Coronary angiography and computed tomography in situs inversus totalis

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CASE PRESENTATION

A 65-year-old Hispanic man presented to the emergency department with complaints of intermittent chest pain for 1 year. Coronary angiography demonstrated dextrocardia with situs inversus totalis, confirmed by subsequent computed tomography (*Figure 1*). The angiogram was performed via the right femoral artery; because the aortic arch was best visualized in the right anterior oblique angle, engagement of the coronary arteries was done in the right anterior oblique plane, and all subsequent angiography was performed in the opposite angle compared with standard angiography (*Figures 2 and 3*). The stomach was on the right, and only one fissure was present in the “right” lung.

Figure 1. Computed tomographic angiography of the heart with the apex of the left heart on the right side of the patient. AA indicates ascending aorta; LA, left atrium; LAD, left anterior descending artery; LV, left ventricle; PA, pulmonary artery; RV, right ventricle.

DISCUSSION

Situs inversus is a well-recognized entity, with an incidence of 1:10,000 (1), and can occur with dextrocardia or levocardia. When situs inversus is seen with dextrocardia, the cardiac apex

Figure 2. Left coronary angiography performed in the (a) left anterior oblique caudal view and (b) left anterior oblique view with cranial angulation (similar to the view seen in Figure 1). LAD indicates left anterior descending artery; LCX, left circumflex artery; LM, left main artery.

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Figure 3. Right coronary angiography performed in the left anterior oblique view. PDA indicates posterior descending artery; RCA, right coronary artery; RV, right ventricle.

is located along the right side of the thorax and the base-to-apex axis of the heart is pointed toward the right. Situs inversus

presents a technical challenge for the angiographer in locating the ostia of the coronary arteries, and there has been no recognized approach to this problem. The first cardiac catheterization in situs inversus was reported in 1974, and the first percutaneous transluminal angioplasty in situs inversus, in 1987 (2, 3). While use of cardiac computed tomographic angiography as a roadmap for angiography and angioplasty has not been well described, its use in identifying coronary anomalies and unusual locations of ostia is well established (4). Prior knowledge of the location of the ostia in situs inversus may serve as a roadmap in locating ostia, thereby enabling better procedural preparation.

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