Type A aortic dissection and pheochromocytoma: an indirect consequence of the Covid-19 pandemic

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Abstract

Type A aortic dissection is a cardiovascular emergency. Its incidence seems to have increased in the last few years, it is not clear whether this is a consequence of the ageing population or better awareness of the diagnosis (Erbel R, Alfonso F, Boileau C, Dirsch O, Eber B, Havercich A et al., Task Force on Aortic Dissection, European Society of Cardiology. Diagnosis and management of aortic dissection Task Force on Aortic Dissection, European Society of Cardiology. Eur Heart J 2001;15;22:1642–81). Acute type A aortic dissection is often lethal without urgent surgical treatment with mortality rates of around 17% (Conzelmann LO, Weigang E, Mehlhorn U, Abugameh A, Hoffmann I, Blettner M et al. Mortality in patients with acute aortic dissection type A: analysis of pre- and intraoperative risk factors from the German Registry for Acute Aortic Dissection Type A (GERAADA). Eur J Cardiothorac Surg 2016;49:e44–e52). Pheochromocytomas are rare tumours, though often asymptomatic, they could be lethal if left untreated. The incidence is around 0.6 per 100,000 persons per year. The association of both aortic dissection and pheochromocytoma is rare. Here, we report a case of a 36-year-old patient with pheochromocytoma and hypertension, whose delay of surgery due to the Covid-19 pandemic led to acute type A aortic dissection.

Keywords: Aortic dissection • Pheochromocytoma • Covid-19 • Surgery

CASE

We report the case of a 36-year-old male admitted to the emergency department of the Centre Hospitalier Universitaire Vaudois with a type A aortic dissection as a consequence of resistant hypertension in a patient known for pheochromocytoma. The patient has been known for tobacco smoking and hypertension since 2005 with sub-optimal blood pressure management. In 2005, the patient had an unremarkable abdominal ultrasound and CT scan. Fifteen years after the first investigations, the patient was addressed to a hypertension clinic where an abdominal Magnetic Resonance Imaging (MRI) found a left suprarenal mass; a laboratory workup confirmed the diagnosis of pheochromocytoma in July 2020. A Positron emission tomography/Computed tomography (PET/CT) scan was ordered and obtained 3 months later. Surgery was intended but due to the drastic Coronavirus disease 2019 (Covid-19) pandemic in Switzerland, the surgery was never scheduled.

Over a year after the PET/CT scan, the patient reported with severe tearing chest pain. The patient was initially admitted to the Yverdon hospital where a thoracic CT scan is done before being transferred to the Centre Hospitalier Universitaire Vaudois (Fig. 1). Upon arrival, the patient was severely hypertensive despite labetalol and urapidil during transportation. The patient was on perindopril, amlopidine, indapamide, and doxazosin prior to admission.

The patient was admitted to the operating room conscious without any neurologic deficit and peripheral pulses present. Intraoperatively, we confirmed the diagnosis of type A aortic dissection with an intimal tear located in the non-coronary sinus, in contact with the aortic valve. There was a reentry point at the base of the brachiocephalic trunk, which required the replacement of the proximal third of the arch with reimplantation of the brachiocephalic trunk into the prosthesis (Dacron 24 mm). Due to contact of the tear with the native aortic valve, it was replaced, and a Bentall procedure with a Carboseal mechanical valve (25/28 mm). The procedure was performed without any complications.

Postoperative follow-up was remarkable with multiple punctiform cortical strokes on cerebral MRI; later neurological progress was favourable. We obtained endocrinology consult that adjusted antihypertensive medications (amlodipine, doxazosin, atenolol, and lisinopril). The patient was later transferred to the visceral surgery division for left laparoscopic adrenalectomy, 1 month after the aortic dissection, which was uneventful (Fig. 2). Pathology confirmed the diagnosis of pheochromocytoma and the patient was discharged with a good blood pressure profile.

DISCUSSION

Max Schottelius was the first to describe the pathological characteristics of pheochromocytoma identified in a young
lady. Pheochromocytoma is a rare tumour with an annual incidence of 2–9.1 per 1 million adults, which presents with the typical triad of headaches, palpitations, and diaphoresis [1]. Pheochromocytomas increase catecholamines and thus sympathetic tone on the heart and blood vessels yielding tachycardia and increased blood pressure [2]. Hypertension increases vessel wall stress and is one of the most frequent risk factors for acute aortic dissections [3]. Few reports of acute aortic dissection and pheochromocytoma are published. The case we report presents a patient with longstanding secondary hypertension whose surgical management was delayed by the Covid-19 pandemic. The pandemic had an impact on elective surgical procedures worldwide. Our patient’s surgery was not planned because only urgent surgeries were performed. All hospital departments contributed to the care of Covid-19 patients with operating rooms closed or transformed into intensive care units. Since pheochromocytoma has a low malignant profile, its removal was not scheduled, and unfortunately, the patient presented with an aortic dissection. Blood pressure management is one of the most challenging aspects of aortic surgery in patients with pheochromocytoma; alpha and beta blockades are the mainstays of blood pressure management. Preoperative blood pressure stabilization has a positive effect on the surgical outcome. In our case, there was no hypertensive crisis during surgery but its management remained a challenge after surgery. Timing of pheochromocytoma surgery is important to discuss in a multidisciplinary team because no recommendation exists.

CONCLUSION

The Covid-19 pandemic delayed pheochromocytoma surgery, but the final outcome was good. Multidisciplinary team management improves outcome.

Conflict of interest: none declared.

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