Endocrine—Primary Aldosteronism

Concept

Either unilateral adenoma (85%) or bilateral adrenal hyperplasia (15%) resulting in elevated aldosterone levels, hypertension, and hypokalemia.

Way Question May be Asked?

"32 y/o female with two year history of hypertension, unresponsive to medical treatment." May also have fatigue, muscle cramps, polyuria, weight gain, peripheral edema (often rings on the fingers not fitting is first thing patient notices).

How to Answer?

Have to think about surgically correctable forms of hypertension in young patient with new onset HTN (coarctation, renal artery stenosis, Cushing's, pheo)

Complete History and Physical Exam

Questions to rule out pheo
Family history (if suspicious of pheo)
Make sure pt not taking any medications (especially diuretics—will throw off lab values)

Diagnostic Tests

Check for low potassium
Check aldosterone/renin ratio (should be > 400 or primary hyperaldosteronism)
If renin is high, suspect other etiology (renal artery stenosis)

To differentiate bilateral hyperplasia for adenoma, use *Captopril test*
(1) Give dose of captopril and measure aldosterone level before and after, if decreases, then bilateral hyperplasia

Always try to localize tumor (these are typically small):
(1) CT scan abd/pelvis
(2) Selective venous sampling (especially if CT negative)
(3) NP-59 Iodocholesterol scan (helps rule out hyperplasia too)

Surgical Treatment

If bilateral hyperplasia, treatment is medical with Spironolactone (effective in 90% cases)
If single adenoma, unilateral adrenalectomy is indicated. This could be
(1) A posterior approach through the 12th rib on right or 11th on left
(2) Through midline laparotomy
(3) Laparoscopic
Describe whatever approach you are comfortable with, but remember
(1) On right, the adrenal vein enters posteriorly into the IVC and mobilization of the right lobe of the liver is necessary if going transabdominal
(2) On left, mobilization of the colon, and pancreas +/− spleen may be required and adrenal vein empties into renal vein
(3) Only the venous drainage is consistent in adrenal anatomy

Careful of post-op hypotension→may need to use steroids

Common Curveballs

Pt will have b/l hyperplasia if you don't rule it out
Pt will have no tumor by CT scan so know other localizing studies
Pt will have renal artery stenosis or fibromuscular dysplasia if you don't check renin levels
Pt will have post-op hypotension (from adrenal insufficiency)
Will injure spleen when mobilizing colon for left adrenalectomy
Will injure IVC doing right adrenalectomy

Strikeouts

Not checking potassium, aldosterone, renin levels
Not being able to describe surgical approach (no matter what question, this brings you back next year—and if you can't describe, don't make it up)
Not ruling out other forms of surgically correctable HTN
Not knowing medical treatment for b/l hyperplasia and performing bilateral adrenalectomies
Not knowing how to treat post-op hypotension and doing extensive work-up for hemorrhagic/hypovolemic/cardiogenic shock
Misdiagnosing pt as a pheochromocytoma
Not knowing mechanism of action of aldosterone or renin-angiotensin-aldosterone axis
Not knowing that syndrome is called "Conn's Syndrome"