EJVES Extra **10**, 8–11 (2005)
doi:10.1016/j.ejvsextra.2005.04.008, available online at http://www.sciencedirect.com on SCIENCE DIRECT®

SHORT REPORT

A Rare Case of Brachial Artery Obstruction: Possible Link with Pergolide

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We present a case of a 51-year-old man, with an unusual occlusion of his brachial, radial and ulnar artery. Salvage of the extremity was achieved with a saphenous vein bypass from the axillary artery to the brachial artery at the elbow and subsequently a jump graft from the distal part of this bypass to the radial artery: histological analysis of the ulnar artery showed constriction of the vascular lumen by media-hyperplasia reminiscent of the medial fibroplasias-subtype of fibromuscular dysplasia. The brachial artery showed intimafibrosis and myxoid changes. These observations suggest a drug-induced or toxic cause, most likely to have been caused by pergolide. The precise mechanisms by which pergolide mediates its adverse vascular effects are unknown but may be related to ergotism. This type of side effect of pergolide has not been described before.

Keywords: Artery; Fibrosis; Pergolide; Ergotism.

Introduction

Dopamine-agonists mainly stimulate the postsynaptic dopamine receptors in a direct way,[1,2] and can be used in the treatment of patients with Parkinson's disease. The first dopamine-agonists were the ergotderivates bromocriptine, lysuride and pergolide (Permax®). Later, the non-ergotderivates ropinirole, pramipexole and cabergoline were introduced. Pergolide is being used in The Netherlands since 1991 as monotherapy or adjuvant therapy for symptomatic treatment of patients with with Parkinson's disease.

Besides peripheral side effects like orthostatic hypotension, nausea and vomiting, also psychiatric side-effects like hallucinations, psychoses and confusion can occur.[3] Other side-effects are constipation, edema of the lower extremities and Raynaud's phenomenon.[3]

Retroperitoneal fibrosis is rarely observed as a negative side-effect in the treatment of patients with Parkinson's disease with the ergotderivates bromocriptine, methysergide, and pergolide.[4–6] Pergolide-induced pleuritis, pleuropulmonary fibrosis and valvular heart disease have also been described.[7,8] In retroperitoneal fibrosis, pleuropulmonary fibrosis and valvular heart disorders inadequate fibrosis takes place with secondary loss of function of the specific organ. This may suggest a common etiology. Lower extremity ischemia and arterial spasm have been described in patients with ergotism.[9,10] If patients continue the use of ergotamine, ischemia and necrosis can be the result.

We report a case of a 51-year-old man, known with Parkinson's disease, who sustained brachial artery obstruction thought to have been induced by pergolide. Thus far, this possible type of side effect of pergolide has not been described.

Case Report

History

A 51-year-old male bank employee was seen in our

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department in June 2003 with complaints of a cold left hand since 3 weeks, with tingling and signs of sensory loss in his fingers and sometimes pain in his hand. He noticed loss of grip strength. Recently, he was diagnosed with Parkinson's disease had started pergolide (Permax®) 4 months ago. He did not use levodopa (Madopar or Sinemet).

His medical history included appendectomy, transurethral resection of the prostate because of prostatic hyperplasia, and epilepsy. Phenytoin was used until 2000. Since 2000, he complained of a tremor of his right hand due to focal epilepsy of the left hemisphere. Therefore, he was started on oxcarbazepine and clonazepam. Because of mood disorders fluvoxamine was also given. In 1983 he quitted smoking. He had a normal diet and daily physical activity. His family history was negative for vascular disease and venous thromboembolism. An aunt was known to have hypertension.

Physical examination

Physical examination revealed a cold and cyanotic left hand with more splinter hemorrhages on the left side compared to the right side. The left radial and brachial artery could not be palpated. There was atrophy of the musculature of left hand and the patient was hardly able to spread his fingers. The blood-pressure was 110/70 mmHg on the right side, and on the left side the blood-pressure was not measurable. The right radial artery pulse was just palpable. There were no signs of a costoclavicular syndrome or other features of an autoimmune disease. Chest and cervical spine X-rays were made and showed no abnormalities.

Additional investigations

Blood and urine samples (fasting blood glucose and lipidprofile, ANCA, thrombophily, protein C, protein S, lipids, glucose, factor II mutation, factor V Leiden, lubus anticoagulance, and hyperhomocystein) showed no abnormalities. A cardial embolism was excluded by echocardiography. No abnormalities were found by the ophthalmologist. Echo-Doppler monitoring showed no signals in the left upper-extremity. Digital subtraction angiography (DSA) examination showed complete obstruction of the left brachial artery and proximal arteries of the lower arm (Fig. 1(A)–(C)). Angiography did not show any narrowing or irregularity in the thoracic outlet area. There were no signs of atherosclerosis or vasculitis.

First operation

Since, there was no rest pain at first presentation an operation was planned at short notice. A deterioration on the day of admission required an emergency operation. Initially we attempted a thrombectomy of the brachial artery and both arteries of the lower arm. No thrombus was found. However, stenoses in the lumen of all arteries, including the brachial and axillary arteries, could be felt. We initially did a reversed left saphenous vein bypass from the axillary artery to the brachial artery in the elbow, since the attempted thrombectomy was abnormal from the elbow upwards but the arteries below the elbow felt fairly smooth. Good pulsations were felt both at the radial and at the ulnar artery with restoration of the circulation to the hand.

Post-operative

Post-operative pulses were felt in the bypass as well as distal from the bypass. A coumarin anticoagulant was started. Six days after the initial operation, both the radial and ulnar artery was pulseless. Echo-Doppler monitoring showed a good arterial bypass flow without vein bypass graft stenosis. There was no flow in the ulnar artery and only a slight flow in the radial artery. DSA showed a patent vein bypass graft. The ulnar and distal radial arteries were completely obstructed. There was collateral circulation to the thumb, index and middle finger, but poor vascularisation to the fourth and little finger was seen. In contrast to DSA, Echo-Doppler examination showed a patent distal radial artery and multiple stenosis in the proximal and distal part of the artery. To exclude any influence of pergolide it was stopped and a second operation was performed.

Second operation

A second bypass was performed using the reversed right greater saphenous vein from the distal part of the former bypass to the distal part of the radial artery. There was no pulsation in the ulnar artery and a biopsy was taken from the ulnar artery for pathological examination. Finally a fasciotomy was performed.

Histopathological findings

Histological analysis of the ulnar artery revealed constriction of the vascular lumen by media-hyperplasia, reminiscent to the lesion of the medial