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Anaesthesia management of laparoscopic Adrenelectomy: A deluge of differential diagnosis

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Abstract
Adrenal tumours are extremely rare tumours and rarely symptomatic. Mostly, it is a post mortem finding. Laparoscopic excision of adrenal tumours is the best approach for tumour excision as it prevents wide abdominal incision maintaining hemodynamic stability, decreasing infection rate, and reducing post-operative ICU stay. Anything that requires adrenal gland manipulation carries the risk of catecholamine release intraoperatively. We report a case of 37 year old female, presenting with complaints of pain in abdomen with abdominal distension. CT scan of abdomen showed well-defined 7.6 *5 *9cm soft tissue lesion arising from left adrenal gland causing indentation on left kidney with well-maintained fat planes between them. Findings were suggestive of left adrenal lipoma. It was important to rule out slightest possibility of secreting adrenergic tumour. All the precautionary measures were taken considering the patient develop hemodynamic instability equivalent to that in pheochromocytoma.
We took all the preventive and precautionary measures in anticipation of intraoperative adrenergic crisis as well as maintained hemodynamic stability in laparoscopic surgery. Ruling out possibility of secreting adrenal tumour like pheochromocytoma, cushing syndrome, conn's syndrome at every step is what our case revolves around.
Preoperative hormonal evaluation, smooth and gentle induction of anaesthesia, modern anesthetic drugs, intraoperative hemodynamic stability and strong intraoperative collaboration with surgical team, are the most important steps that can guarantee the successful management of laparoscopic adrenelectomy.

Keywords: Adrenelectomy, myolipoma, laparoscopy

Introduction
Laparoscopic adrenalectomy is a highly skilled procedure and requires substantial knowledge and experience to minimize potential intraoperative complications. Our primary goal is to maintain hemodynamic stability of the patient which can get deranged because of possibility of pheochromocytoma, cushing syndrome, conn's syndrome and also, maintain induced hypotension throughout surgery. Here we present a case of 37 year old female having adrenal mass posted for laproscopic adrenelectomy with preoperative work up and intraoperative precautions.

Case Repost
We report a case of 37 year old female (BMI 25.07 kg/sq.m), presented with chief complaints of pain in abdomen and constipation off and on. She had obstetric history P4L4, all full term normal delivery. Patient had no symptoms of endocrinological tumor like body flushes/ headache/ palpitation/ high blood pressure/ weight loss. She had no comorbidities; there was surgical history of hemithyroidectomy 9 year ago.
On examination patient was vitally stable, airway was normal; she had short neck with double chin. Routine blood investigations including serum electrolytes, thyroid function test, Serum Cortisol 8am value and ACTH value were within normal limits. Endocrinologist opinion was taken, accordingly there was no need for preoperative preparation with alpha-blockers before surgery.
Patient was taken inside operation theatre with consent for surgery, high risk consent regarding manipulation of adrenal gland and the risk associated with that. Adequate blood and blood products were reserved. Peripheral venous cannulation with 20 G was secured.

Pulse oximetry, electrocardiogram, non-invasive and invasive blood pressure, capnography, central venous pressure monitoring was used for intraoperative monitoring.
To minimise the duration of exposure to anaesthesia, induction was done only after laparoscopy instruments setup and arrangements were done. Patient was induced with intravenous propofol 2mg/kg and succinylcholine 2mg/kg as muscle relaxant. Oral intubation was done. After confirmation of endotracheal tube placement, vecuronium 0.1 mg/kg was given. Isoflurane was used as maintenance in mixture of oxygen: nitrous oxide (50:50). Internal jugular vein line and left radial arterial line was secured. After laparoscopic port insertion the intraabdominal pressure was maintained between 10-12 mm Hg. After half an hour of starting surgery blood pressure was 150/100. Dexmedetomidine infusion was started via proximal central line port at rate of 0.02microgm/kg/hr. Intraoperatively blood sugar was monitored after removal of mass to rule out hypoglycaemia. Throughout laparoscopic procedure, blood pressure maintained around 110/70 and heart rate was around 70 beats per minute. For additional analgesia intravenous paracetamol 1 gm was given towards completion of procedure. After surgery, extubation was done. Patient was observed for 30mintues then shifted to surgical ICU for monitoring and postoperative care.

