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Case Report

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A rare case of adrenal pheochromocytoma discover by accident in a CT scan

Abstract

Pheochromocytoma's are rare tumours originating in chromaffin cells. The majority of these tomours are benign and unilateral, characterised by the production of catecholamines and other neuropeptides. Mainly located in the adrenal gland, they are more frequent between the 3rd and 5th decades of life; however, 10–25% can be associated with genetic familial syndromes (multiple endocrine neoplasia type 2). The author presents a rare case in a 53-year old patient with a long history of high pressure, and due to a mass accidentally discovered in a CT scan, confirmed the diagnosis of pheochromocytoma. HP was controlled with α and β blockers and alpha blockers with posterior retroperitoneal laparoscopic surgical intervention and subsequent resolution of HP.

Keywords: adrenal glands, adrenalectomy, catecholamines, metanephrine, normetanephrine, pheochromocytoma

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Introduction

Pheochromocytoma is a rare but life-threatening condition that has varied clinical presentations particularly hypertension, headache, palpitation, and sweating. Patients with suggestive clinical symptoms are frequently tested for pheochromocytoma. The medical interest in this tumour has increased with the improved availability of diagnostic laboratory tools particularly plasma or urinary fractionated metanephrines (metanephrine and normetanephrine), and other neuroendocrine markers particularly chromogranin. The wide universal availability of different imaging facilities, both anatomical and functional, has also improved the detection of pheochromocytoma.[1]

Catecholamine-producing tumours are neuroendocrine tumours that affect the chromaffin cells of adrenal medulla and postganglionic fibers of the sympathetic nervous system. These tumours are characterised by the synthesis, storage, release, and secretion of catecholamines and their metabolites.

Epinephrine (and its metabolite metanephrine) is the catecholamine that is produced exclusively by the adrenal medulla and adrenal pheochromocytoma. On the other hand, norepinephrine (and its metabolite normetanephrine) is the catecholamine produced by the adrenal medulla and adrenal pheochromocytoma as well as by the extra-adrenal pheochromocytoma and paraganglioma, which can also produce dopamine and its metabolite methoxytyramine.[2]

Pheochromocytomas can affect individuals of all ages. They are common in people aged between 40 and 50years, and relatively more common among females.

Case report

A 53-year-old female presented in 2017 to the Institute of Oncology Angel Roffo, with a CT scan from 2013 showing a mass in the right upper quadrant discovered accidententally in a routine test for irritable bowel. The CT scan was repeated and revealed the same image. She had a long history of high pressure, type I Diabetes in 2017 and a hysterectomy in 2012.

The patient was a nosmoker or an alcohol consumer. She was a middle aged, obese, female, with a pulse of 84pumps/min, and a blood pressure (BP) of 160/90mm of hg. Abdominal examination showed a well-healed Pfannenstiel scar, a soft abdomen, no tenderness, no palpable masses, no organomegaly, and no ascites. The (CT) scan of the abdomen confirmed a right adrenal mass (4,2x4,3cm) that was heterogeneous.

The patient had laboratory results within the references ranges for core blood laboratory tests including electrolytes, renal, liver, bone, glucose, glycated haemoglobin (HbA1c), and thyroid profiles. Endocrine tests revealed normal level of aldosterone and renin and low-normal levels of serum cortisol. Plasma catecholamines (dopamine, norepinephrine, and epinephrine) levels were within the reference ranges. Plasma metanephrine and normetanephrine levels were markedly raised.

The patient was admitted one day prior to surgery for preparation and assessment. All precautions were taken and preparations for managing the preoperatory hypertensive crisis. Patient was started on oral doxazocin 4mg daily and oral carvedilol 6,25mg twice daily. Three days after starting the antihypertensive medications, the blood pressure was controlled and the range of readings were in the range of 120/80 to 132/80mmHg. She was scheduled to undergo laparoscopic adrenalectomy under general anaesthesia.[3]

Anaesthetic management

On the day of surgery in the operation room she was connected to routine non- invasive monitoring: five ECG leads, pulse oximeter and intravenous arterial cannulations were performed following under local anaesthesia. Right internal jugular venous cannulation was performed after commencement of general anaesthesia and after tracheal intubation.

The following drugs were available to use in case of emergency, sodium nitroprusside (SNP), esmolol, Nitroglycerin (NTG) and noradrenaline infusions.

Induction of anaesthesia started with i.v. fentanyl 100mcg, propofol 140mg and tracheal intubation was facilitated by i.v. Succinylcholine 70mg and precurarization by atracurium 10mg At induction of anaesthesia the blood pressure was 120/82mmHg and at tracheal intubation it was 105/70mmHg. The anaesthesia management was using remifentanil and Sevoflurane and the muscular relaxation with atracurium.

During surgery central venous pressure (CVP) increased from 6 to around 12-14cm H_2O with fluid infusion at a rate of 10-15ml/kg/hr of crystalloids. The patient tolerated the whole procedure well, with minimal fluctuation of the blood pressure except at the time of the manipulation of the tumour before the time of ligation of the last artery supplying the tumour, where she developed severe hypertension and ST level elevation which was successfully managed with NTG and Esmolol both in bolus and continuing with infusion. After completion of surgery and before tracheal extubation morphine and analgesic were administrated.[4]

The patient was transferred fully awake to intensive care unit (ICU) with stable vital signs. She made an uneventful recovery and two days later she was discharged to regular surgical ward. Histopathology of the right adrenal gland confirmed the diagnosis of pheochromocytoma.

Discussion

Pre-operative management of the pheochromocytoma patient is essential. Although alpha – blockade is not universally considered as absolute necessity, other investigators recommended proper alpha1-receptor blockade. In our case, we have used high dose alpha-adrenergic and beta blockade prior to surgery. Despite this precautions the patient developed high pressure and cardiac event.

The real deal with this patient was, her long history of high pressure without palpitations or other symptoms and the tumour had been discovered by accident in a CT scan.

Despite the lack of symptoms, during the surgery the patient presented an ST elevation without acute myocardial infarction with a coronary angiography without alterations, so it was concluded that the right adrenal incidental was the cause of this.

Because pheochromocytoma may be recurrent, controls of blood pressure and levels of metanephrine are necessary.[5,6]

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None.

Conflict of interest

The author declares no conflict of interest.

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