SA HEART

CARDIAC IMAGING QUIZ

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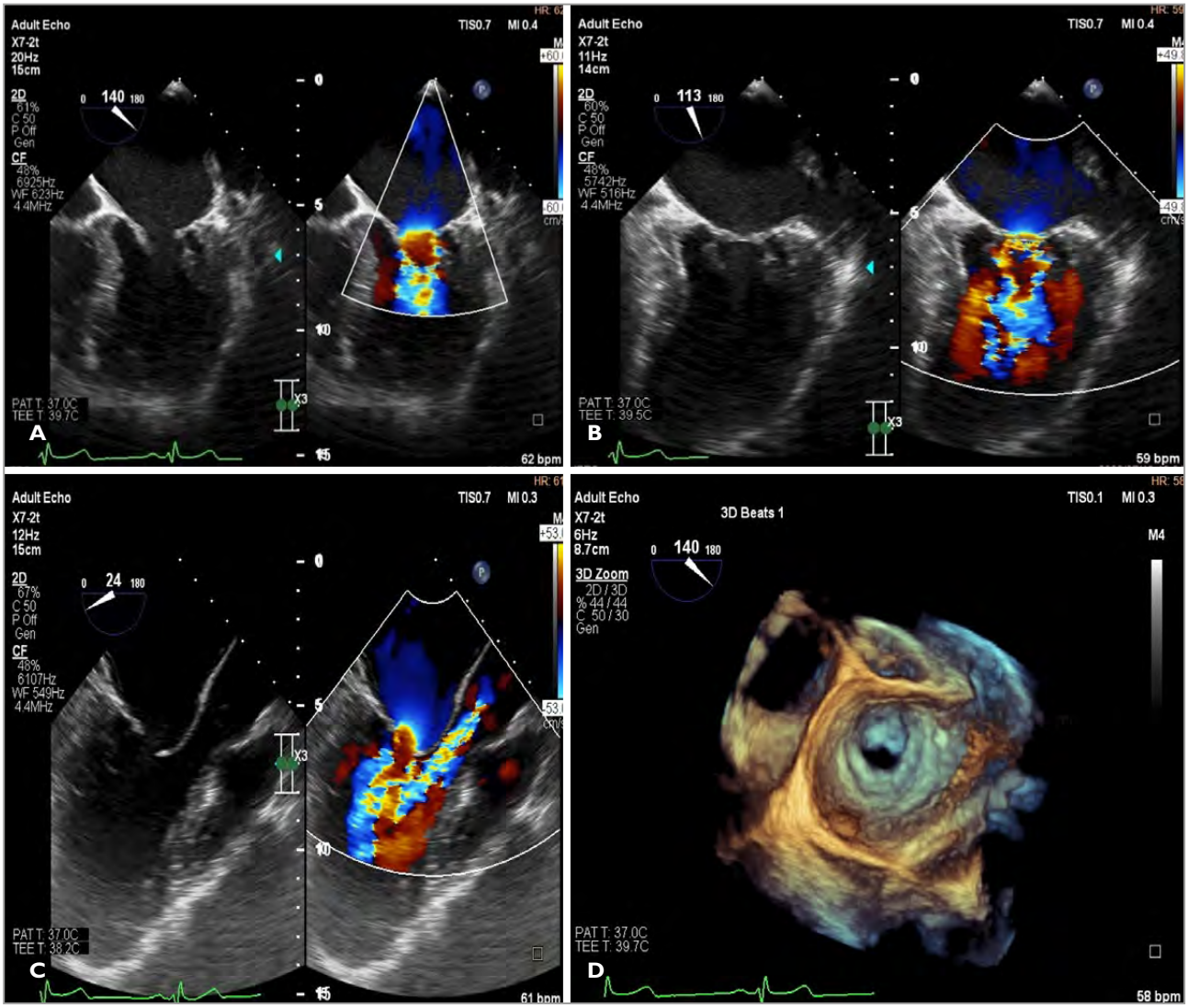

QUESTION: What is the diagnosis?

a. Dextroversion with rheumatic valvular disease.

b. Dextrocardia with rheumatic valvular disease.

c. Dextroposition with rheumatic valvular disease.

d. Mixed rheumatic valve disease.

ANSWER

(B) Dextrocardia with rheumatic valvular disease.

These transoesophageal (TEE) echocardiographic images were obtained from a 20-year-old male who presented with shortness of breath. Cardiac positional changes and abnormal cardiac looping during foetal development can result in dextrocardia, with a mirror-image loop, where the morphologic right ventricle is on the left of the morphologic left ventricle. Specific manipulations of the TEE probe and transducer are necessary to obtain the required views, as seen in the images above. Standard mid-oesophageal TEE views are: 4-chamber (0-10°); 2-chamber view (45-60°), 3-chamber or long axis view (135-150°). In this case 4-chamber view obtained at 140°, 2-chamber view at 113° and long axis or 3-chamber view at 24°, a mirror-image of normal views. Additionally, the typical appearance of rheumatic mitral valve stenosis is evident in the 2-dimensional (top and bottom panels) and 3-dimensional enface views (bottom panel) with thickened tips, diastolic restriction and a fish-mouth appearance visualised respectively in these views. Additionally aortic regurgitation is also noted on the 3-chamber view.

Dextrocardia is a rare cardiac positional anomaly where the heart is positioned in the right hemithorax, with its base-to-apex axis directed rightward and downward. It is generally discovered incidentally and may be associated with other congenital abnormalities. The prevalence of dextrocardia is reported to be less than 1%. It must be distinguished from cardiac dextroversion which is a congenital condition that results from the heart malrotating around its long axis, with left ventricle lying anterior to the right ventricle. Additionally it must be differentiated from cardiac dextroposition, which occurs when the heart is displaced to the right due to extracardiac factors such as right lung hypoplasia, right pneumonectomy, or diaphragmatic hernia.

Individuals with dextrocardia exhibit variant intracardiac anatomy and may have congenital conditions such as discordant atrioventricular connection, univentricular atrioventricular connection, ventricular septal defect, and pulmonary artery anomalies. Extracardiac anomalies are also common in these patients. Dextrocardia can be categorised into 4 types. The isolated form, as seen in our patient. Other types of dextrocardia include dextrocardia situs inversus, where the liver and spleen are located on the opposite side of the body, dextrocardia situs inversus totalis, where all vital organs in the chest and abdomen are reversed, and dextrocardia with heterotaxy, where some or all vital organs are misplaced or absent.

Diagnosis is based on clinical evaluation, chest X-ray, which reveals the right-sided location of the cardiac apex and aortic arch, and electrocardiogram findings such as inverted or reversed electrical waves, right-axis deviation of the P wave, and the QRS complex, which are indicative of dextrocardia. Cardiac imaging, including echocardiography, cardiac CT, and MRI, is used to assess structural and functional abnormalities. The management and prognosis of dextrocardia depend on the specific type and whether there are associated congenital defects.

This case is notable due to the presence of acquired rheumatic heart disease with predominant mitral valve stenosis. No other cardiac or extracardiac defects were observed in this patient.

Conflict of interest: none declared.

SUGGESTED READING

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