CASE REPORT

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A Case of Coronary Vessel Anomaly of the Left Circumflex Artery Originating from the Right Coronary Artery with Variant Angina

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ABSTRACT

Coronary vessel anomaly is a rare disease, with an incidence of about 0.6−1.3% of patients receiving coronary angiography. The ischemia in coronary vessel anomalies is due in most cases to atherosclerosis or compression of the coronary artery by a great vessel, but occasionally spasm of a coronary vessel anomaly is responsible for the pathogenesis of chest pain and myocardial ischemia. A 64-year-old female presented with a one-year history of effort angina. The left circumflex artery originated from the proximal right coronary artery. There was no atherosclerotic lesion in the right and left coronary arteries, but a focal spasm in the right coronary artery by ergonovine. In a patient with chest pain and coronary artery anomaly, if there is no coronary atherosclerosis, abnormal course or compression, the spasm test of the coronary artery should be documented. **(Korean Circulation J 2004;34(7):711-714)**

KEY WORDS : Coronary vessel anomalies ; Angina pectoris, variant.

Introduction

Coronary vessel anomaly is a rare disease, which is discovered incidentally by coronary angiography. It presents almost no symptoms, but occasionally causes symptoms including, unconsciousness, tachycardia, chest pain and sudden death. It has been reported with incidences varying between 0.6 and 1.3% of adult patients undergoing coronary angiography.[1)2)] A coronary vessel anomaly of the right coronary artery is the most common, with an incidence of left circumflex anomaly of 0.3%.[3)]

This paper deals with a patient having a left circumflex anomaly originating from the right coronary artery and a coronary artery spasm in the right coronary artery.

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Case

A 64-year-old female presented with a one-year history of effort angina. She had an 8 year history of hypertension and hyperlipidemia. On admission, her blood pressure, pulse rate, respiratory rate and body temperature were 150/80 mmHg, 76 beats per min, 20 per min and 36.6℃, respectively. There was no abnormal heart or respiration sounds. A laboratory examination showed that her troponin T, CK-MB, total cholesterol, triglyceride and HDL-cholesterol were 0.01 ng/mL, 5.22 ng/mL, 187 mg/dL, 187 mg/dL and 43.7 mg/dL, respectively. Her thyroid function tests had been normal about 4 months earlier. An electrocardiogram on admission showed regular sinus rhythm and no ischemic change (Figure 1). The chest radiograph was also normal. An echocardiogram revealed a normal left ventricular ejection fraction and mild tricuspid regurgitation.

A cardiac perfusion SPECT using 50.4 mg of adenosine showed no redistribution (Figure 2). Diagnostic co-

ronary angiography revealed a normal left anterior descending artery and its branch shows no abnormality or stenosis (Figure 3A). There was no arterial flow in the left circumflex artery during injection into the left coronary artery. Afterwards, the right coronary artery was engaged, showing the left circumflex artery originating from the proximal right coronary artery, with no atherosclerotic lesion in the right or left coronary arteries (Figure 3B). An ergonovine spasm test showed a focal spasm in the mid-portion of the right coronary artery (Figure 3C),

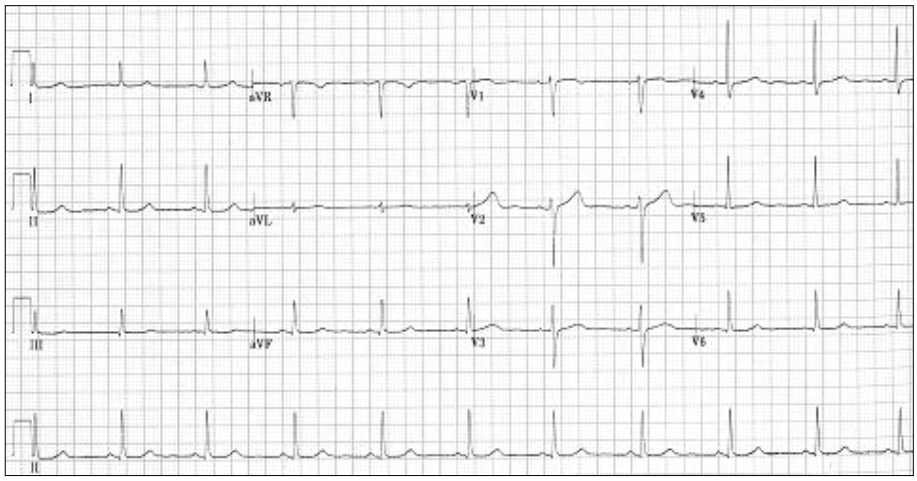

Figure 1. Electrocardiogram showing no ST-T abnormalities.

