CLINICAL VIGNETTE

Multiple atrial septal defects with concomitant partial anomalous pulmonary venous return on cardiac computed tomography

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We present a case of multiple atrial septal defect (ASD) with concomitant anomalous pulmonary venous return on cardiac computed tomography.

A 42-year old woman undergoing a scheduled diagnostic workup at the laboratory of computed tomography due to the deterioration of exercise tolerance observed for many years and dyspnea during exercise, New York Heart Association class II/III. Her medical history also showed mixed hyperlipidemia and nicotinism.

Cardiac computed tomography was performed using a protocol for assessing cardiac chamber morphology with maximum saturation of the left atrium with a contrast agent. With regard to the interatrial septum, a double defect has been revealed with pronounced signs of interatrial shunt (FIGURE 1A). The first observed defect was ostium secundum ASD, sized 0.8 × 0.7 cm. The second observed defect was sinus venosus ASD located at the opening of the superior vena cava into the right atrium, and was sized 1.0 × 0.8 cm (FIGURE 1B). Moreover, cardiac computed tomography revealed anomalous pulmonary venous return. The image showed 4 right pulmonary veins: 2 right upper pulmonary veins, right intermediate pulmonary vein and right lower pulmonary vein; and 2 left pulmonary veins, left upper pulmonary vein and left lower pulmonary vein. The 2 right upper pulmonary veins opened to the superior vena cava (FIGURE 1C and 1D). The right intermediate pulmonary vein opened at the border of the superior vena cava and right atrium (FIGURE 1E). The right lower pulmonary vein, left upper pulmonary vein, and left lower pulmonary vein opened usually into the left atrium (FIGURE 1F). The examination also revealed dilation of the right atrium, right ventricle, and pulmonary veins. Left ventricular ejection fraction estimated by tomography was 72%, and right ventricular ejection fraction was 46%.

Atrial septal defects are the most common congenital heart defects in adults, representing about 40% of congenital heart defects diagnosed in patients over 40 years old.[1] The most common is single ASD, which in the majority of cases (70%) is located in the mid part of the atrial septum (ostium secundum ASD). Sinus venosus ASD is rare and occurs in 5% to 10% of all ASD cases. Multiple ASDs are very rare.[2] Arterial septal defect is typically asymptomatic at young age and becomes symptomatic around 40 years of age, and the symptoms increase with age.[3] If ASD is diagnosed, closure should be considered, optimally percutaneous.[4]

The prevalence of partial anomalous pulmonary venous return in the general population is 0.4% to 0.7%. The probability of its occurrence is 10-fold higher in the presence of ASD. It usually affects right pulmonary veins (60%–90% of cases) with a typical additional abnormal opening of a single pulmonary vein beside the left atrium. Partial anomalous pulmonary venous return is often asymptomatic, while symptoms of overload of right cardiac chambers occur in the presence of large shunts or in the event of concomitant ASD.[5]

Summing up, the presented case of multiple ASD with partial anomalous pulmonary

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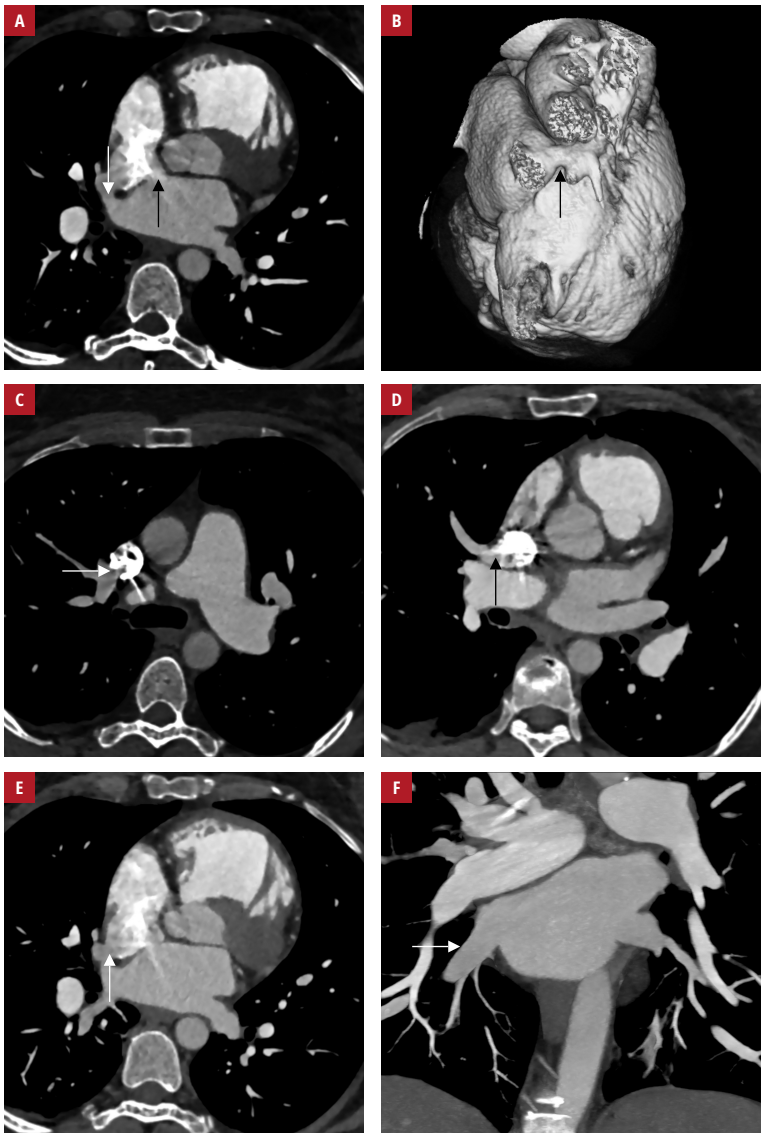

FIGURE 1 Cardiac computed tomography: **A** – axial reconstruction. Double atrial septal defect: ostium secundum defect (black arrow) and sinus venosus defect (white arrow); **B** – volume rendering technique reconstruction. Atrial septal sinus venosus defect (arrow); **C** – axial reconstruction. Opening of the right upper pulmonary vein 1 into the superior vena cava (arrow); **D** – axial reconstruction. Opening of the right upper pulmonary vein 2 into the superior vena cava (arrow); **E** – axial reconstruction. Opening of the right intermediate pulmonary vein on the border of the superior vena cava and right atrium (arrow); **F** – maximum intensity projection reconstruction. Typically opening of the right lower pulmonary vein (white arrow), opening of the left upper pulmonary vein (black arrow) and opening of the left lower pulmonary vein (red arrow) into the left atrium.

venous return represents one possible anatomical variant of congenital heart defect of this type—a very rare variant from the epidemiological point of view.

ARTICLE INFORMATION

CONFLICT OF INTEREST None declared.

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