بسم الله الرحمن الرحيم

سُبْحَانَكَ لاَ عِلْمَ لَنَا إِلاَّ مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ ٱلعَلِيمُ الحَكِيمُ

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Assessment of Different Regiment of Progesterone Administration In Luteal Phase Support In IVF Cycles

Thesis

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تقييم الطرق المختلفة لتناول هرمون البروجيستون لتدعيم مرحلة الجسم الأصفر في عملية أطفال الأنابيب

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List of abbreviation

BBT	Basal body temoperature
BUS	B up stream segment
CL	Corpus luteum
CPR	Clinical pregnancy rate
DR	Delivery rates
E2	Estradiol
ET	Embrgo transfere
FSH	Follicular stimulating hormone
GIFT	Garnate intra fallopian transfer
GnRHa	Gonado tropin releasing hormone agonist
HCO	Human chroionic gonadotropin
HMG	Human menopsaul gonadotropin
IM	Intramuscular
IVF	Invitro fertilization
LDL	Low density lipoprotein
LH	Luteinize hormone
LPD	Luteal phase defect
MCR	Metabolic clearance rate
MMB	Matrix metallo proteinases
OHSS	Ovarian hyperstimulation syndrome
OPR	Ongoing pregnancy rate
P	Progesterone
PEP	Progrestogen associated endometrial protein
PFF	Porcine follicular fluid
PR	Progesterone receptor
TIMP	Tissue inhibitors of metallo prote
VEGF	Vascular endothelial growth factor

Introduction

Edwards and Steptoe (1980) were the first authors who suggested that there was an iatrogenic luteal phase defect in women undergoing in vitro fertilization embryo transfer (IVF-ET).

The need for luteal phase support following ovulation induction for IVF-ET in cycles using gonadotrophin releasing hormone agonist (GnRHa) has become a consensus.

Methods of luteal phase support include corpus luteum stimulation to secrete endogenous oestrogen and progesterone by serial injections of human chronic gonadotrophin (hCG) or with exogenous replacement of progesterone ***(Friedler et al., 1999)***.

The use of hCG for luteal phase is associated with a marked increase in the risk of ovarian hyperstimulation syndrome (OHSS) there for progesterone is the preferred choice ***(Pabuccu and Akar, 2005)***.

Micronized progesterone induces endometrial maturation and leads to pregnancies following IVF-ET or during cycles of oocytes donation ***(Friedler et al., 1999)***.

Micronized progesterone is almost completely absorbed after administration by oral route but, due to the important metabolic inactivation during the first hepatic pass, bioavailability of oral progesterone is notably poor reaching values lesser than 10% ***(Gallardo et al., 2004)***.

Aim of the work

It is a prospective study to assess the efficiency of protesterone in luteal phase support either through (a) oral (b) vaginal (c) intramuscular routes in 30 infertile women undergoing IVF and receiving progesterone for support of luteal phase.

Progesterone biosynthesis

Biochemistry

Progesterone is synthesized from cholesterol in a two step enzymatic reaction. First, cholesterol is converted to pregnenolone within the mitochondria in a reaction catalyzed cytochrome P450 cholesterol side chain cleavage enzyme, ***(Cunningtiam et al., 2005).*** Pregnenolone leaves the mitochondria and is converted to progesterone in the endoplasmic reticulum by two cytoplasmic enzymes, 3β-ondehydrogenase and Δ4,5 isomerase. The dehydrogenase converts the 3-0H group of pregnenolone to a3 keto group and the isomerase moves the double bond from the B ring to the A ring to produce progesterone ***(Stanczyk, 1997).***

Production of progesterone

Only one natural progestogen namely, progesterone, has major biologic significance. Progesterone is secreted by the ovary and adrenal gland and during pregnancy by the placental trophoblast. Another progestogen, 17 hydroxy progesterone, is also secreted by the ovary and adrenal; however, this compound is virtually devoid of progestational activity ***(Stanczyk, 1997).***

Menstrual cycle

During the follicular phase of the menstrual cycle, the production rate and circulating levels of progesterone are low (< I mg/day and <0.5 ng/mL, respectively).