Normal physiological and menstrual cycle pdf

The secretion of gonadotrophins from the pituitary is under ovarian control via negative feedback mechanisms. Estradiol and progesterone mediate the negative feedback at the hypothalamic and pituitary levels. During the follicular phase of the cycle, elevated estradiol levels lead to a decrease in pulsatile GnRH release, which in turn reduces gonadotrophin secretion. During the luteal phase, progesterone levels increase, further reducing GnRH release and gonadotrophin levels.

During puberty, the hypothalamus is sensitive to the supraphysiologic effect of the very low levels of estradiol-17β (E2) observed in prepubertal children. This sensitivity is necessary for the normal development and maturation of the hypothalamic-pituitary-ovarian axis. Estradiol is produced by the follicles and is secreted into the bloodstream. It then binds to estrogen receptors in the hypothalamus and pituitary, leading to a decrease in GnRH release.

In contrast, during the menopausal transition, estradiol levels decrease significantly, leading to a decrease in GnRH release and a decrease in gonadotrophin secretion. This decrease in estrogen levels is thought to be a key factor in the onset of menopause. However, it is important to note that there are many other factors that can influence the onset of menopause, including genetics, lifestyle, and health.

In summary, the secretion of gonadotrophins from the pituitary is controlled by the hypothalamus via negative feedback mechanisms. The levels of estradiol and progesterone in the bloodstream are key factors in this control. During puberty, estradiol levels are low, leading to increased GnRH release and gonadotrophin production. During the menopausal transition, estradiol levels decrease, leading to a decrease in GnRH release and gonadotrophin production. Understanding the factors that influence the secretion of gonadotrophins is crucial for understanding the normal and pathological processes that occur in the female reproductive system.