Letter to the Editor

Acute Upper Limb Ischemia with Wrist Drop in an Elderly Patient

1. Introduction

Acute arterial occlusion in the upper extremities is much less common than occlusion in the lower limbs. The incidence rate of acute upper limb ischemia (AULI) has been reported to be 1.3 cases/100,000 individuals/year. We report on a rare case of an elderly patient with wrist drop and atrial fibrillation, who was eventually diagnosed with AULI and occlusion of all three coronary arteries.

2. Case report

Our patient was a 68-year-old man with hypertension, hyperlipidemia, and diabetes mellitus, all of which were under control with regular medication. He takes aspirin daily to prevent a stroke event. He came to our hospital with complaints of severe pain over his right upper arm and on the day of visit his right wrist dropped for 1 hour since he awakened in the morning. He denied any previous trauma in his arms. Although a physical examination showed the muscle power of his shoulder and elbow to be intact, his right wrist could not extend up. The patient also felt chillness and numbness on his right upper arm, which also extended to the left. The right upper arm was examined for hypothermic status and radial pulse. The radial pulse was weak and the patient was found to be poikilothermic. The upper arm was almost pink without pallor. Electrocardiogram revealed atrial fibrillation with heart rate up to 86 beats/minute and laboratory data were within normal limits. Although bedside transthoracic echocardiogram showed no visible left atrial thrombus, it did reveal left atrial enlargement. Except for pallor, the patient had paresthesia, pain, weak radial pulse, poikilothermia, and paralysis in the right upper arm, and therefore AULI was highly suspected. Computed tomography angiography (CTA) was arranged immediately following consultations with a cardiovascular surgeon.

CTA showed appearances of near-total occlusion in the right distal subclavian artery and the axillary artery, and partial occlusion in the right brachial artery (Figs. 1 and 2). Endarterectomy was immediately performed by dissection and thrombectomy with a 4-Fr Fogarty thrombectomy catheter to remove the thrombus in the right brachial artery. After the operation, the symptoms improved quickly. The treatment period from the onset of clinical symptoms to the end of successful intervention to remove the thrombus was approximately 6 hours. An echocardiogram following the surgery showed regional wall motion abnormality associated with the left anterior descending coronary artery. The patient underwent diagnostic coronary angiography immediately, which showed occlusion of all three coronary arteries. Under the diagnosis of triple-vessel coronary disease, we decided to perform coronary artery bypass grafting (CABG) for advanced restabilization of coronary circulation. The patient was stable after the surgery, and he took aspirin and warfarin regularly. The patient was discharged 2 weeks after admission.

3. Discussion

Of all the risk factors associated with arterial occlusion, smoking and diabetes are the most important. Approximately half of the patients with arterial occlusion also have either coronary or cerebrovascular disease. High death and complication rates are reported among patients who present with acute limb ischemia. Approximately 15–20% of the patients die within 1 year after presenting with clinically coexisting symptoms of occlusion. Leading causes of AULI are atherosclerotic plaque rupture, embolism, arteritis, trauma, iatrogenic injury, vasospasm, thoracic outlet syndromes, aneurysms, and hypercoagulable states. Embolism is considered to be the most common cause of AULI. By contrast, the main cause of lower limb ischemia is thrombosis. A previous study also suggested that atrial fibrillation substantially increases the risk of AULI. The risk was found to be higher with increasing age and female sex, and was associated with hypertension, myocardial infarction, heart failure, and stroke. Some studies reported that the brachial artery is the most common artery in the upper limb that develops occlusion.

In our patient, CTA with three-dimensional (3D) reconstruction revealed the occlusion of vessels between the right distal subclavian artery and the right brachial artery; in addition, the occlusion also affected portions of the radial nerve, causing wrist drop (Fig. 3A and B). However, CTA with 3D reconstruction could not illustrate the location of the thrombus inside the right brachial artery because the vessel was too small to show the thrombus in the CTA image. Cardiac catheterization was performed prior to CABG, which showed that the brachial artery was patent without flow limitation (Fig. 4). Based on the clinical pattern, risk factors, and results of surgery and cardiac catheterization, we suspected that the thrombus in the right brachial artery was due to atrial fibrillation without oral anticoagulation control.

Acute arterial occlusion in the lower extremities had been reported in many studies but only limited data are available on occlusion in the upper extremities. Heparin should be administered as

Conflict of interest: All contributing authors declare that they have no conflicts of interest.
soon as AULI is diagnosed. Thrombectomy with a Fogarty catheter is considered to be the safest and successful surgical procedure for AULI, and is valuable in removing brachial emboli. Thrombolysis, which has been established as the standard treatment for lower limb occlusion, is not performed for the upper limbs because it is associated with unfavorable complications such as hemorrhage and stroke. Percutaneous aspiration thromboectomy by the transbrachial approach was demonstrated to be a useful method for AULI. This procedure actually reduces postoperative and anesthetic risks, which are common in elderly patients with cardiovascular problems.

AULI is an emergency situation that requires urgent treatment to rescue the occlusive limb. Wrist drop should be considered while diagnosing AULI and should be treated appropriately, especially in elderly patients with atrial fibrillation. Besides, to achieve successful outcome, emergency physicians, radiologist, and vascular surgeons should perform a thorough examination and consider aggressive treatment methods as necessary to prevent coronary artery occlusion.
References