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ATRIAL SEPTAL DEFECT - A NEW PERSPECTIVE ON THE CARDIAC DYSPNEA

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Abstract

The congenital cardiac diseases predominately affect the children, as well as the young adults, and they are the consequence of an abnormal embryological development.
Atrial septal defect (DSA) is a congenital heart malformation, which can close in the first year of life, being shown by the presence of a communication between the left atrium and right atrium with the left-to-right shunt, and it subsequently produces some complications.
We report the case of a 31 years-old-female without previous medical history, who was diagnosed with atrial septal defect.
Keywords: *atrial septal defect*

Rezumat
Bolile cardiace congenitale afectează preponderent atât copiii, cât și adulții tineri, și sunt rezultatul unor dezvoltări embriologice anormale.
Defectul septal atrial (DSA) reprezintă o malformație congenitală a cordului, care se poate închide în primul an de viață, fiind pus în evidență de prezența unei comunicări între atriul stâng și atriul drept, cu apariția șuntului stânga-dreapta, iar ulterior determină apariția unor complicații.
În continuare vom prezenta cazul unei paciente de 31 de ani, fără antecedente cardiovasculare cunoscute, la care se va decela prezența defectului septal atrial.
Cuvinte cheie: *defect septal atrial.*

The congenital cardiac disease may affect the children, as well as the young adults, and they are the consequence of an abnormal embryological development.
The atrial septal defect (ASD) represents a congenital cardiac disorder which involves an abnormal opening between the right and the left atrium and if the pulmonary blood flow

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increases the left-to-right shunt may develop. Usually the communication between the upper cardiac chambers closes, but if it persists the condition may cause complication.
We report the case of a 31 years-old-female without previous medical history, who was diagnosed with atrial septal defect.
Keywords: *atrial septal defect.*

A 31-year-old patient with no known history of cardiovascular disease comes at the emergency department with retrosternal pain of constrictive nature with a sudden onset, inspiratory dyspnoea at great effort and excessive sweating.

From the family history we consider that her father died of a heart attack at the age of 42, and, in terms of behaviour, we consider that the patient is non-smoker, does not consume toxic substances and does not take any basic medication.

In the **objective examination** conducted at admission, we notice a good general condition, moist skin, normal lungs auscultation, SaO2 96%, good rhythmic heart sounds, synchronous with peripheral pulses, BP 135/80 mmHg.

The electrocardiogram performed at the admission outlines a sinus rhythm, 88 bpm, +45^0 QRS axis, RBB, P wave in DII, ST depression about 1 mm in DII, DIII, aVF, and 0.5 mm in V3-V5. (figure 1).

The echocardiography performed at the admission in the emergency department outlines effective LV with maintained parietal cell kinetics, dilated right cavities, tricuspid regurgitation of 1st/2nd degree, SPAP: 46 mmHG (figure 2).

The laboratory tests show mild hypocalcemia (ionised calcium 3.97 mg/dl; normal values 4.2-5.2 mg/dl) and mild hypokalemia (K + 3.4 mmol/l, normal values 3.5-5.1 mmol/l), the rest of the values within the normal range, including enzymes of myocardial necrosis made in dynamics (cTnI < 0.000 ng/ml respectively cTnI < 0.000 ng/ml), and D-Dimers (1.345 ug/ml)

The angio-CT is performed for the pulmonary arteries and thoracic and abdominal aorta which excludes imagining signs of pulmonary embolism and, at the same time, excludes the presence of aneurysm-like expansions or an aortic dissection (figure 3 and 4).

