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A case of Pheochromocytoma presenting for adrenalectomy

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INTRODUCTION

Adequate preparation with alpha blockade is important in a patient presenting for pheochromocytoma resection. Use of vasopressin is indicated to treat intraoperative hypotension refractory to alpha agonistic agents. Clevidipine is a new, novel agent effective in the management of hypertensive episodes.

CASE DESCRIPTION

A 75- year- old with left adrenal mass, hypertension and atrial fibrillation with elevated metanephrine and normetanephrine was diagnosed with pheochromocytoma. Adequate preoperative alpha blockade was established with oral doxazocin. General anesthesia with endotracheal tube was performed for laparoscopic left adrenalectomy. Perioperative blood pressure was closely monitored with an arterial line. Hypotension in the post-induction period was effectively managed with vasopressin. Hypertension during resection and hypotension following resection were not encountered as this patient was adequately alpha- blocked preoperatively.

P R E - O P

CLINICAL FEATURES:	Headaches, Palpitations, Diaphoresis , Severe Hypertension , Postural Hypotension, Tachyarrhythmias, Diabetes mellitus, Pallor, Weight Loss, Cardiomyopathy
PREFERRED DIAGNOSTIC TESTS for Pheochromocytoma (per Task Force of the Endocrine Society):¹	1. Plasma metanephrine: Sensitivity 96%, specificity 85% 2. 24-hr collection of urinary catecholamines: Sensitivity 87.5%, specificity 99.7%
PREOPERATIVE PREPARATION:	1. Initiate alpha blockage 10-14 days before surgery 2. Initiate beta blockade only after complete alpha blockade
ALPHA BLOCKERS for preoperative preparation:^{2,3}	1. <u>Phenoxybenzamine</u> : Non-selective; prolonged half-life; causes reflex tachycardia; should be stopped within 24-48 hours 2. <u>Doxazocin</u> : Selective Alpha 2 antagonist; doesn't cause reflex tachycardia; reduced incidence of intraop hypertension and postop hypotension
PREOPERATIVE OBJECTIVES for adequate alpha blockade:²	1. Control hypertension. 2. Reverse circulating blood volume. 3. Control heart rate and arrhythmia. 4. EEG free of ST segment and T wave changes. 5. Reverse hyperglycemia and electrolyte abnormalities.
PREOPERATIVE TARGETS of adequate alpha blockade:²	1. In-hospital blood pressure below 160/90 mmHg for 24 hours prior to surgery. 2. No orthostatic hypotension with blood pressure <80/45 mmHg. 3. EKG free of ST and T wave changes for one week prior to surgery. 4. Fewer than five (5) premature ventricular contractions per minute.

I N T R A - O P

DRUGS TO AVOID INTRAOPERATIVELY^{2,3}

(Laparoscopic adrenalectomy is currently the surgical method of choice)

- ✓ Histamine releasing drugs (morphine, atracurium)
- ✓ Vagolytic agent (pancuronium)
- ✓ Ketamine

CRITICAL PERIODS OF HEMODYNAMIC CHANGES DURING RESECTION^{2,3}

- ✓ *Catecholamine surge leading to hypertensive episode:* Laryngoscopy; peritoneal insufflation; tumor manipulation
- ✓ *Hypotension due to catecholamine decline:* Tumor ligation

ANESTHETIC GOALS^{2,3}

1. Avoid or reduce catecholamine release due to surgical and anesthetic techniques
2. Avoid drugs that release catecholamines or histamines
3. Minimize the hypertensive response during tumor handling.
4. Minimize the hypotensive response following tumor resection.

PHARMACOLOGICAL AGENTS TO CONTROL HEMODYNAMIC CHANGES DURING SURGERY⁵

CLEVIDIPINE is effective in controlling hypertension during tumor handling. VASOPRESSIN is the agent of choice to treat hypotension resistant to alpha adrenergic agonistic agents.

CONCLUSION

Preoperatively, adequate selective alpha2 blockade with doxazocin minimizes hypertensive and hypotensive episodes during pheochromocytoma resection.³