Pulmonary Vascular Engorgement in a 65-Year-Old Woman

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This 65-year-old retired laundress complained of dyspnea, orthopnea and pedal edema. She had known of a cardiac murmur for many years, but never sought regular medical attention. There was no history to suggest rheumatic fever, coronary artery disease or pulmonary embolism.

She was a frail woman in apparent congestive failure. The carotid pulses were brisk, but collapsed in midsystole. The cardiac apical impulse was hyperkinetic with a diffuse precordial systolic thrill. A third heart sound was present. There was a grade 4 of 6 harsh holosystolic murmur maximal at the left sternal border in the third interspace, but audible across the entire precordium. A grade 1 of 6 decrescendo diastolic murmur was present at the base. To some examiners, the thrill suggested ruptured chordae tendinae. VDRL serology was positive. These chest films were obtained after cardiac compensation had been restored.
Diagnosis: Ventricular Septal Defect

The chest roentgenograms (Fig 1, 2) demonstrate cardiac enlargement, particularly of the left atrium and right ventricle. The pulmonary artery is enlarged and there is arterial over-circulation in the lungs consistent with left-to-right shunting. The aortic knob is small. Cardiac catheterization and cineangiography confirmed the diagnosis of ventricular septal defect (VSD) with a 3-to-1 left-to-right shunt. Trivial aortic insufficiency was present; all three aortic cusps were visualized and there was no prolapse. The final diagnoses were congenital VSD and minimal aortic insufficiency, probably luetic.

The natural history of VSD is a subject of continued interest. Isolated or in combination with other lesions, VSD is the most common congenital heart defect. However, the high early mortality rate of complex lesions, the Eisenmenger reaction and spontaneous delayed closure of uncomplicated defects combine to make VSD rare in the adult. Persons with uncomplicated atrial septal defects (ASD), on the other hand, usually survive to middle age with few symptoms, and not infrequently attain advanced age.

In patients with pulmonary arterial engorgement indicative of left-to-right shunting, radiologic distinction between ASD and VSD can often be based on the size of the left atrium. With ASD, the left atrium is decompressed by the shunt and usually remains undilated. In VSD the left atrium transmits the full volume of the shunt plus the forward cardiac output, and is characteristically enlarged.

Careful fluoroscopic examination with use of the left anterior oblique projection is required for complete evaluation of left atrial size. Exaggerated pulsations of the central branches of the pulmonary arteries are helpful in the distinction between VSD and acquired mitral disease. In the adult, super-imposed acquired heart disease may alter the physiology and thus the radiologic appearance of the congenital lesion. Nonetheless, as in this patient, chest roentgenography may provide sufficient information for the recognition and differential diagnosis of congenital heart disease in the adult.

REFERENCES

Utilitarian Ingenuity of Master Builders

The aqueduct, as we know it, was a Roman discovery. One of their great inventions was the arch which made possible the aqueducts with their unbroken line of conduits supported by tiers of arcades beneath. Although there are traces of its use before them by the Asiatic Greeks, the development of its resources, which they realized, practically made it their own. "Marcia" the first high-level aqueduct, carried spring water at an elevation of 195 feet above sea-level. Built of rough hewn stone it was nearly fifty-eight miles long, and one of the three most famous aqueducts. From Tivoli it passed to Gallicano, being carried on arches across the valleys and by tunnels through the hills until it reached Via Latina. Sinking there into a conduit beneath the road, it was taken again, seven miles from Rome, upon an arched aqueduct and distributed to three sections of the city.

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