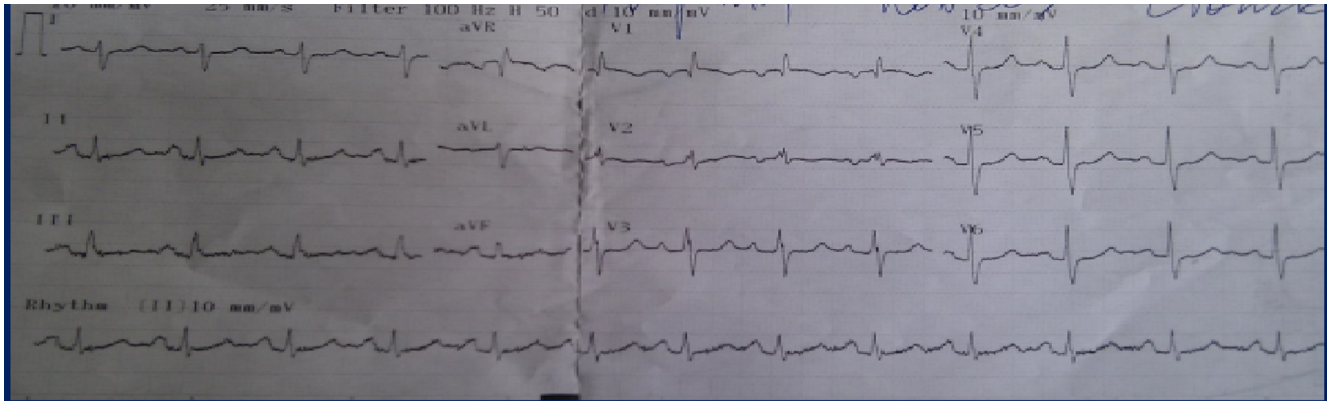

Fig. 1 – Electrocardiographic record of the patient on the day of hospitalization.

result in a spectrum of diseases from no significant cardiac sequelae to right-sided volume overload, pulmonary arterial hypertension, and even atrial arrhythmias [8–10].

Secundum type ASD represents 80% of ASDs and is usually located in the region of the fossa ovalis and its surrounding [1–4]. Patients frequently remain asymptomatic until adulthood; however, the majority develop symptoms beyond the fourth decade including reduced functional capacity, exertional shortness of breath, and palpitations (supraventricular tachyarrhythmias), and less frequently pulmonary infections and right heart failure. Life expectancy is reduced overall, but survival is much better than previously assumed [7–11].

In this article we present a case of a patient with uncorrected ASD secundum type, diagnosed in adulthood after cardiac morphologic and functional changes have been developed.

Case presentation

A 39-year-old female patient from the city of Sofia, Bulgaria was admitted to our hospital with symptoms of viral respiratory infection – fever up to 38.5 °C and productive cough (October 2013). The patient had never had complaints consistent with a cardiovascular disease so far. From the medical history we found Hashimoto thyreoiditis and diabetes mellitus type 2 to be the concomitant diseases.

Physical examination on the day of hospital admission: satisfactory general condition; Pulmonary system: acute vesicular breathing, no crackles and crepitations; Cardiovascular system: rhythmic heart rate ~90 beats per minute (bpm), clear heart sounds, largely split and accentuated second hear sound, proto-mesosystolic 2/6 murmur at the second left intercostal space, next to the sternum, arterial blood pressure 125/80 mmHg; Abdomen: soft abdominal wall, not painful on palpation, respiratory mobile, liver and spleen – not enlarged; Extremities: no edema, preserved peripheral arterial pulsations.

From the instrumental investigations (October 2013)

Electrocardiography: sinus rhythm, heart rate 83 bmp, right axis deviation, incomplete right bundle branch block (RBB), criteria presented for possible right ventricular hypertrophy and right atrial enlargement (Fig. 1).

The X-ray showed mild to moderate pulmonary congestion, no infiltrations, enlarged cardiac silhouette, double-figured descendent aorta (suspicions for aortic coarctation), and marked conus pulmonalis.

From the laboratory: fasting glucose 9.0 mmol/L; all other routine laboratory findings were within normal ranges.

Transthoracic echocardiography:

- Marked dilation of the right chambers; the heart apex is formed by the right ventricle – right ventricle diameter 35 mm, right atrium – 62/46 mm, left atrium – 65/43 mm; Large aneurysm of the atrial septum with deviation from the main axis up to 19 mm; Mobile formation in the right atrium, contacting the anterior cusp of the tricuspid valve.
- Atrial septal defect secundum type 32/29 mm, significant left-to-right shunt, and reversed septal motion.
- Left ventricullar (LV) end-diastolic diameter 37 mm, LV end-systolic diameter 23 mm, LV end-diastolic volume 48 ml, LV end-systolic volume 16 ml, and LV ejection fraction 56% (by Simpson's rule).
- Septum 10 mm and posterior LV wall thickness 10 mm.
- Moderate tricuspid valve insufficiency and tricuspid annular plane systolic excursion 23 mm.
- Systolic pulmonary pressure 55 mmHg.
- Pericardial effusion ~ 250 ml.

Transoesophageal echocardiography: Marked Eustachian valve, reaching the coronary venous sinus and forming Chiari's network in the right atrium; Large atrial septal defect type ostium secundum and large aneurysm of the right atrium with deviation (32/33/20 mm) from the main axis up to 17 mm; Pulmonary hypertension (Fig. 2).

Invasive cardiac evaluation (February 2014) showed:

- Clear coronary arteries
- No segmental LV wall motion abnormalities
- LV ejection fraction 62%
- Large atrial septal defect visualized with left-to-right shunt from the left to the right atrium
- Pressures: moderate pulmonary hypertension and peak pulmonary artery pressure 43 mmHg