Catecholamine Secreting Tumor

Occurence: 90% of the time is isolated; 10% familial. Pts are usually 30-40 years old upon diagnosis. 80% of the time occur within adrenal medulla or at organ of Zuckerkandl (near the aortic bifurcation); 2% at the neck and thorax.

NE: Epi secretion ratio = 85:15 (opposite of normal adrenal secretion)

Mortality Rate with surgery: 0-3%

Sign and Symptoms: HTN, sweating, headache, pallor, palpitations, orthostatic hypotension. NE (alpha) - systolic & diastolic HTN with reflex bradycardia. Epi (beta) - systolic HTN and diastolic hypotension with tachycardia. Cardiomyopathy - dilated and hypertrophic and left ventricular outflow obstruction. Coronary vasoconstriction leads to decreased coronary blood flow. ECG changes: ST segment changes, T wave changes, prolonged QT, peaked P waves, left axis deviation and dysrhythmias. Increased blood glucose due to glycogenolysis and inhibited insulin release.

Diagnosis: Pts with low probability: 24-hour urine collection will show vanillymandelic acid (metabolites of NE/Epi). Pts with high probability: plasma free metanephrines (catecholamine metabolites). Clonidine supression test: no effect to clonidine means positive for pheochromocytoma

Pre-op Management: Phenoxybenzamine: (non-competitive alpha 1 antagonist) has a long duration so, discontinue 24-48 hours pre-op. Prazosin and doxazosin: (alpha 1 competitive antagonist) short acting and causes less tachycardia. Labetalol: (non-selective beta-blocker) for heart rates greater than 120 bpm. Esmolol:(Beta 1 selective) good for Epi secreting pheo's. Alpha-methylparatyrosine: inhibits tyrosine hydroxylase - rate limiting enzyme. Nifedipine, diltiazem, verapamil, captopril: (CCBs) decrease catecholamine release. ACE inhibitors.

Intra-op Management: *Histamine releasers:* morphine and atracurium. *Catacholamine inducers:* atropine, pancuronium, succinylcholine. *Hypertension* - Nitroprusside (direct vasodilator). Phentolamine (competitive alpha blocker). Nitroglycerine can cause tachycardia and you need a large dose. Labetalol (epi secreting tumors). Magnesium - decreased catecholamine release, decreases sensitivity of the alpha receptor to NE/Epi and is a direct vasodilator. *Ventricular Arrhythmias* - Lidocaine or Beta blockers. *Fluids* - LR, NS, D5W. Glucocorticoids.

Post-op Management: Take 7-10 days for plasma catecholamine levels to decrease.*Goal BP* : <165/90 >80/45 mmHg for the first 48 hours.

Presentation with different catecholamine release

NE	EPI	Other SS
HTN	Palpitations	Dysrhthmias
Headache	Tachycardia	Cardiomyopathy
Sweating	Panic/Anxiety	MI
Pallor	Tremors	Encephalopathy
Bradycardia	Hyperglycemia	Stroke
		Renal Insufficiency
		Tumar mass effects (i.e. compression)