

MONITORING ADRENAL FUNCTION NOTES

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Anything highlighted in Blue is a possible test/exam question

Static Tests:

- Cortisol fluctuates – so there is a marginal value (either taken at a trough or a peak)
- Diurnal rhythm (biological day/night rhythm)

Integrated measures:

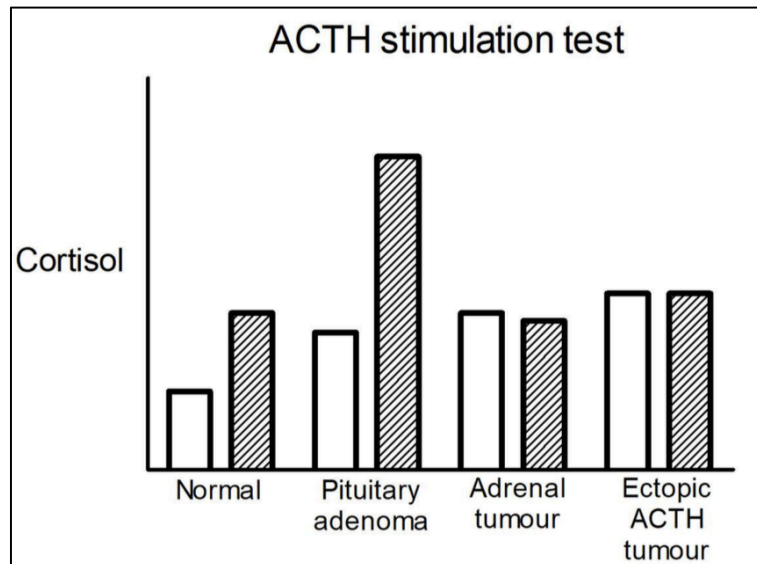
- CBG (Cortisol binding Globulin)- Only 2% free cortisol in the bloodstream , 98% of cortisol is bound to CBG.
 - The 2% free cortisol is the biologically active cortisol
 - Only free cortisol can enter the cells and be excreted via the nephron.
 - Only free cortisol is metabolized by the urine
- Measured via Urine , Saliva and hair
 - Urine sample (24hr): records the amount of cortisol released over 24 hours
 - Saliva : saliva is an ultrafiltrate of circulating blood plasma so the circulating free cortisol will be in the saliva.
 - Hair : Growth rate can be used to determine cortisol exposure (used in seals to determine pregnancy)

Dynamic tests:

- Stimulates or inhibits HPA axis
- Dexamthazone (analog of cortisol) – high or low doses are used
- ACTH stimulation – measures the capacity of the adrenal to respond. A hyperplastic adrenal Is an enlarged adrenal due to excessive ACTH secretion.
- CRF stimulation – Testing of the whole axis , the pituitary produces ACTH and the adrenal responds to the produced ACTH
- Insulin hypoglycaemia – Low glucose is a stressful situation , the body responds by producing ACTH , CRF and cortisone.
 - Depressed patients can have an increased Cortisol level in the body.

- Cushing's can secrete ACTH, this looks the same as the response in depressed patients as they often give the same result in other tests.
- Also measures ACTH for differential diagnosis

ACTH stimulation test:



- No cortisol response for Adrenal tumour and Ectopic ACTH tumour.
- Cortisol is increased in a Pituitary adenoma as this type of tumour secretes ACTH
 - Part of a group of diseases that causes Cushing's syndrome

ACTH Levels:

