ADRENAL NODULE

The adrenal glands sit above the kidneys, one on each side of the body. They make several hormones important for normal body function. An adrenal nodule is a growth in the adrenal gland. Adrenal nodules are not uncommon. By 70 years of age, up to 7% of people have a nodule in the adrenal gland.

Most of these nodules do not cause any harm and can be left alone. However, about 10% of the time, the nodule can make too much hormone and cause problems in the body. If the nodule is over 1 cm, blood work is recommended to see if the nodule is making excess hormones.

Imaging studies such as CT or MRI are recommended at 6, 12 and 24 months after the nodule is first seen.

Nodules less than 3 cm that do not make extra hormones are not likely to make extra hormones on repeat testing. However, 20% of nodules larger than 3 cm can show excess hormone production on repeat testing. Therefore, some experts recommend blood work every year for three to four years for nodules larger than 3 cm.

Very rarely, the nodule can be cancerous. Removal is recommended for nodules over 6 cm, or over 4 cm in young, healthy patients.

Questions
History of high blood pressure?_________ What medications you do take for it?_________

History of high blood sugar?_________ Diabetes?_____ Medications for diabetes?_______

Do you have a history of cancer?___________ What kind?_____________________________
When were you diagnosed?_____________ How was it treated?_______________________

Do you get episodes of (circle those that apply): tremor headache sweating heart
pounding palpitations anxiety

History of endocrine disorder in the family (Multiple Endocrine Neoplasia type 2, von
Hippel-Lindau syndrome, neurofibromatosis type 1)?_______________________________
Nothing to eat or drink after midnight the night before blood work.
Blood work to be drawn before 9:30 am.

BLOOD WORK (all drawn same morning)
☐ Morning serum cortisol level
Take 1 mg dexamethasone at 11:00 pm the night before the test
Cannot be on oral birth control pills

☐ Morning plasma free metanephrines
To be drawn laying down (supine)
No caffeine for 24 hours
No acetaminophen (Tylenol) for 5 days

☐ If high blood pressure: Morning serum aldosterone and renin level
To be drawn in sitting position

☐ If adrenal cortical carcinoma is strongly suspected (eg mass over 4 cm or virilization):
Dehydroepiandrosterone sulfate (DHEA-S), 17-OH progesterone, androstenedione,
testosterone, 17 beta-estradiol

Alternative to above low dose dexamethasone test:
24 hour urine collection for cortisol level, creatinine level. Must have normal kidney function.
Alternative to above plasma free metanephrines:
24 hour urine collection for metanephrine level, creatinine level. Must have normal kidney function.

**Cortisol**
A morning serum cortisol greater than 5 g/dl is diagnostic of Cushing syndrome.

**Metanephrine**
Beta blockers can cause false positive metanephrine results. If metanephrines are positive, stop beta blocker and repeat metanephrine testing.
Metanephrine values four times normal are diagnostic of pheochromocytoma, lower values are equivocal results.

**Aldosterone**
Replace potassium if low potassium as hypokalemia can cause false positive results.
Angiotensin converting enzyme inhibitors can cause false negative aldosterone testing. If aldosterone testing is normal and there is a strong suspicion for hyperaldosteronism (Conn syndrome), stop angiotensin converting enzyme inhibitor and repeat aldosterone testing.
Patients should be off potassium sparing diuretics and mineralocorticoid receptor blockers for six weeks before testing.
Morning aldosterone > 15 ng/mL with an aldosterone-to-renin ratio of >30 is indicative of Conn syndrome (hyperaldosteronemia).
Confirmatory testing with sodium loading is indicated. Elevated aldosterone levels after sodium loading confirms the presence of hyperaldosteronism.
All patients who test positive for hyperaldosteronism require adrenal venous sampling before adrenalectomy.

References