

Hormonal Changes and the Consequences on children

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About the Study

Hormones

Hormones are chemical messengers that send messages throughout the body. They activate specific cells or tissues by travelling through tissue fluids such as the bloodstream and exerting their actions. Hormones available in a variety of forms in the human body. Hormones communicate with nearly every cell, organ, and body activity and function when they work together. Hormones regulate growth and development, cognition, metabolism, hunger/thirst, reproductive processes, and sexual function, among other functions. These mechanisms are critical for young children's normal growth.

Effects of hormones on children

In both girls and boys, a number of hormones are required for appropriate growth, overall health, and metabolism. The pituitary gland in the brain, produces growth hormone, which is required for most normal growth during childhood and adolescence. The pituitary hormones LH and FSH regulate puberty. Thyroid hormone is produced by the thyroid gland in the neck, and it is necessary for appropriate brain development in neonates as well as normal growth and metabolism throughout life.

Some hormones are particularly important in regulation of human development they are Thyroxin (T_4) from the thyroid; cortisol and adrenal androgens (De-Hydro Epi - Androstenedione (DHEA), De-Hydro Epi-Androstenedione Sulphate (DHEAS), and androstenedione [D4-A]) from the adrenal cortex. Testosterone (T) from the testes, Estrogens (E) from the ovaries, insulin from the pancreas and a (ADH).

During puberty, substantial changes in endocrine physiology may occur, particularly in the Hypothalamic-Pituitary-Gonadal (HPG) axis, in which the gonads produce hormones in sufficient amounts to promote increased genital organ growth and the formation of secondary sexual characteristics.

The elevation in secretor activity of gonadal and adrenal sexual hormones

in contact causes the most significant modifications. The appearance of external indications related to hormone action is usually used to determine its duration. However, there is a first event that occurs immediately before the morphological changes: Increased hypothalamic LHRH secretion, followed by a progressive increase in pituitary gonadotrophic hormones: FSH and LH.

Following are the peripheral increases in Testosterone and Estrogen, as well as their associated occurrences. Girls begin puberty at a younger age than boys (18–24 months earlier), starting around the ages of 9 for girls and 10 for boys. Testosterone rises quickly in men, with the exception of 10-year-olds, over a one-year period, before remaining stable in 14-year-olds. Testosterone in females showed little variation over a year in 9-year-olds;

Testosterone increases in 10–11 year olds, and changes in Testosterone become more varied in 12–13, and 14-year olds due to menstrual cycle differences. During early adolescence, however, there are large individual variances in Testosterone for both boys and girls in the same chronological age category.

Hormonal Imbalance in Children

Hormones play an important part in a child's development and overall health, therefore abnormal functioning of any endocrine gland in the body can have serious consequences. The majority of hormone imbalance illnesses are linked to irregular growth or sexual development. During pubertal development, for example, the brain releases Corticotropin Releasing Hormone (CRH), which prompts the pituitary to secrete FSH and LH, causing the ovaries or testes to begin producing sex hormones.

However, if one of the endocrine glands involved in this process begins to function improperly and produces too much or too little hormone, pubertal development is negatively impacted. Precocious puberty, for example, occurs when puberty begins in young children at an early age, whereas delayed puberty can occur in some teens; both illnesses are caused by aberrant hormone secretion. Pediatric endocrinologists, who specialize in the diagnosis and treatment of disorders involving the endocrine system, must be consulted if a child has a disorder caused by hormone imbalance.

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