Case Reports

Multiple Coronary Stenoses of Unknown Etiology

Kiyoshi Suzuki,1 Yasuo Murakami,1 Akihiko Sakai,2 Hisaharu Sagara,3 Yoshiho Hatai,1 Katsuhiko Mori,1 and Shigekazu Mimori1

1Department of Pediatric Cardiology, Sakakibara Heart Institute, Tokyo; 2Pediatric Department, Hada General Hospital, Nagano; and 3Pediatric Department, Fukuoka University School of Medicine, Fukuoka, Japan

SUMMARY. The case of a 13-year-old girl with multiple coronary stenoses and abundant collaterals, but no risk factors, is described. She was not suspected of having ischemic heart disease until an abnormal electrocardiographic pattern was detected during a routine examination in school. All children with electrocardiographic abnormality should be carefully examined, even though they have neither symptoms nor coronary risk factors.

KEY WORDS: Ischemic heart disease of unknown etiology—Multiple coronary stenoses—Silent myocardial ischemia in childhood—Infantile coronary arteritis

Ischemic heart disease is not a rare disorder in childhood, because it can be caused by familial hypercholesterolemia [1], congenital malformations of the coronary arteries, Kawasaki disease [10], and even chest trauma [3]. It is also well known that coronary risk factors, such as fatty food intake, obesity, hypertension, and smoke, may predispose children to ischemic heart disease [1, 2, 7, 8, 11]. We encountered an adolescent girl with multiple coronary stenoses without such history and risk factors. No such case has been previously reported.

Case Report

The 13-year-old girl had no past history of any disorders or episodes leading to coronary ischemia. She was not suspected of having ischemic heart disease until an abnormal electrocardiographic (ECG) pattern was detected during a routine examination in school. She was not overweight (11% below ideal weight), had a blood pressure of 100/60 mmHg, and had neither xanthomata nor cutaneous nodules. A chest x-ray film showed no cardiomegaly (CTR 45.5%) or evidence of abnormal calcification. But the ECG showed abnormal ST-T depressions in leads II, III, aVF, and the left precordial leads (Fig. 1). An echocardiogram demonstrated normal left ventricular movement without any intracardiac anomalies. The thallium perfusion scintigram was suspicious of ischemic changes in the lateral wall to the apex of the left ventricle. The left ventriculogram revealed mild hypodynamic movement in the lateral wall to the apex, although the ejection fraction was within the normal range (59%). Coronary arteriography demonstrated multiple severe stenoses in the main coronary arteries and rich collateral circulation (Fig. 2A and B). Urine and blood analyses were normal, including the serum cholesterol levels. The retinal arteries were also of normal structure. Furthermore, her family members’ physical examinations, past histories, serum cholesterol levels, and ECGs did not show any abnormalities.

She was advised not to participate in strenuous sports; medication was prescribed along with regular follow-up.

Discussion

Many cases of ischemic heart disease in infants and adolescents have been reported, but in almost all of them there have been obvious disorders which could cause coronary ischemia. However, our patient had no previous reported risk factors, such as congenital malformations of the coronary arteries, generalized arteritis (Kawasaki disease [10] and periarteritis nodosa), hypercholesterolemia [1], hypertension, obesity, diabetes mellitus, or chest trauma [3]. Taking into account the multiple coronary lesions and the development of collaterals, we assume that the most probable cause of her disorder was coronary arteritis in early infancy. She could
Fig. 1. Twelve-lead ECG at rest (left) and during maximal stress test (right). Abnormal ST-T changes are seen in II, III, aVF, V1, V4 at rest. During the treadmill exercise test (maximal heart rate of 169 beats/min and maximal blood pressure of 128/85 mmHg), the ECG revealed 2- to 3-mm ST segment depressions in leads I, II, III, aVF, V4, V6, and ST segment elevations in aVR and V1, suggesting ischemic changes from the posterolateral wall to the apex of the left ventricle.

Fig. 2. Left (A) and right (B) coronary angiograms. Multiple coronary stenoses (†) and rich collateral circulation are seen in both coronary arteries. Left panels: left anterior oblique projection; right panels: right anterior oblique projection.

have suffered from the forme fruste of infantile arterial calcification [5, 12] or infantile periarteritis nodosa [4]. Another disease to consider in the differential diagnosis is pseudoxanthoma elasticum, which may cause coronary ischemia due to multiple coronary stenoses. No case with coronary involvement prior to the appearance of dermal and ophthalmologic abnormalities has been reported and, as mentioned, our patient’s skin and ophthalmological examination showed no abnormalities. But the possibility of a forme fruste of autosomal recessive type of pseudoxanthoma elasticum should be considered [6, 9].

Patients with ischemic heart disease, but symptom-free, such as this case, could die suddenly during strenous exercise. All children with an abnormal ECG pattern should be carefully examined, even though they have neither symptoms nor risk factors of ischemic heart disease.

References

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