Case Report

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Polyarteritis Nodosa Complicated by Chronic Total Occlusion Accompanying Aneurysms on All Coronary Arteries

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Polyarteritis nodosa (PAN) is characterized by inflammatory necrosis of medium sized arteries. PAN can also be associated with stenosis or aneurysm of the coronary artery. However, the involvement of PAN at a coronary artery is usually asymptomatic, which makes it difficult to diagnose. In addition, all of the three main coronary arteries involved with chronic total occlusion (CTO) is a rare finding in patients with PAN. We report a patient that presented with PAN complicated by CTO and aneurysms of three main coronary arteries, without typical symptoms of angina. **(Korean Circ J 2012;42:568-570)**

KEY WORDS: Polyarteritis nodosa; Coronary aneurysm; Coronary occlusion.

Introduction

Polyarteritis nodosa (PAN) is a disease that affects the whole body, and is characterized by inflammatory necrosis of medium sized vessels. PAN rarely causes severe coronary artery disease; however, it can be complicated by sudden death as a result of coronary artery aneurysm or myocardial infarction.[1)2)] An association of PAN with widespread stenosis of the coronary artery has also been reported.[3)] However, it is rare that all of the three main coronary arteries become involved with chronic total occlusion (CTO). We report a patient that presented with PAN complicated by CTO accompanying aneurysms of three coronary arteries, but who showed no clinical evidence of angina.

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Case

A 52-year-old male was transferred to our hospital because of skin necrosis on his left arm. Forty-eight years ago, he had experienced a severe scalding burn on his left arm from boiling water. Two months ago, he had undergone acupuncture treatment at a private oriental clinic because of a tingling sensation in his left elbow and wrist. Uncontrolled skin ulcers developed at the acupuncture site and he had skin grafts at a local plastic surgery clinic, but the wound continued to worsen. At admission, the circulation of the left arm was poor and the grafted skin was nearly necrotized. He had been on anti-hypertensive medication 5 years ago. He had no history of angina or dyspnea on exertion. He also had no history of smoking, alcohol intake, or specific familial disease including coronary artery disease.

The patient's blood pressure was 92/54 mm Hg on the left arm and 140/80 mm Hg on the right arm. Blood chemistry analysis showed that total cholesterol was 128 mg/dL, triglyceride was 190 mg/dL, high density lipoprotein was 32 mg/dL, and low density lipoprotein was 61 mg/dL. The erythrocyte sedimentation rate was 76 mm/hour (normal range 1-20) and high-sensitivity C-reactive protein was 94.9 mg/L (normal range ≤8.0). Blood test results for autoimmunity showed positive anti-nuclear antibody and negative anti-neutrophilic cytoplasmic antibody. Upper extremity angiography was performed for a possible musculo-cutaneous flap operation. The left axillary artery showed aneurismal change with distal total occlusion and the right axillary and brachial arteries had multiple

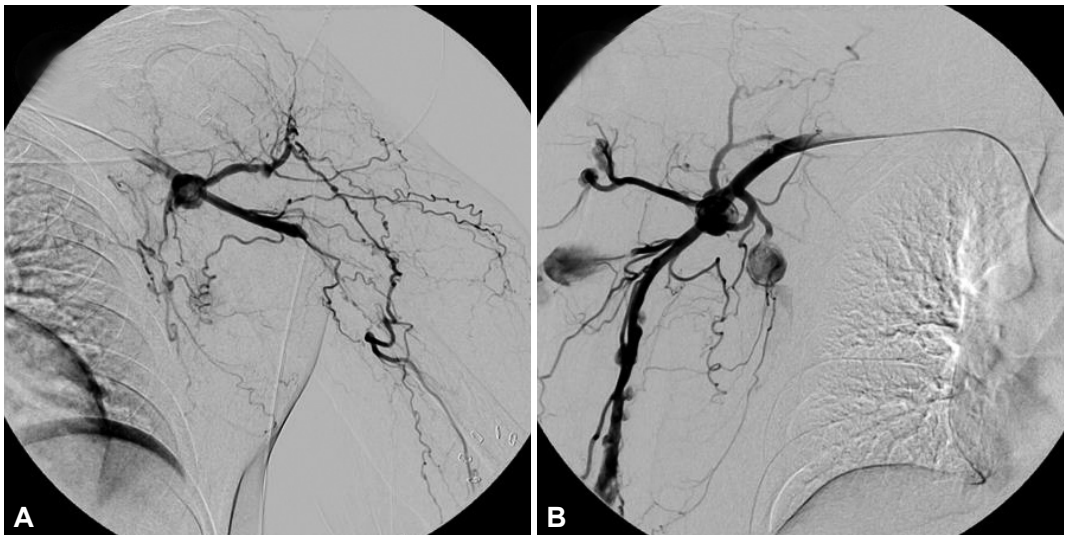

Fig. 1. The upper extremity angiography showed aneurismal change with distal total occlusion of the left axillary artery (A) and multiple aneurismal changes in the right axillary and brachial arteries (B).