Discussion

Adrenal myelolipomas are rare benign neoplasms composed of mature fat and bone marrow elements [1]. It is detected incidentally and estimated autopsy finding of this tumor is 0.1 - 0.2% [2] Indications for adrenalectomy were abdominal or flank pain, large tumor size (>8 cm), atypical radiologic appearance, and/or inferior vena cava compression [3]. Even though the test came negative for pheochromocytoma in our patient, the possibility of excess secretion of catecholamine intraoperatively cannot be ruled out completely.
Pheochromocytoma represents very significant challenges and for diagnosis, excess catecholamine must be demonstrated. It is necessary to rule out subclinical cortisol secreting lesion by an overnight 1 mg dexamethasone suppression test. A response providing values lower than 5 μg/dL was considered normal. It is important to evaluate 24-hour total urinary metanephrines and fractionated catecholamines (or both plasma and urine study) to exclude a pheochromocytoma [5]. Anaesthesia primary goal is the delivery of an anesthesia which provides stable hemodynamics in the face of catecholamine surges (especially at laryngoscopy, peritoneal insufflation, surgical stimulation, and tumor handling) followed by the opposite scenario following tumor ligation [6]. Preoperatively, renin and aldosterone level with serum electrolytes are to be made sure that they are in normal limits to rule out Conn's syndrome in which case there might decreased renin, high aldosterone and hypokalemia.
CT scan findings in this case showed well defined soft tissue lesion 7.6*5*9 cm with foci of fat within, arising from medial limb of left adrenal gland causing indentation of medial wall of left kidney with well-maintained fat planes between them; no significant enhancement was noted. These features were suggestive of left adrenal lipoma.
In this case we have also done Thyroid function test to confirm her euthyroid profile before posting her in view of history of hemithyroidectomy. We had done adrenocorticotropic hormone and 8am cortisol level. After confirming the origin of tumour and its non secreting nature, we proceeded further.
Preoperatively all antihypertensives including beta blockers, nitroglycerin, sodium nitroprusside were arranged. Also large amounts of fluid were arranged to avoid hypotension anticipated after tumor ligation. Factors that stimulate catecholamine release (hypoxia, hypercarbia, fear, stress, shivering) were avoided. We avoided morphine and atracurium as they cause histamine release which can provoke catecholamine release.
In a study, intraoperative increases in blood pressure necessitating antihypertensive therapy were observed in 17 of 40 patients (44.7%), in 11 of 40 patients (28.9%) blood pressure peaks of >200 mmHg (> 1 min) were noted [6]. So as to maintain blood pressure, the patient was started on dexmedetomidine infusion providing additional advantages of maintaining deep sedation and extends pain free period postoperatively thereby reducing total analgesic requirement [7]. The laparoscopic approach for adrenalectomy has become the 'gold standard' for small tumours and for large and non-malignant adrenal tumours [4]. The management of these adrenal disorders usually using a laparoscopic approach following localisation is highly successful, resulting in control of both metabolic abnormalities and the hypertension that often accompanies these diseases [8].

Conclusion

Patients with adrenal tumour involves adrenal gland handling. Anything that involves adrenal gland handling can pose a significant risk of catecholamines secretions intraoperatively. It is important to differentiate secreting adrenal tumours preoperatively as well as be ready with all management intraoperatively if need arises. Primary goal of anaesthesiologist in handling adrenal gland tumours is maintaining hemodynamic stability.

Conflict of Interest

Not available

Financial Support

Not available

References

1. Gockel I, Heintz A, Kentner R, Werner C, Junginger T. Changing pattern of the intraoperative blood pressure during endoscopic adrenalectomy in patients with Conn's syndrome. Surg Endosc. 2005;19(11):1491–1497.
2. Sharma MC, Gill SS, Kashyap S, Nabi G, Mishra MC. Adrenal lipoma. A case report. Urol Int. 1998 Aug;60(4):245-7.
3. Victoria M. Gershuni, MS, James G. Bittner, IV, MD, et al. Adrenal myolipoma: operative indications and outcomes. Laparoendosc Adv Surg Tech A. 2014 Jan 1; 24(1):8-12.
4. Serji B, Souadka A, Benkabbou A, et al. Feasibility and safety of laparoscopic adrenalectomy for large tumours. Arab J Urol. 2016;14:143-6.
5. Giorgio Guazzoni, Francesco Montorsi, Aldo Bocciardi, Luigi Da Pozzo, Patrizio Rigatti, *et al*. Transperitoneal Laproscopic versus open adrenelectomy for benign hyperfunctioning adrenal tumours: A comparative study. 1995 May;153:1597-1600.

6. Ramakrishna H. Pheochromocytoma resection: Current concepts in anesthetic management. J Anaesthesiol Clin Pharmacol. 2015;31(3):317-323.
7. Vinayak Panchgar, Akshaya N, Shetti HB, Sunitha, Vithal K, Dhulkhed, Nadkarni AV. The Effectiveness of Intravenous Dexmedetomidine on Perioperative Hemodynamics, Analgesic Requirement, and Side Effects Profile in Patients Undergoing Laparoscopic Surgery Under General Anesth. Anaesthesia Essays and Researches. 2017 Jan-Mar;11(1):72-77.
8. Vaughan ED. Diseases of the adrenal gland. Jr. Med Clin North Am. 2004;88(2):443-466.

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