

Cardiovascular Imaging In-a-Month

Reduced Left Ventricular Ejection Fraction in an 82-Year-Old Woman With Aortic Stenosis

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CASE

An 82-year-old woman presented with a history of progressive dyspnea persisting for several days. The diagnosis of severe aortic stenosis was established some years ago. However, she had firmly declined the recommendation of aortic valve replacement. On admission, electrocardiography showed ST-segment depression in leads I , aL , and 3 to 6 . Echocardiography revealed that the aortic valve area of 0.6 cm^2 remained unchanged, but the left ventricular ejection fraction was reduced to 44% compared to 70% some months before. She died of progressive heart failure. Autopsy disclosed tricuspid stenotic aortic valves with calcification probably due to age-related degeneration, and circumferential discoloration in the subendocardial layers of the left ventricle with coronary artery stenosis of $< 50\%$ in diameter (Fig. 1).

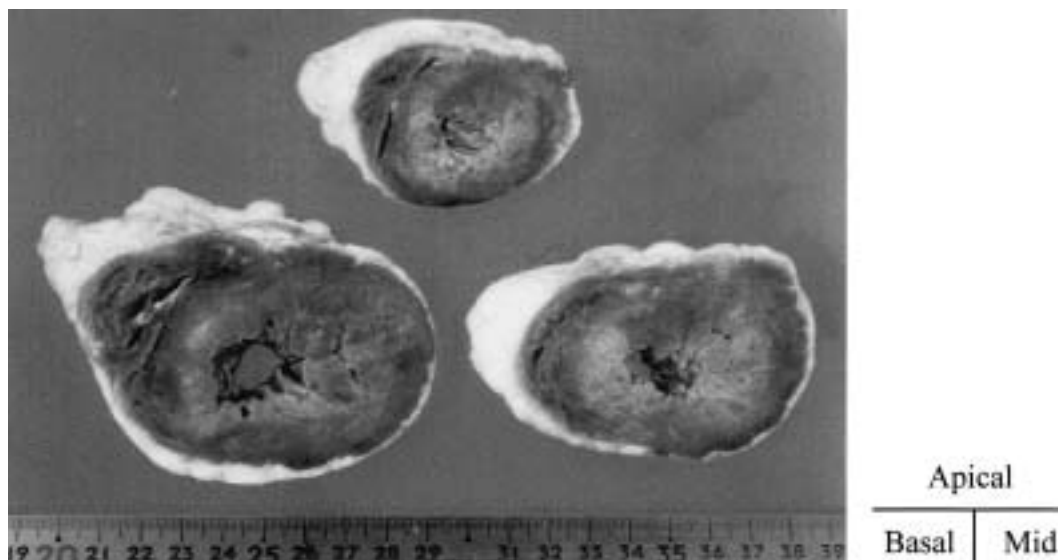


Fig. 1

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Point of Diagnosis

Histological examination confirmed that the circumferential discoloration in the subendocardial layers of the left ventricle was myocardial infarction (Fig. 2). In general, subendocardium is predisposed to myocardial ischemia, possibly leading to myocardial infarction, even in the absence of significant coronary lesions¹⁾. Subendocardial infarction seems not to be uncommon in patients with aortic stenosis due to marked myocardial hypertrophy and raised ventricular pressure¹⁻³⁾. In this case, the onset of subendocardial infarction was unidentifiable because neither prolonged chest pain nor cardiac enzyme leakage had occurred during the clinical course. However, subendocardial infarction could develop silently in patients with aortic stenosis⁴⁾. Silent myocardial infarction may have led to the left ventricular dysfunction in the present patient.

Diagnosis: Subendocardial infarction with aortic stenosis

Key Words: Aortic valve stenosis; Myocardial infarction, pathophysiology; Pathology

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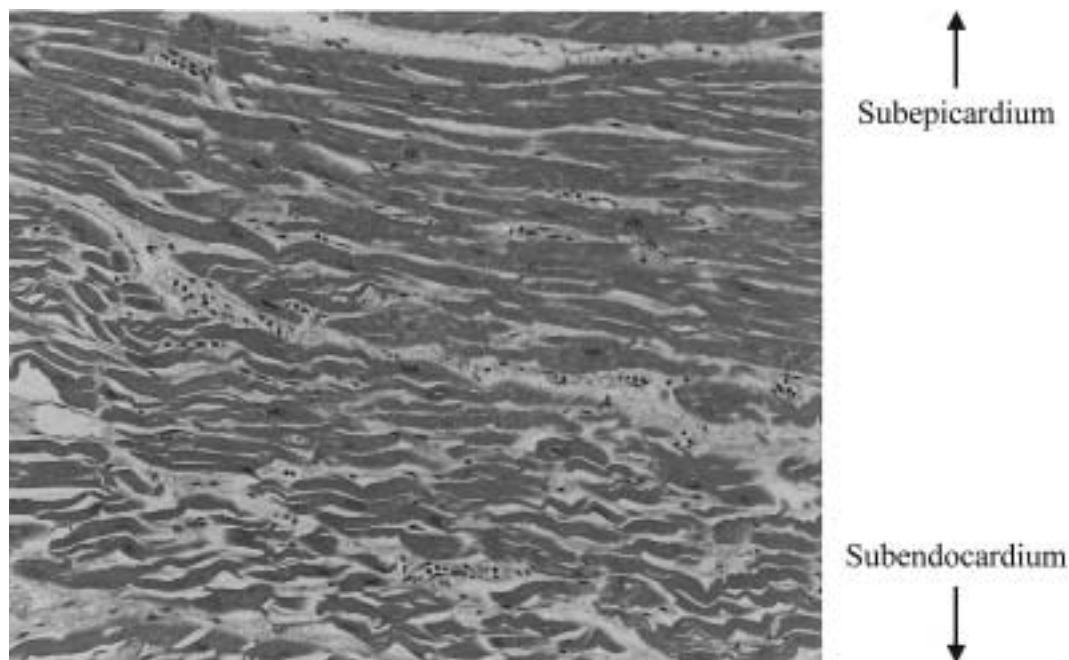


Fig. 2

Fig. 1 Photograph of heart sections

Transverse sections of the heart at the level of apical, mid, and basal ventricles show circumferential discoloration in the subendocardial layers of the left ventricle.

Fig. 2 Photomicrograph of the subendocardium

Wavy fibers are preferentially distributed in the subendocardium (hematoxylin-eosin stain, objective $\times 4$).