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ACTH stimulation test

The ACTH stimulation test measures how well the adrenal glands respond to adrenocorticotrophic hormone (ACTH). ACTH is a hormone produced in the pituitary gland that stimulates the adrenal glands to release a hormone called cortisol.

How the Test is Performed

The test is done the following way:

- Your blood is drawn.
- You then receive a shot (injection) of ACTH, usually into the muscle in your shoulder. The ACTH may be a man-made (synthetic) form.
- After either 30 minutes or 60 minutes, or both, depending on how much ACTH you receive, your blood is drawn again.
- The lab checks the cortisol level in all the blood samples.

You may also have other blood tests, including ACTH, as part of the first blood test. Along with the blood tests, you may also have a urine cortisol test or urine 17-ketosteroids test, which involves collecting the urine over a 24-hour period.

How to Prepare for the Test

You may need to limit activities and eat foods that are high in carbohydrates 12 to 24 hours before the test. You may be asked to fast for 6 hours before the test. Sometimes, no special preparation is needed. You may be asked to temporarily stop taking medicines, such as hydrocortisone, which can interfere with the cortisol blood test.

How the Test will Feel

When the needle is inserted to draw blood, some people feel moderate pain. Others feel only a

prick or stinging. Afterward, there may be some throbbing or slight bruising. This soon goes away.

The injection into the shoulder may cause moderate pain or stinging.

Some people feel flushed, nervous, or nauseated after the injection of ACTH.

Why the Test is Performed

This test can help determine whether your adrenal and pituitary glands are normal. It is most often used when the doctor thinks you have an adrenal gland problem, such as Addison disease, or pituitary insufficiency. It is also used to see if your pituitary and adrenal glands have recovered from prolonged use of glucocorticoid medicines, such as prednisone.

Normal Results

An increase in cortisol after stimulation by ACTH is normal. Cortisol level after ACTH stimulation should be higher than 18 to 20 mcg/dL, depending on the dose of ACTH used.

Normal value ranges may vary slightly among different laboratories. Some labs use different measurements or may test different specimens. Talk to your doctor about the meaning of your specific test results.

What Abnormal Results Mean

This test is helpful in finding out if you have:

- Acute adrenal crisis (life-threatening condition that occurs when there is not enough cortisol)
- Addison disease (adrenal glands do not produce enough cortisol)
- Hypopituitarism (pituitary gland is not producing enough hormones such as ACTH)

Risks

Veins and arteries vary in size from one person to another and from one side of the body to the other. Obtaining a blood sample from some people may be more difficult than from others.

Other risks associated with having blood drawn are slight but may include:

- Excessive bleeding
- Fainting or feeling lightheaded
- Hematoma (blood accumulating under the skin)

- Infection (a slight risk any time the skin is broken)

Alternative Names

Tests of adrenal reserve; Cosyntropin stimulation test; Cortrosyn stimulation test; Synacthen stimulation test; Tetracosactide stimulation test

References

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