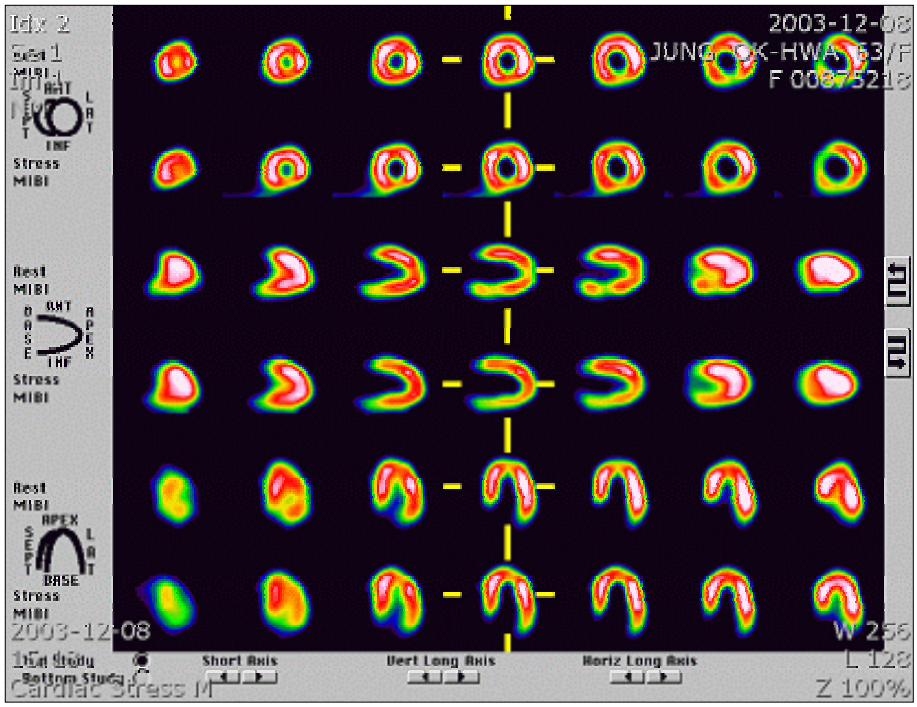

Figure 2. Myocardial SPECT-99mTc showing no perfusion defect in either the resting or stress phases.

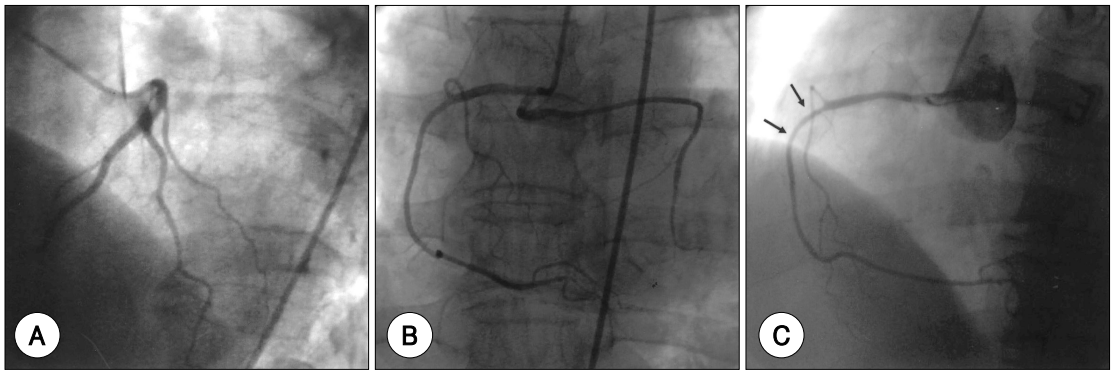

Figure 3. Coronary angiography. A: left coronary angiography: a left anterior descending artery showing no stenosis or arterial flow in the left circumflex artery. B: right coronary artery angiography showing the left circumflex artery originating from the right coronary artery, with no stenosis. C: focal spasm (arrow) of mid portion of the right coronary artery during an ergonovine 50 μg infusion.

although she noted chest pain, and an electrocardiogram showed ST elevation (not available). She was treated with a calcium channel blocker, nitrate and aspirin after which the chest pain subsided.

Discussion

Coronary vessel anomaly is a rare disease, with an incidence of about 0.6−1.3% of patients receiving coronary angiograms and between 0.04−0.4% of the whole population.[1)2)4)] In most cases, a congenital cardiac anomaly is accompanied with great vessel transposition or coronary arteriovenous fistula.[4)5)] A coronary vessel anomaly of a right coronary artery anomaly is the most common, with a left circumflex anomaly having an incidence of 0.3% of coronary artery vessel anomalies.[4)] In our case, there was no cardiac anomaly and the left circumflex artery originated from the proximal part of the right coronary artery.

Mavi and his colleague reported that coronary vessel anomalies of the left circumflex artery originated from the left valsalva sinus (55.5%), the right coronary artery (36.9%) and right sinus of valsalva (25.9%).[6)]

Most coronary vessel anomalies cause no symptoms, but in some cases can cause chest pain, sudden death and myocardial infarction.[7)8)] The ischemia in coronary vessel anomalies is mostly due to atherosclerosis or compression of the coronary artery by a great vessel, but occasionally a spasm of a coronary vessel anomaly is responsible for the pathogenesis of chest pain and myocardial ischemia.[9)] Oshima and his colleague reported a case suspected as a spasm of a coronary vessel anomaly by an electrogram, which they treated with a calcium channel blocker (diltiazem, 120 mg per day).[10)] Kubota and his colleague reported a 68-year-old woman showing an abnormal left circumflex artery originating from the right sinus of the valsalva from coronary angiography and a focal spasm in an ergonovine injection test.[11)] Additionally, Wojtna and his colleague reported on a 45-year-old woman showing a focal spasm in a coronary vessel anomaly, but without stenosis in a coronary artery. She died due to an inferior wall myocardiac infarction.[12)]

In our case, the chest pain was due to a coronary artery spasm, as there were no abnormal or ischemic features in an electrocardiogram and myocardiac perfusion scan and with no atherosclerotic stenosis on coronary angiography. Chest pain arises when a right coronary artery spasm occurs during an ergonovine spasm test.

A coronary vessel anomaly is a rare disease, which is occasionally complicated by chest pain, unconsciousness and myocardiac infarction due to coronary atherosclerosis, compression by a great vessel or coronary artery spasm. In a patient with chest pain and a coronary artery anomaly, if there is no coronary atherosclerosis, abnormal course

or compression, the spasm test of the coronary artery should be documented.

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