DECREASED LEVEL OF FSH

A condition with low serum follicle-stimulating hormone (FSH) concentration.

♀️ Symptom ♂️ Male & Female

ℹ️ About Decreased level of FSH

Follicle-stimulating hormone (FSH) is a gonadotropin that regulates the development, growth, pubertal maturation, and reproductive processes of the body. In both males and females, FSH stimulates the maturation of germ cells. FSH and luteinizing hormone (LH) work together in the reproductive system. The increase in serum estradiol levels cause a decrease in FSH production by inhibiting gonadotropin releasing hormone (GnRH) production in the hypothalamus.

In men, the combination of low LH and FSH in combination with a low testosterone confirms LH/FSH deficiency; a high testosterone would indicate a source elsewhere in the body (such as a testosterone-secreting tumor). Men lose facial, scrotal and trunk hair, as well as suffering decreased muscle mass and anemia.

In women, the diagnosis of LH/FSH deficiency depends on whether the woman has been through the menopause. Before the menopause, abnormal menstrual periods together with low estradiol and LH/FSH levels confirm a pituitary problem; after the menopause (when LH/FSH levels are normally elevated and the ovaries produce less estradiol), inappropriately low LH/FSH alone is sufficient. Stimulation tests with GnRH are possible, but their use is not encouraged. Women experience oligo- or amenorrhea (infrequent/light or absent menstrual periods respectively) and infertility. Both sexes may experience a decrease in libido and loss of sexual function, and have an increased risk of osteoporosis (bone fragility). Lack of LH/FSH in children is associated with delayed puberty.

Polycystic ovary syndrome (PCOS)

PCOS is a common, highly heritable complex disorder of unknown aetiology characterized by hyperandrogenism, chronic anovulation and defects in glucose homeostasis. Increased luteinizing hormone (LH) relative to FSH secretion, insulin resistance and developmental exposure to androgens are hypothesized to play a causal role in PCOS. Increased LH stimulates ovarian testosterone production while relative FSH deficiency results in arrest of ovarian folliculogenesis.

Hypopituitarism

Hypopituitarism is a condition where there is partial or complete loss of production of one or more of the pituitary gland hormones which include FSH. The hormones of the pituitary have different actions in the body, and the symptoms of hypopituitarism therefore depend on which hormone is deficient. The symptoms may be subtle and are often initially attributed to other causes. In most of the cases, three or more hormones are deficient. The most common problem is insufficiency of FSH and/or LH leading to sex hormone abnormalities.

Hyperprolactinemia

Levels of LH/FSH may be suppressed by a raised prolactin level, and are therefore not interpretable unless prolactin is low or normal. Abnormally high levels of prolactin in the blood are called hyperprolactinemia. Hyperprolactinemia inhibits the secretion of gonadotropin-releasing hormone (GnRH) from the hypothalamus (by increasing the release of dopamine), which in turn inhibits the release of FSH and LH from the pituitary gland.
and results in diminished gonadal sex hormone production (termed hypogonadism).

Hyperprolactinaemia may cause galactorrhea (production and spontaneous flow of breast milk) and disruptions in the normal menstrual period in women and hypogonadism, infertility and erectile dysfunction in men.

**Hypogonadotropic hypogonadism**

Diminished secretion of FSH can result in failure of gonadal function - hypogonadism. Hypogonadotropic hypogonadism is caused by a failure in production of LH and FSH is the impairment of the hypothalamus to release the hormone GnRH which in normal circumstances induces the production of LH and FSH. Without the correct release of GnRH the pituitary gland is unable to release LH and FSH which in turn prevents the ovaries and testes from functioning correctly. This failure in GnRH production can either be due to the absence of the GnRH releasing neurones inside the hypothalamus or the inability of the hypothalamus to release GnRH in the correct pulsatile manner to ensure LH and FSH release from the pituitary.

LH and FSH have a direct action on the ovaries in women and testes in men. The absence of LH and FSH means that initially puberty will not commence at the correct time and subsequently the ovaries and testes will not perform their normal fertility function with the maturation and release of eggs in women and the production of sperm in men alongside their role in producing the sex hormones.

The main biochemical parameters in men are low serum testosterone and low levels of the LH and FSH, and in women low serum estrogen and low levels of LH and FSH.

**Kallman syndrome**

Kallmann syndrome is a rare disease characterized by congenital hypogonadotropic hypogonadism (CHH) and an altered sense of smell in both genders. Kallmann syndrome results from abnormal neural development affecting both the olfactory tracts and GnRH neuron migration. Infertility in men and women with Kallmann syndrome can be corrected by gonadotropin administration to induce spermatogenesis or ovulation.

**Gonadotropin deficiency**

Gonadotropins are glycoprotein polypeptide hormones secreted by gonadotrope cells of the anterior pituitary of vertebrates. This family includes the mammalian hormones FSH, LH, and placental/chorionic gonadotropins human chorionic gonadotropin (hCG).

Gonadotropin deficiency due to pituitary disease results in hypogonadism, which can lead to infertility. Treatment includes administered gonadotropins, which, therefore, work as fertility medication. Such can either be produced by extraction and purification from urine or be produced by recombinant DNA. Failure or loss of the gonads usually results in elevated levels of LH and FSH in the blood.
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