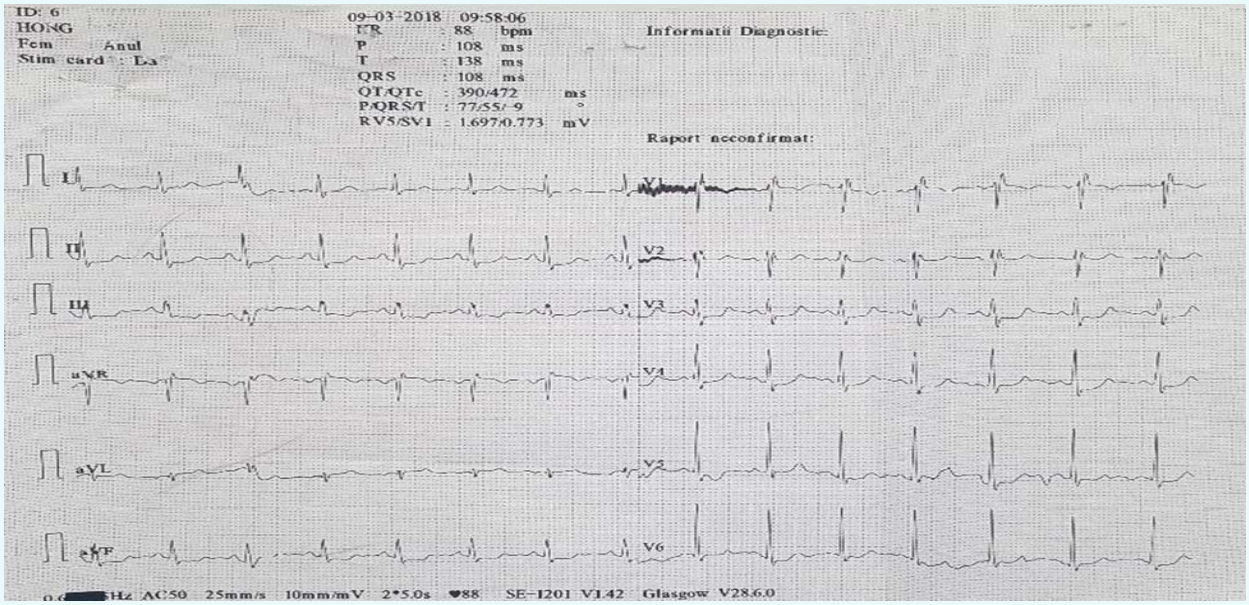

Figure 1. *The electrocardiogram performed at the admission*

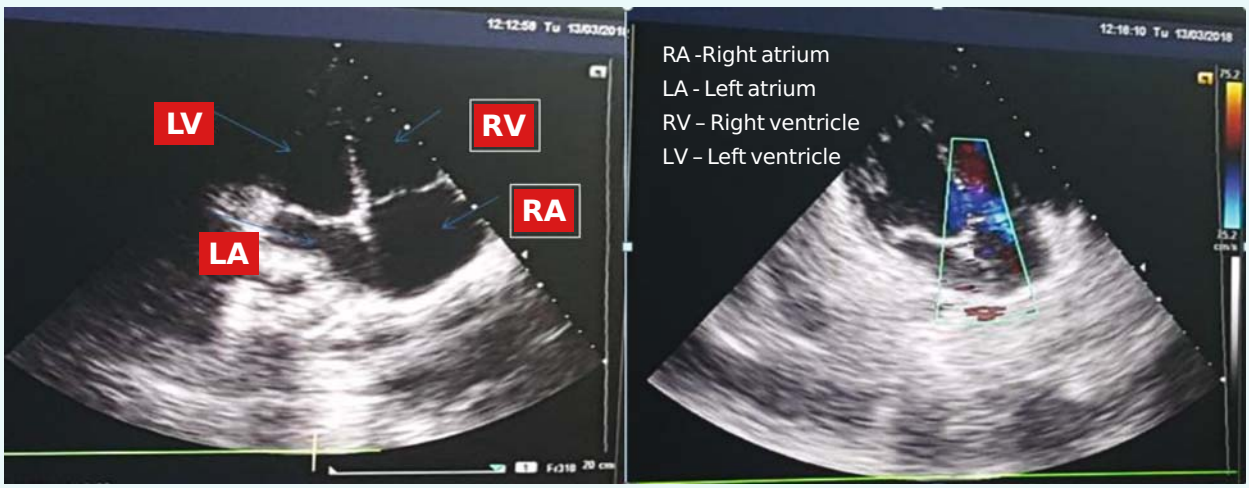

Figure 2. *The echocardiography performed at the admission*

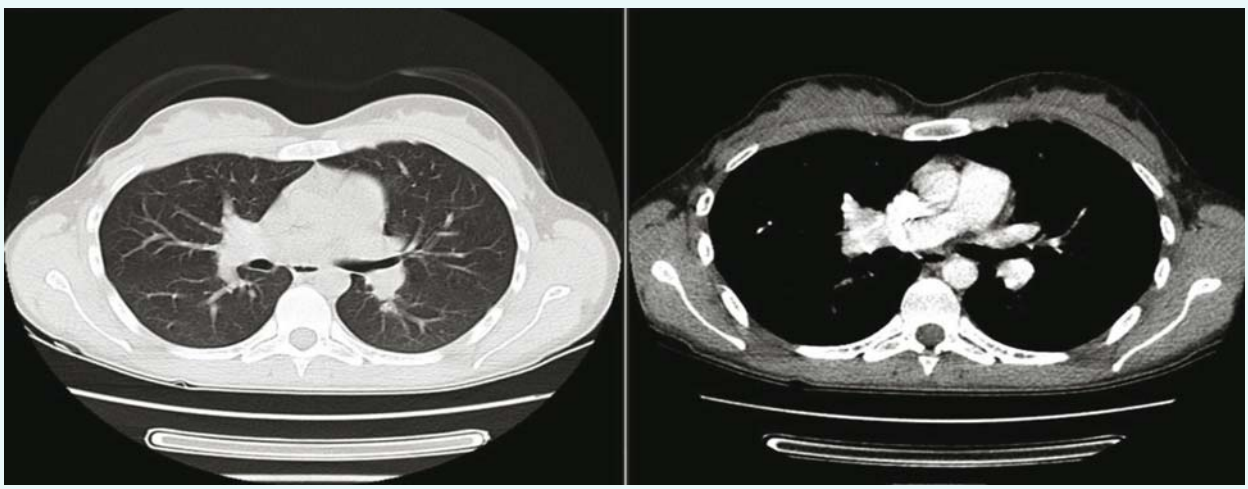

Figure 3. *Angio-CT,* ***Figure 4.*** *Angio-CT*

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On the basis of history data correlated with the objective examination and paraclinical assessments the following diagnosis is established: Acute coronary syndrome under supervision, important block of right branch, tricuspid insufficiency of 1st/2nd degree, possible pulmonary hypertension, hydroelectrolytic disorders, anxiety disorder.

During the admission, the patient is reassessed from the point of view of electrocardiography, but no additional changes are found compared to the previous EKG and from the point of view of echocardiography where the presence of an ostium secundum type atrial septal defect with left to right shunt is additionally found (figure 5).

To confirm the diagnosis of pulmonary hypertension the patient is proposed to perform right and left cardiac catheterization which she refuses. Further, in the course of admission, a pulmonology and phtisiology examination is performed and both functional respiratory tests and viral hepatitis markers were within the normal range.

Finally the following diagnosis is established: Ostium secundum type atrial septal defect with left to right shunt, tricuspid insufficiency of 1st/2nd degree, important block of right branch, hydroelectrolytic disorders, possible pulmonary hypertension.

Thus, the patient is recommended surgical correction of the congenital malformation, which she postpones.

Discussion

The atrial septal defect (ASD) is given by the existence of an inter-atrial communication, i.e. between the left atrium and right atrium. This represents a congenital malformation at the level of interatrial septum and is most commonly seen in women.

ASD is classified into four types: Ostium secundum type ASD, which is the most commonly encountered and is situated in the middle region, at the level of the fossa ovalis, of the interatrial septum; Ostium primum type ASD, which differs from the first type by the fact that it is typically found within the common atrioventricular canal and is located in the lower region of the septum adjacent to the mitral and tricuspid valves; Sinus venosus type ASD which meets at the level of the discharge of the superior vena cava, or more rarely, of the inferior vena cava, in the right atrium; Coronary sinus type ASD which is extremely rare and is given by the partial or total lack of wall that lies between the coronary sinus and the left atrium[(1)].

