

# ACTH

<b>HOSP #</b>		<b>WARD</b>	G16 Medical Ward
<b>CONSULTANT</b>		<b>DOB/AGE</b>	54 y Female

## Abnormal Result

21/08/2018 Two ACTH tests (referred to another laboratory) and two

Cortisol levels (at our laboratory) were done.

At first it was thought to be a dexamethasone suppression test, but then

realized the clinicians were suspecting hypopituitarism.

10h05: **ACTH 0.7 pmol/L ↓** (1.6-13.9) Cortisol 8 nmol/L ↓  
(Morning: 133- 537; Afternoon 68 – 327)

10h35: ACTH 1.8 pmol/L N (1.6-13.9)

Cortisol 68 nmol/L ↓ (Morning: 133- 537; Afternoon 68 – 327)

## Presenting Complaint

? hypopituitarism

## History

Known with a pituitary macroadenoma, previously seen at the Radiotherapy clinic in 2016.

## Examination

No clinical info available.

For Primary adrenal insufficiency one would expect:

Hyperpigmentation

(due to ↑ ACTH), +/- hyperkalemia/hyponatremia (aldosterone

effect), +/-  
virilization.

For Secondary adrenal insufficiency there is subtle symptoms, electrolytes are not deranged significantly because aldosterone function is preserved. See table on Bishop 7<sup>th</sup> ed. p. 459.

## Laboratory Investigations

Measurement of plasma ACTH concentration is used to assess Cushing's disease, adrenal tumors, ectopic ACTH-producing tumors, Addison's disease, Nelson's syndrome, and hypopituitarism.

The laboratory diagnosis of hypopituitarism, however is relatively straightforward. In contrast to the primary failure of an endocrine gland that is accompanied by dramatic increases in circulating levels of the corresponding pituitary tropic hormone, secondary failure (hypopituitarism) is associated with low or normal levels of tropic hormone. This is the diagnosis in this case with the history of previous radiotherapy which was given for a macro-adenoma.

## Other Investigations

Free T4 on 19/04/2018 was 7.8 pmol/L (12-22), also suggesting possible hypopituitarism, although a TSH would be helpful.

# Final Diagnosis

Hypopituitarism confirmed.

## Take Home Messages

Dexamethasone suppression test need only measurement of cortisol, not accompanying ACTH, except in extended work-up however, where a Cosyntropin (CRH) stimulation test can be done to distinguish between pituitary or hypothalamic insufficiency.

Evaluation of pituitary function need the Primary hormone (Cortisol) as well as the tropic hormones from the pituitary (ACTH).