J Cardiol 2005 Jun; 45(6): 277–279

Cardiovascular Imaging In-a-Month

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

Takuya TANIGUCHI, MD
Tatsuya KAWASAKI, MD
Tadaaki KAMITANI, MD
Shingo KAWASAKI, MD
Hiroki SUGIHARA, MD

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, aV_L, and V_3 to V_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**).

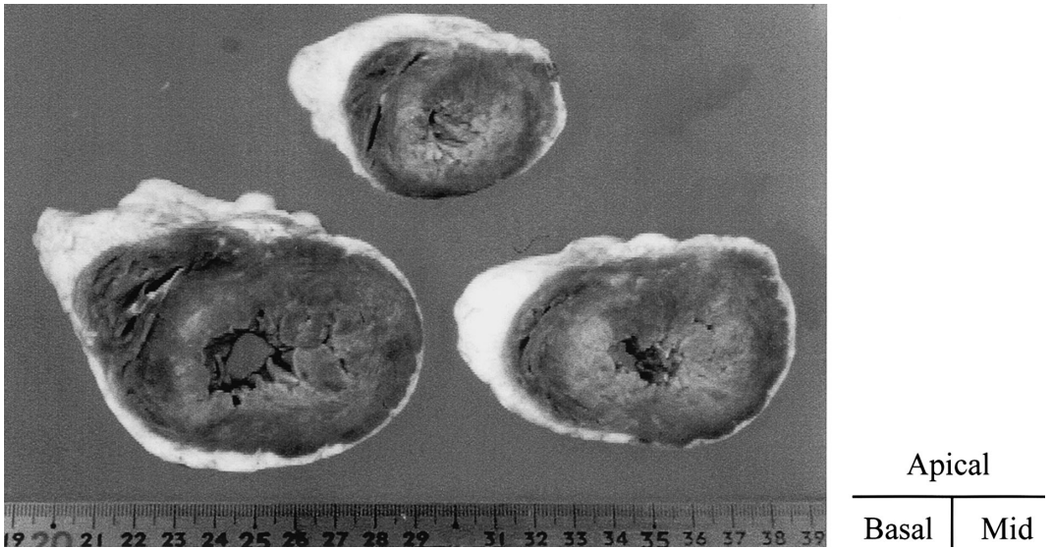

Fig. 1

松下記念病院 循環器科〔谷口琢也，川崎達也，神谷匡昭，川崎信吾，杉原洋樹〕: 〒570−8540 大阪府守口市外島町5−55
Department of Cardiology, Matsushita Memorial Hospital, Osaka
Address for correspondence: TANIGUCHI T, MD, Department of Cardiology, Matsushita Memorial Hospital, Sotojima-cho 5−55, Moriguchi, Osaka 570−8540; E-mail: cytokine@nike.eonet.ne.jp
Manuscript received February 24, 2005; revised April 4, 2005; accepted April 5, 2005

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 lesions[1]. Subendocardial infarction seems not to be uncommon in patients with aortic stenosis due to marked myocardial hypertrophy and raised ventricular pressure[1–3]. 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 stenosis[4]. Silent myocardial infarction may have lead to the left ventricular dysfunction in the present patient.

Diagnosis: Subendocardial infarction with aortic stenosis

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

Acknowledgement

We thank Atsushi Tatebe, MD, for the pathologic diagnosis.

References

1) Levine HD: Subendocardial infarction in retrospect: Pathologic, cardiographic, and ancillary features. Circulation 1985; **72**: 790–800
2) Hutchins GM, Kuhajda FP, Moore GW: Myocardial injury in patients with aortic stenosis. Am J Cardiovasc Pathol 1987; **1**: 31–37
3) Kodama-Takahashi K, Ohshima K, Kurata A, Yamamoto K, Uemura S, Watanabe S, Iwata T, Kawachi K: Myocardial infarction in a patient with severe aortic stenosis and normal coronary arteriograms: Involvement of the circumferential subendocardial wall of the left ventricle. Circ J 2003; **67**: 891–894
4) Sarda L, Faraggi M, Brochet E, Vissuzaine C, Delahaya N, Le Guludec D: Acute diffuse myocyte necrosis evidenced with ^{111}In-antimyosin antibody scintigraphy in a patient with aortic stenosis. J Nucl Cardiol 1997; **4**: 426–427

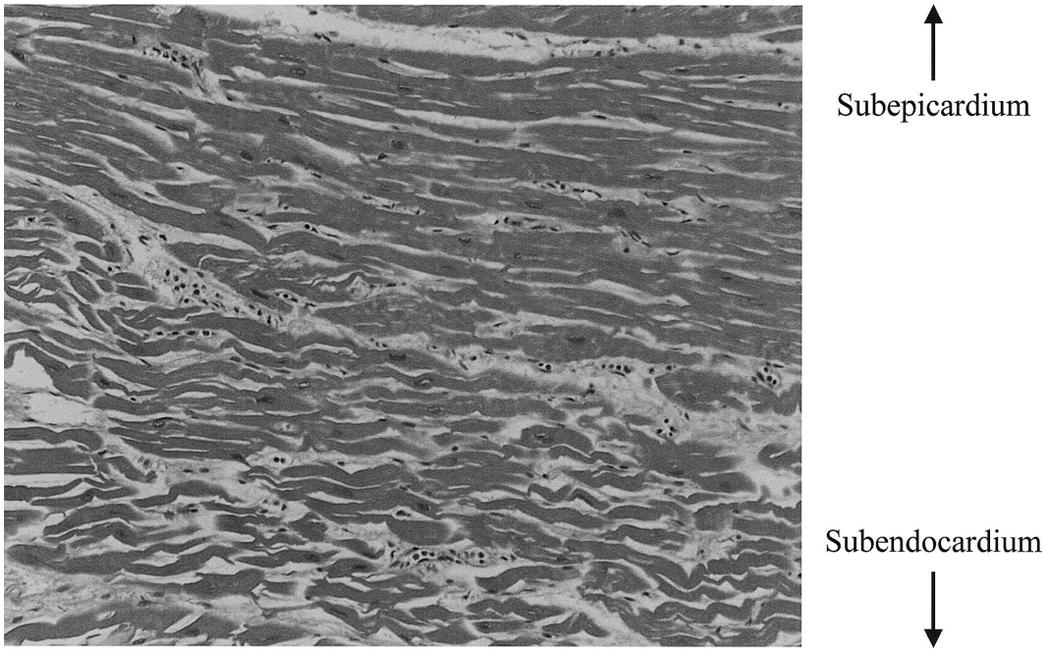

Fig. 2

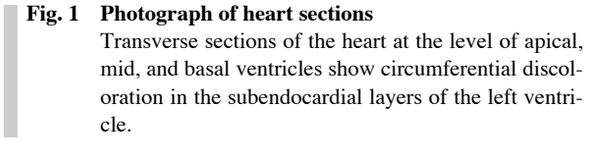

Fig. 1 Photograph of heart sections
Transverse sections of the heart at the level of apical, mid, and basal ventricles show circumferential discoloration in the subendocardial layers of the left ventricle.

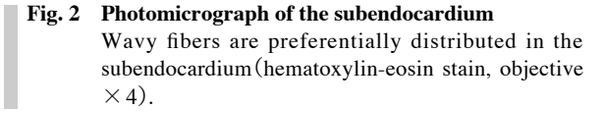

Fig. 2 Photomicrograph of the subendocardium
Wavy fibers are preferentially distributed in the subendocardium (hematoxylin-eosin stain, objective $\times 4$).