CHAPTER 29

ESTROGEN AND PROGESTERON SUPPORT IN IVF CYCLES

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What is the normal physiology of luteal phase?

Normal menstrual cycle is divided into follicular phase (proliferative phase) and luteal phase (secretory phase). Proliferative phase is the period between menstruation and ovulation. Luteal phase extends from ovulation to the menstruation or establishment of pregnancy (1). Increasing estradiol, secreted from the granulosa cells of dominant follicle, triggers a surge of luteinizing hormone (LH) from the pituitary gland. Before the ovulation, the granulosa cells of the dominant follicle begin their transformation into corpus luteum (CL) by enlarging and becoming vacuolated (2). Although the CL secretes many different hormones progesterone is the most important one because it is necessary for providing receptivity of endometrium to blastocyst implantation and to maintain early pregnancy (2). Studies have shown that although progesterone is the most important hormone for the luteal support, estrogen is also necessary that estradiol metabolites may play an active role in angiogenesis, lifespan and regression of CL (3). Normal luteal function is necessary for preparing the endometrium for implantation. Continuous LH stimulation is needed for continuity of CL. After conception and implantation, human chorionic gonadotropin (hCG) is secreted from the developing blastocyst which maintains the CL and its secretions (4).

What is luteal phase deficiency?

Luteal phase deficiency (LPD) is the inadequate secretion of endogenous progesterone which causes difficulty to maintain functional secretory endometrium and impairment inimplantation and growth of normal embryo. This condition is firstly described by Georgiana S. Jones as a possible cause of infertilityin 1949 (5).

Are there diagnostic criteria for luteal phase deficiency?

Although several methods (basal body temperature (BBT) charting, serum progesterone levels and endometrial biopsy) have been proposed for the diagnosis of

IVF/ICSI cycles. Large randomized controlled trials are needed related with the optimal regimen of intensive luteal support during GnRH-Agonist triggered cycles in ART.

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