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Case Report

Anaesthetic Management of Phaeochromocytoma in an Elderly Patient with Atypical Presentation: An Anaesthetic Dilemma - A Case Report

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Abstract

Background: Phaeochromocytoma accounts for approximately 4% of incidentally discovered adrenal masses, with 9–10% presenting atypically. These atypical presentations pose significant diagnostic and anaesthetic challenges, particularly in elderly patients and may increase the risk of delayed diagnosis and perioperative morbidity. Careful and adequate perioperative preparation has been shown to be an independent determinant of intraoperative haemodynamic stability. The aim of this report is to demonstrate the importance of meticulous preoperative optimization in achieving haemodynamic stability during adrenalectomy for atypical phaeochromocytoma. Case Presentation: We report a 67-year-old woman with a 17-year history of hypertension, well controlled on amlodipine, who was incidentally diagnosed with phaeochromocytoma following an atypical presentation during evaluation for an adrenal mass. Perioperative optimization was achieved using antihypentensive therapy and multidisciplinary planning involving the surgical and anaesthetic teams. She subsequently underwent adrenalectomy under combined general anaesthesia and epidural analgesia. Intraoperative haemodynamics remained stable, including during tumour manipulation and renal vein clamping. The postoperative course was uneventful and she was subsequently discharged in stable condition. Conclusion: Anaesthetic management of phaeochromocytoma remains challenging, particularly in atypical cases where diagnosis may be delayed; however, adequate preoperative optimisation is critical for favourable outcomes. Calcium channel blockers are increasingly relevant in the preoperative preparation of such patients, especially where classical features are absent. This case highlights the importance of thorough perioperative planning in ensuring haemodynamic stability and good surgical outcome.

Keywords

Anaesthesia, Phaeochromocytoma, Atypical Presentation, Elderly Patient

1. Introduction

Phaechromocytoma is a rare neuroendocrine tumor that originates from chromaffin cells in the adrenal gland with an incidence of 0.05%. [1, 2]. It occurs mainly between 30-50 years in both sex with similar frenquency in both adrenal

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glands. It constitutes about 4% of incidental adrenal mass. [3] The clinical presentation is due to excessive secretion of catecholamines, however common symptoms include episodic headache, sweating and tachycardia with hypertension (either sustained or paroxysmal) as the most observed feature. [2, 4].

Studies have documented that atypical presentation of phaechromocytoma occur in 9-10% of patients as cerebrovascular accident, pulmonary edema, myocardial infarction, renal failure. [2, 5] Also 0.05% to 0.1% patients at autopsy has been found to have phaechromocytoma, which shows that some cases may go undiagnosed. [6] These reflects that the prevalence of this tumor may be underestimated.

Phaechromocytoma is diagnosed by elevated plasma or urinary metanephrines and confirmed with Computed Tomography (CT) Scan or Magnetic Resonance Imaging (MRI). Surgical resection is the treatment of choice preceded by medical management of blood pressure to reduce surgical risks [5].

Surgical resection of phaechromacytoma poses a significant and great challenge to anaesthesiologists. [7-9] Careful preoperative preparation have been documented as the most important contributor to intraoperative haemodynamic stability. We present an atypical presentation of phaechromocytoma in a relatively normotensive patient.

2. Case Presentation

A 67 year old who presented with history of left flank pain of one month duration. The pain was severe in intensity and aching in character, with no associated abdominal swelling. He is a known hypertensive diagnosed 17 years prior to presentation and regular on anti-hypertensive (Tab Amlodipine 10mg daily). In Systemic examination, cardiovascular system showed pulse = 74b/m, Bp = 130/70mmHg, Heart sound 1 & 11 were heard only. Other systems were essentially normal. Investigations done on presentation include:

Ultrasound (US) Scan = showed Hepatic mass measuring 61x87mm with irregular borders and hyper-echoic with peripheral vascularity and posterior acoustic shadow. The kidney showed 2 cystic mass measuring 23x25mm and 22x20mm respectively situated on the inferior pole of the left kidney.

Fasting Blood Sugar (FBS) = 94mg/dl

Liver Function Test (LFT) showed decreased Alkaline phosphatase (ALP) and total protein, other parameters essentially normal.

Full Blood Count (FBC) & Serum Electrolyte Urea and Creatinine (S/E/U/Cr) were within normal range.

MRI = There is a right suprarenal mass that is related to the upper pole with significant inferior displacement of the kidney while the left kidney harbours 3 identifiable benign cyst. Impression of suprarenal gland tumor, likely phaechromocytoma was made.

