A 77-year-old woman presented with pulmonary edema 2 weeks after experiencing an acute inferior ST-segment–elevation myocardial infarction treated successfully with primary coronary angioplasty with bare metal stent implantation in the right coronary artery. On admission, she experienced marked dyspnea, and on physical examination, she had tachypnea, her peripheral pulse was irregular with an average rate of 86 bpm, her blood pressure was 152/77 mm Hg, she had elevated jugular vein pressure, her heart sounds were irregular and attenuated, and her breathing sounds were decreased bilaterally with crepitations. The rest of the physical examination was not revealing. The ECG showed atrial fibrillation without ischemic changes. A chest X-ray revealed pulmonary congestion and an enlarged cardiac shadow. Transthoracic echocardiography was technically suboptimal; however, normal global systolic left ventricular function was found, and thickened mitral leaflets with limitations in opening and sclerosis and mildly stenotic aortic valves with moderate regurgitation were noticed. Transesophageal echocardiography was performed, and a prominent mobile membranous structure consistent with a thebesian valve was noticed at the orifice of the coronary sinus (CS), as shown in 2-dimensional imaging (Movie I in the online-only Data Supplement). The measured diameter of the CS was 1.6 cm. Three-dimensional echocardiography demonstrated the extent and mobility of the thebesian valve in the long axis (Movie II in the online-only Data Supplement) and short axis (Movie III in the online-only Data Supplement). Despite the fact that the thebesian valve almost completely encircled the orifice of the CS, color Doppler showed low velocities (Figure), within the normal range,1 thus excluding a role of this finding as a contributor to the presentation of the patient.

In a recent study using fiberoptic technology in human patients, the thebesian valve was studied by direct visualization during biventricular pacemaker implantation in 98 patients.2 A thebesian valve was noted in 54% of the subjects. Almost all the valves were attached at the posterior (33%) or inferior (61%) margins of the CS ostium.2 A thebesian valve covering 70% of the CS ostium was seen in only 6 of the 98 patients.2 In a series of 75 autopsied human hearts, the thebesian valve was present in 73% of examined hearts.3 The composition of most of the thebesian valves was membranous (46%), followed by fibrous (24%), fibromuscular (11%), and muscular (18%).3 Fenestrations were noted in 26% of valves. In 16% of the hearts, a valve covered >75% of the ostium, and some were devoid of any fenestrations.3 As a result of this morphology, such variants could potentially complicate the cannulation of the CS.

Because the patient may need a procedure involving CS cannulation and because the described morphology of the thebesian valve predicts difficulties in the cannulation of the CS, transesophageal 3-dimensional echocardiography may help guide such procedures.

Disclosures

None.

References

Figure. Low pulsed-wave Doppler velocities at the orifice of the coronary sinus.
Three-Dimensional Echocardiography Can Overcome the Obstacle of the Thebesian Valve
Dawod Sharif, Isis Abomouch and Uri Rosenschein

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