Left atrial thrombi which occlude the pulmonary vein in a patient with mitral mechanical prosthesis valve: The role of computed tomography in imaging

Mekanik mitral protez kapağı olan bir hastada pulmoner ven obstrüksiyonu yapan sol atriyum trombüsü: Bilgisayarlı tomografinin görüntülemedeki önemi

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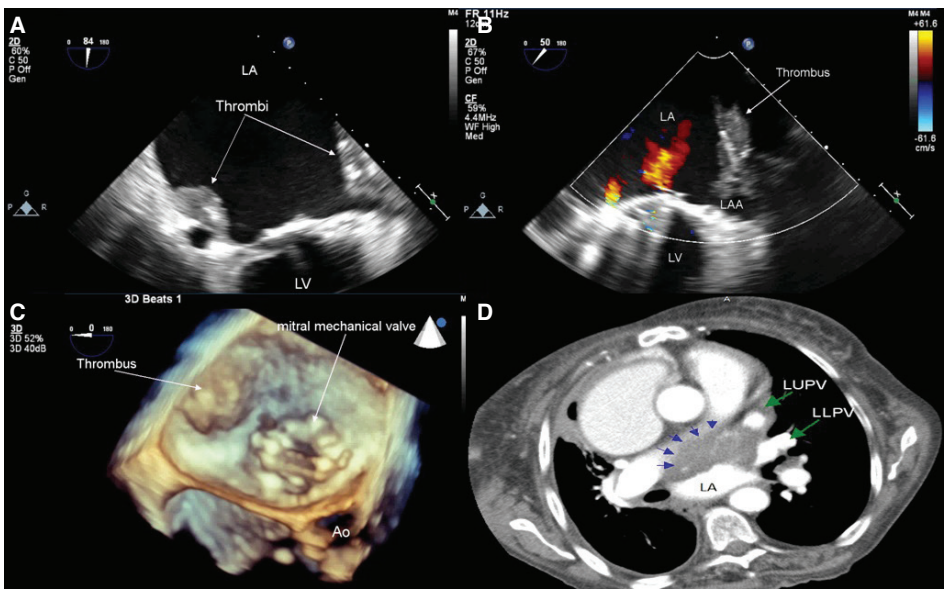
A 70-year-old female patient was admitted to our emergency department with symptoms of congestive heart failure (dyspnea, bilateral leg edema, tachypnea, palpitations,etc.). Her history showed that she had been operated on for rheumatic mitral valve disease, and had a 10-year history of mechanical mitral valve replacement with a bileaflet prosthesis (St.Jude, No:27). Cardiovascular examination showed mildly muffled mitral mechanical valve sounds. Electrocardiography (ECG) revealed atrial fibrillation with a heart rate of 110 beats per minute. On lung auscultation, there were bilateral basal rales. Examination of other systems yielded normal findings. Laboratory findings were within normal range and her international normalized ratio was 2,6 adequate in therapeutic interval. After hospitalisation, transthoracic echocardiography (TTE) and transesophageal echocardiography (TEE) showed moderately increased mitral mechanical valve gradients (a peak at 26 mmHg and a mean at 8 mmHg), a normal mitral valve area of about 2.8 cm^2, non-restricted leaflet mobility, mild paravalvular leakage, and also dense spontaneous echocardiographic contrast in the left atrium and the left atrial appendage. The patient had a normal range ejection fraction of about 55%. TEE revealed an annular non-obstructive thrombus on the atrial side of the mitral mechanical valve, and two other thrombi. One of these was separate on the posterior atrial wall and measured 2.3 cm x 1.7 cm, the other was layered on the remaining anterior atrial wall and occluded the left upper pulmonary vein opening (Figure A-C). After heart rate control with intravenous administration of metoprolol, an ECG-gated 64 slice contrast enhanced computerized tomography (CT) was performed to evaluate the coronary artery, mitral mechanical valve and the left atrium, and this depicted the masses, suggestive of thrombus, involving the left atrium and occluding the left upper pulmonary vein connection to the heart (Figure D). There were no significant stenoses in the coronary arteries, and severe lung edema with remarkable deposition of transudates on the fissures and alveoli. Peripheral embolisation is the most common manifestation of left atrial thrombi. Obstruction due to left atrial thrombi is a rare event and when present is usually due to the obstruction of pulmonary veins, and is usually detected by TEE. In our case, CT helped to determine the extent of the thrombus in the left atrium and its relation with the other cardiac structures (valves, etc.).



Figures– (A) TEE shows two separate thrombi in the left atrium. **(B)** TEE reveals that the thrombus occludes the pulmonary veins. **(C)** 3D TEE image of the thrombus. **(D)** CT shows the thrombi in the left atrium and its relationship with pulmonary veins.