LH-RH STIMULATION TEST

This procedure must only be performed by Medical Consultant or competent staff designated by Consultant. This protocol may have minor variations tailored to individual patients (See Appendix)

INDICATION

Investigation of the pituitary-gonadal axis

PRINCIPLE

The decapeptide LH-RH releases both luteinizing hormone (LH) and follicle stimulating hormone (FSH) from the pituitary, the effect on LH being much greater. Circulating levels of gonadal steroids feedback and modify the action of LH-RH on the pituitary gonadotrophin secreting cells. The test is used to assess the status of gonadotrophin secretion by the pituitary in females with infertility after other baseline investigations have been performed (see Notes, 2).

NOTES

1. The test may be combined with the TRH test if a more detailed investigation of hypothalamic pituitary function is necessary.

2. Progesterone, prolactin and basal gonadotrophins (FSH/LH) estimations should be considered before the LH-RH test.

PATIENT PREPARATION

The patient should refrain from smoking throughout the test. Fasting is not required. The test does not require hospital admission and may be conducted any time of day. It should be performed during the follicular phase, normally during the first six days following menstruation.

ITEMS REQUIRED

Gonadorelin synthetic LH-RH 100 microgram (µg)

An indwelling venous needle.

PROCEDURE [1] [2] [3]

1. Insert an indwelling venous needle, if possible one hour before the procedure.

2. Take 4mL of venous blood into a gold topped Vacuette®. Clearly label this sample as "Basal sample" and with name, time and date.

3. Immediately after taking the basal sample inject 100 microgram (µg) of LH-RH intravenously over 30 seconds.

   In children give intravenously 2.5 microgram(µg) of LH-RH per kilogram (Kg) body weight up to a maximum of 100 microgram(µg).

4. Take further 4mL samples of blood into gold topped Vacuettes® at exactly 30, 60 and 90 minutes post LH-RH. Clearly label all samples with name, date and times of collection.
5. Send all samples to the laboratory for LH and FSH determinations.

**INTERPRETATION**  [1]  [3]  [4]  [5]

In hypogonadotrophic hypogonadism a normal gonadotrophin response to LH-RH suggests a probable hypothalamic cause whilst a subnormal response favours, but is not specific for, a pituitary lesion.

In the normal subject the basal levels of LH and FSH should be within age related reference ranges.

**Adult Males**
The response of LH to LHRH should reach a peak at 30 minutes and increases should be 2.5 - 8.0 fold greater than basal levels. The increase should certainly be more than 5.0 U/L above the basal. Greatest responses are seen in patients over 40 years of age.

The response of FSH to LHRH is more variable, rising by as much as two fold in some cases and not seen in others.

**Adult Females**
The response of LH to LHRH should reach a peak at 30 minutes and results are quantitatively similar to males. The magnitude however varies with the stage of the menstrual cycle the response being 2 - 5 fold greater in the luteal phase than the follicular phase with the greatest response in the pre-ovulatory phase.

The response of FSH to LHRH is similar but less marked.

Subnormal responses may occur.

**Children**
The response in the pre-pubital or delayed pubital child is minimal. An exaggerated response, particularly with exaggerated basal levels, is obtained in precocious puberty (i.e. exaggerated for age) and in primary gonadal failure (e.g. Turner's Syndrome).

**REFERENCES**

APPENDIX

PAEDIATRIC PROTOCOL

LHRH Test
Date of test :-
Drugs given and dose:-
LHRH 100 microgram(µg) i.v.

Insert cannula.
Withdraw 2 x 4ml blood sample for tests indicated in table at baseline (0 min).
Give 100mcg of Gonadotrophin (LHRH) i.v.
Take a further 4ml blood sample for tests indicated in table at 30, 60, and 90 minutes.
Ultrasound Scan and Bone Age to be performed
Patient can eat and drink as likes and can go home after the investigations are finished.

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Other Tests :- Save Urine for Steroid Profile