CT Urography showed an irregular moderately but heterogenously enhancing mass lesion measuring 8.4cm x8.1cm x 6.2cm in the right suprarenal gland bed. An impression of right suprarenal gland mass, likely malignant. (Figures 1 & 2).

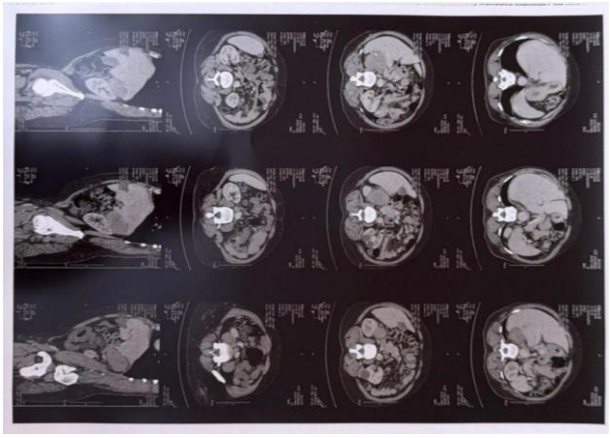

Figure 1. *CT Urography.*

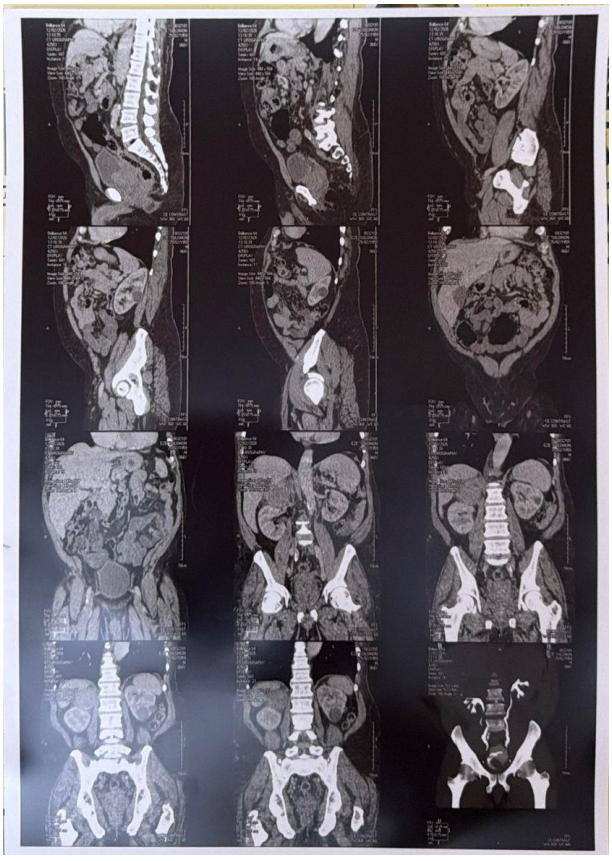

Figure 2. *CT Urography.*

Based on the assessments as above, a diagnosis of phaechromocytoma was made and patient was booked for right adrenelecctomy.

Preanaesthetic review showed an elderly man in no obvious distress who had been on Tab Amlodipine 10mg with stable vital signs Bp = 134/75mmHg on lying down and 132/72mmHg on standing up, Pulse = 74bpm, SPO2 = 95%

on Room air with left axis deviation and normal ST segment on Electrocardiography (ECG). Vital signs had remained stable as above more than a week prior to the review. Patient continued on Tab Amlodipine on the morning of the surgery.

Intraoperatively, patient was transported into the theatre and baseline vital signs were taken as follows: Bp = 135/78mmHg. Pulse= 72bpm and SPO2 = 96% on Room air /100% on Oxygen. Wide bore cannular was inserted on both hands. Epidural catheter was inserted for intraoperative and postoperative pain management while general anaesthesia with endotrachael intubation was established for Adrenelectomy. During tumor manipulation, epidural Top - up was done with 5ml of 0.25% plain bupivacaine and together with inhalational agent (isoflurane) intraoperative hypertension due to release of catecholamine was mitigated. Vitals sign range during Tumor manipulation was Bp= 121/60- 151/80mmHg, pulse= 62-96bpm, SPO2= 98%-100%. Prior to Clamping of the Renal vessels, 500ml of Normal saline was infused and together with injection ephedrine the intraoperative hypotension that follows Renal vessels clamping was mitigated. Vital signs following Renal vessel clamping and resection are as follows: Bp=100/50-120/60mmHg, pulse= 60-82bpm. Intraoperative pain management was achieved using 100µg Fentanyl, iv Pcm 900mg and epidural analgesia.