Thus, the emergence of left-to-right shunt, from the left atrium to the right, has as a consequence the volume overload in the right atrium, the increase of pressures on the pulmonary circulation, and finally leads to

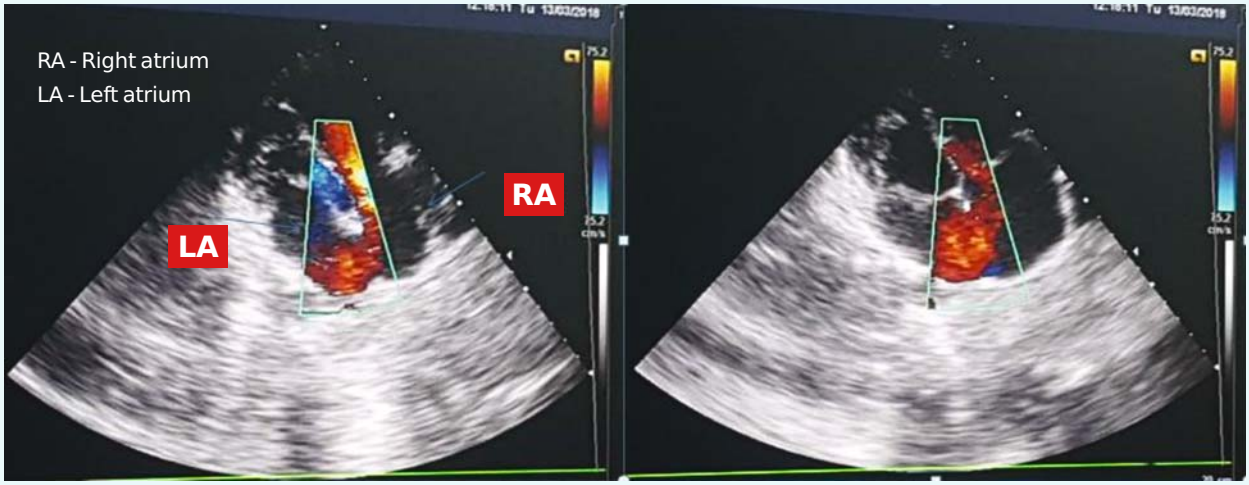

Figure 5. *Echocardiography - ostium secundum type atrial septal defect with left to right shunt*

the occurrence of pulmonary vascular resistance with determination of pulmonary hypertension.

The vast majority of patients remain asymptomatic in childhood and in over half of cases the ASD closes spontaneously during the first year of life. Its persistence requires the emergence of specific symptoms after 30-40 years and the malformation has a better prognosis in individuals with ostium secundum type ASD, but has developed more severe in women[2,3].

People diagnosed with ASD are exposed to a risk of major complications, among which: PAH, atrial fibrillation, atrial flutter, embolism, heart failure and sometimes death.

The correction of atrial septal defect is recommended to be done as soon as possible after diagnosis, ideally before the age of 25. This would cause an improvement in terms of symptoms, decrease of pulmonary pressures and, at the same time, the dimensions of right cavities.

You can correct the cardiac malformation in two ways: by interventional therapy recommended in particular in the case of ostium secundum type ASD, using the devices used for percutaneous closure of the defect or by surgery, recommended in other types of ASD and in case of severe expansion of right cavities, the surgical correction may be associated with tricuspid valve ring annuloplasty[4,5].

Bibliography:

1. Deanfield J, Thaulow E, Warnes C, et al.: Management of Grow Up Congenital Heart Disease. Eur Heart J 2003; 24:1035-84

2. Baumgartner H, Bonhoeffer P, De Groot NMS etal.: ESC Guidelinesc for the management of grow-up congenital heart disease. Eur Heart J 2010; 31:2915-57

3. Carmen Ginghină et al.: Hipertensiunea pulmonară – istorii clinice surprinzătoare-, ed. Medicală Antaeus 2017, 241-253

4. Webb G, Gatzoulis MA: Atrial septal defects in the adult: recent progress and overview. Circulation 2006; 114:1645-53

5. Butera G, Carminati M, Cheesa M, et al.: Percutaneous versus surgical closure of secundum atrial septal defect: comparison of early results and complications. Am Heart J 2006; 151:228-34