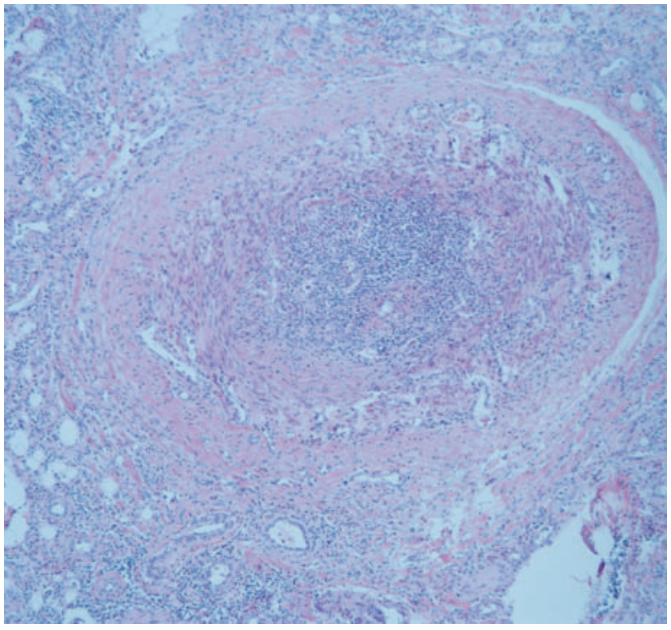

Fig. 2. Medium sized artery showed inflammation at low magnification (×100). The inflammation is especially severe in the intima and the lumen was nearly obstructed.

aneurismal changes (Fig. 1). A biopsy was performed from the skin and subcutaneous nodule and the pathological findings were compatible with PAN (Fig. 2). During his inpatient stay, the patient had resting chest discomfort and a consultation was made with our cardiovascular team for coronary angiography. The electrocardiography was normal except for the Q wave at lead III. The total creatinine kinase was 38 IU/L (normal range 38-160) and creatine kinase-MB was 0.7 ng/mL (normal range 0-3.6). The echocardiography showed normal left ventricular wall motions with an ejection fraction of 58%. The left coronary angiography showed large aneurysms on both the left anterior descending and left circumflex coronary arteries with CTO on distal segments (Fig. 3A). The proximal right coronary artery (RCA) also showed huge aneurismal change with CTO lesion (Fig. 3B). After these investigations, the patient was prescribed with immunosuppressive agents and anti-anginal medications with aspirin and statin.

Discussion

Our patient was a rare case of PAN presenting with coronary artery aneurysm with CTO involving all the major coronary arteries.

The most common cardiac manifestation of PAN is congestive heart failure.[4] The combination of hypertension and silent myocardial ischemia from coronary artery disease contributes to the prevalence of congestive heart failure in patients with PAN.[1] Premature atherosclerotic coronary disease is been well described in PAN and is likely to be secondary to coronary arteritis. The coronary sequelae of PAN include stenosis or occlusion of the coronary artery, coronary aneurysms, acute coronary dissection and rupture.[1)2)]

The involvement of PAN at the coronary artery is difficult to diagnose by coronary angiography pre-mortem because it is mostly asymptomatic.[5] For this reason, case reports of PAN involving the cardiovascular system have usually been made post-mortem upon autopsy. Holsinger et al.[6] reviewed 66 patients who were diagnosed with PAN between the years 1926 and 1958; 41 patients (62%) were found to have coronary arteritis. In this case, the patient had no symptoms of coronary artery disease before admission, even though all of the coronary arteries showed CTO lesions and aneurismal changes. The reason may be that the stenosis and aneurysm may have progressed slowly for a long time and the collateral cir-

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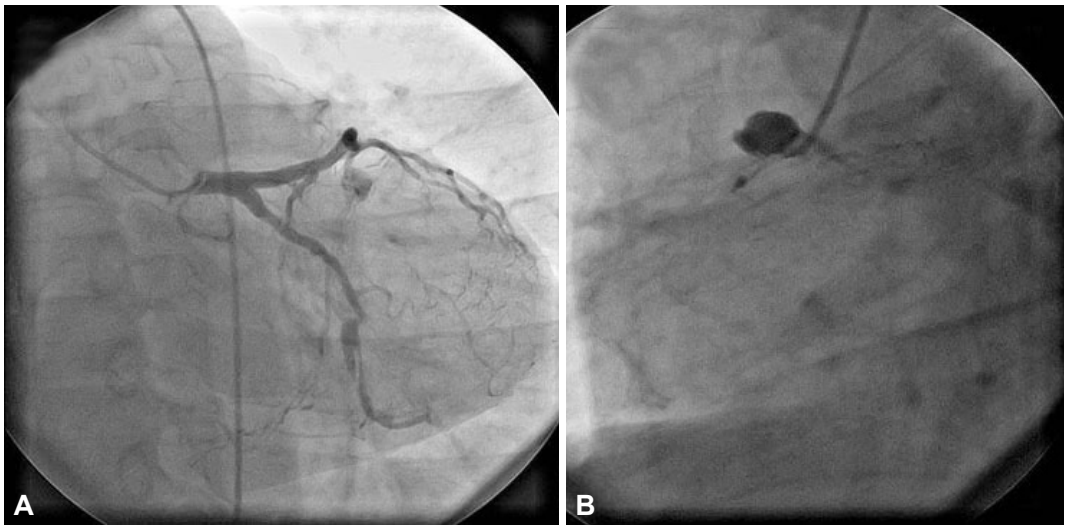

Fig. 3. The left coronary artery angiography showed a huge aneurysm and chronic total occlusion (CTO) of the left anterior descending coronary artery and the left circumflex coronary artery (A). The right coronary artery angiography revealed a huge aneurysm in its proximal segment and CTO (B).

culation from left coronary artery to RCA was maintained.

In our patient, PAN was controlled medically instead by percutaneous coronary intervention (PCI) or coronary artery bypass graft (CABG) because there was no active ischemic symptom and the distal run-off status of the coronary artery was not sufficient for CABG. However, in the face of an active ischemic status or myocardial infarction, a clinical judgment should be made according to the risks and benefits of coronary revascularization (PCI or CABG) versus immunosuppressive therapy.

In conclusion, this is a case report of a patient who was diagnosed with PAN and CTO lesions accompanying aneurysms of three main coronary arteries. Cautious care may be required for all patients with PAN, because of the chance of severe coronary artery disease without clinical evidence of angina.

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