At the end of the surgery, patient was extubated after achieving criteria for extubation. Immediate postoperative vital signs include BP= 110/62mmHg, pulse= 72bpm, SpO2=97% on room air.

Postoperatively day one, patient was stable with vital signs as follows Bp = 130/80mmHg, Pulse = 80bpm, RR = 24Cpm.

Day two, patient was stable with vital signs Bp= 140/80mmHg, Pulse = 73bpm, RR= 28Cpm.

Two weeks postoperative, the histology result of the excised right adrenal gland mass showed features that are in keeping with phaechromocytoma.

3. Discussion

Anaesthesia for phaechromocytoma is challenging and complex. The complexity of the anaesthetic management has been documented to be largely dependent on the surgical approach. [8] Evidence have shown that laparoscopy approach is superior [10] and poses less complexity to the anaesthetic management due to less intraoperative haemodynamic instability associated with laparoscopy adrenelectomy for phaechromocytoma. This is due to less manipulation during tumor resection which leads to reduced catecholamine release compared with open surgery. [11] The index resection was done under open surgery. Woodrum et al [9] reported that careful preoperative preparation is the most important contributor to intraoperative haemodynamic stability. The most critical care to effective and safe preoperative preparation is adequate ά-adrenoceptor blockade which is achieved with phenoxybenzamine (most commonly used), Prazosin, terazosin, doxazosin; and subsequent β- adrenoceptor blockade using propranolol or metoprolol against the effects of catecholamine released during tumor manipulation. Adequate ά blockade is evidenced by no in-hospital blood pressure > 160/90mmHg for 24hrs prior to surgery, blood pressure not lower than 80/45mmHg during the standing phase for orthostatic testing, no ST or T wave changes in one week prior to surgery and not more than 5 premature ventricular contractions per minute. [8] The index patient was on Tab Amlodipne 10mg till the morning of the surgery with vital signs within normal range of Bp= 120/62-134/74 mmHg both on supine and in standing position, pulse= 65bpm-75bpm and ECG tracing with no ST segment or T wave abnormality. Although, Amlodipine is not among the standard ά blockers advocated for achieving adequate ά blockade prior to adrenelectomy for phaechromocytoma, however some studies have shown that attention and use of calcium channel blocker eg. Amlodipine for preoperative preparation of phaechromocytoma patients for adrenelectomy have increased in recent times, predominantly for patients who are normotensive or develop severe orthostatic hypotension with ά blockers or tumors that are <3cm because they do not cause hypotension seen in ά adrenoceptor blockade. [9, 12, 13] This could explain the marginal blood pressure fluctuations seen during tumor manipulation and renal vessel clamping and resection during adrenelectomy in the index patient.

Epidural catheter was employed for intraoperative and postoperative analgesia together with fentanyl and paracetamol in the index study. The use of intraoperative epidural analgesia may have contributed in attenuating intraoperative hypertension during tumor manipulation while rapid infusion of normal saline prior to renal vein ligation may have also contributed in attenuating the effect of epidural local anaesthetic on the hypotension associated with renal vein ligation. Evidence [14, 15] have shown the use of epidural analgesia during adrenelectomy for phaechromocytoma especially in laparoscopic approach. While the above study activated the epidural catheter prior to induction of anaesthesia, however the index study activated the epidural catheter prior to tumor manipulation. These, therefore, highlights the relevance of epidural analgesia in attenuating the catecholamine effects on the intraoperative haemodynamic status.

4. Conclusion

Anaesthetic management of adrenelectomy following Phaechromocytoma is still complex and challenging. Preoperative preparation remains key to maintaining intraoperative haemodynamic stability. Calcium channel blocker like Amlodipine have become increasingly important in preoperative preparation of atypical presentation of phaechromocytoma especially among normotensive patients.

Abbreviations

ALP	Alkaline Phosphatase

CT	Computed Tomography
ECG	Electrocardiography
FBC	Full Blood Count
FBS	Fasting Blood Sugar
LFT	Liver Function Test
MRI	Magnetic Resonance Imaging
S/E/U/Cr	Serum Electrolyte Urea and Creatinine

Author Contributions

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Anselm Okwudili Obi: Data curation, Investigation, Supervision, Writing – review & editing

Conflicts of Interest

There is no conflicts of interest.

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