Gonadotrophin Releasing Hormone (GnRH) test

http://www.pathology.leedsth.nhs.uk/dnn_bilm/Investigationprotocols/Pituitaryprotocols/GnRHTest.aspx

**Indication**

To diagnose hypothalamic-pituitary disease in precocious and delayed puberty in both sexes in those children with low basal gonadotrophins.

**Contra-indications**

This test may be performed simultaneously with TRH or glucagon as part of triple pituitary test.

**Principle**

GnRH (gonadotrophin releasing hormone) is a decapeptide secreted by the hypothalamus which stimulates the production and secretion of LH and FSH by the anterior pituitary.

**Side effects**

GnRH may rarely cause nausea, headache and abdominal pain.

**Preparation**

No specific patient preparation is required.

**Requirements**

3 plain tubes

Drug administration: **GnRH (Gonadorelin) 2.5 microgram/kg to a maximum of 100 microgram**

**Procedure**

| time 0 min | take 2 mL blood for LH & FSH and testosterone (males) and oestradiol (females) |
| time 20 min | immediately give GnRH IV as a bolus (dose as above) |
| time 60 min | take 2 mL blood for LH & FSH |

**Interpretation**

1. Normal basal reference values in prepubertal children are:
   - LH < 2.0 IU/L
   - FSH < 2.0 IU/L
2. Following GnRH, the response may be considered normal if the basal values are in the reference range and there is at least a doubling at 20 min for LH and FSH. The response varies throughout the menstrual cycle: early (D4) < late follicular (D11) = "luteal" (D21), max response occurs at the mid-cycle (D14).
3. An exaggerated response is seen in primary & secondary gonadal failure.
4. A flat response in gonadotrophins (< 5 IU/L) occurs in prepubertal children and with pituitary and/or hypothalamic disease. However, a normal response does NOT exclude pituitary or hypothalamic disease since the response will be affected by the exact anatomy of the disorder.
5. The magnitude of the LH response is proportional to the mean nocturnal LH and therefore the evolution of puberty.
6. In central precocious puberty the LH is greater than the FSH.

**References:** see website link above