REVIEW ARTICLE

Gynaecology

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PROGESTERONE IN PREVENTION OF PRETERM DELIVERY

Dr. Ali Al Delbani Specialist Obstetrics And Gynecology PHD STUDENT University of Medicine and Pharmacy "Carol Davila"

ABSTRACT

Progesterone is steroid hormone implicated in the female menstrual period, pregnancy (supports gestation) and embryogenesis of humans. Progesterone plays an fundamental role in each stage of human pregnancy. In early pregnancy, progesterone produced by the corpus luteum is critical to the maintenance of early pregnancy until the placenta takes over this function, the role of progesterone in later pregnancy, however, is less pure.

Use of progesterone to decrease preterm delivery is necessary.And progesterone supplementation diminishes preterm delivery in a select very high-risk group of females with a considerably reduced rate of preterm labor, preterm delivery, and birth weight < 2500 g

INTRODUCTION

Progesterone is steroid hormone implicated in the female menstrual period, gestation and embryogenesis of persons and other types. **[1]** In (2003) Talwar and Srivastava confirmed that progesterone is formed in the adrenal glands, the gonads exactly after ovulation in the corpus luteum, the brain, and, during pregnancy, in the placenta. In persons, rising quantities of progesterone are produced during pregnancy; initially the source is the corpus luteum that has been "rescued" by the existence of human chorionic gonadotropins (HCG) from the conceptus, but after the 8-thweek making of progesterone shifts over to the placenta **[2].**

Progesterone plays an essential role in every stage of human pregnancy. In early pregnancy, progesterone created by the corpus luteum is serious to the continuance of early pregnancy till the placenta receipts over this function at 7–9 weeks of gestation, later its appellation (progestational steroid hormone). The role of progesterone in later pregnancy, however, is less pure **[3].**

Progesterone and preterm labor:

Because of its numerous functions in the establishment and continuance of pregnancy, progesterone has remained a biological choice for the treatment and stoppage of preterm delivery. Multiple trials have tested the use of progesterone in different preparations for prophylaxis against repeated preterm delivery. One of the earliest trials, reported in 1975,randomized 43 high risk patients to weekly intramuscular 17α-hydroxy progesterone caproate (17P) or placebo It was found that there is a protective effect of progesterone, with a significantly longer mean duration of pregnancy, higher mean birth weight, and lower perinatal mortality rate **[4]**. A number of subsequent trials yielded conflicting results. This encouraged ***Keirse*** to perform a meta-analysis of published studies of progesterone prophylaxis of preterm labor. In a summary of the data of seven trials of progesterone high risk populations published in 1990, he reported a significantly reduced rate of preterm labor, preterm birth, and birth weight <2500 g **[5]**.

Prevention of premature birth with progestogens:

In 2003, the American College of Obstetricians and Gynecologists (ACOG) issued a Committee Opinion entitled Use of progesterone to reduce preterm birth. This document stated that „„. . . the results of [the da Fonseca] study and the [Meis] trial support the hypothesis that progesterone supplementation reduces preterm birth in a select very high-risk group of women **[6]**.

The benefit of progesterone treatment for women in active preterm labor has not been demonstrated. However, recent studies demonstrating a synergistic effect between progesterone and commonly used tocolytic agents on myometrial contractility in vitro **[7, 8].**

Premature shortening of the cervix, or short cervix, is the greatest prognostic risk factor for preterm delivery. Results of clinical studies of intermediations to prevent preterm birth have indicated that identifying at-risk women on the basis of cervical length versus obstetric history alone advances the likelihood of timely interventions with cervical cerclage or progesterone supplementation, improving outcomes. Debate continues over the use of cerclage results of a meta-analysis of randomized controlled trials require evidence to support its practice in women who have history of prior preterm delivery and who acquire short cervix before 24 weeks' conception. Results of the recent PREGNANT trial, consistent with the earlier Fetal Medicine Foundation study, support the use of vaginal progesterone for prevention of preterm birth. In females identified by transvaginal ultrasound to have short cervix (10-20 mm) in midtrimester, everyday vaginal progesterone gel reduced the risk of preterm delivery before 33 weeks' gestation by 45% and before 28 weeks' gestation by 50%.

Occurrence of any morbidity and mortality event also was significantly reduced by 43%, with a 61% reduction in the rate of respiratory distress syndrome in infants born to women receiving vaginal progesterone gel versus those receiving placebo The safety profile of progesteronetreatment in early pregnancy is well established, and studies of vaginal progesterone for prevention of preterm birth have identified no additional safety issues.

In a study done by condo et al 2013 in which indirect comparison of vaginal progesterone versus cerclage using placebo/no cerclage as the common comparator. Four studies that evaluated vaginal progesterone versus placebo and 5 studies that evaluated cerclage versus no cerclage were included. Both interventions were associated with a statistically significant reduction in the risk of preterm birth at <32 weeks of gestation and composite perinatal morbidity and mortality compared with placebo/no cerclage. Adjusted indirect metaanalyses did not show statistically significant differences between vaginal progesterone and cerclage in the reduction of preterm birth or adverse perinatal outcomes. Based on state-of-the-art methods for indirect comparisons, either vaginal progesterone or cerclage are equally efficacious in the prevention of preterm birth in women with a sonographic short cervix in the mid trimester, singleton gestation, and previous preterm birth. Selection of the optimal treatment needs to consider adverse events, cost and patient/clinician preferences **[9].**

Treating expectant mothers with a prior spontaneous preterm birth with 17 alpha hydroxyprogesterone caproate generates future medical cost savings that substantially exceed the cost of treatment. If this population were universally treated with 17 alpha hydroxyprogesterone caproate, discounted lifetime medical costs of their offspring could be reduced by more than 2.0 billion dollars annually**[10].**

As the costs related to care for infants with preterm-birth or low-birth weight exceeded 11 billion dollars in 2003 in the united states so,Hall NR 2011 reviewed the literature on 17 alpha-hydroxyprogesterone caproate (17-P) and natural progesterone and concluded that 17-P is indicated for prevention of preterm

birth in women with a documented history of a preterm birth before 37 weeks **[11].**

Women with twin pregnancy are at high risk for spontaneous preterm delivery. Progesterone seems to be effective in reducing preterm birth in selected high-risk singleton pregnancies, albeit with no significant reduction in perinatal mortality and little evidence of neonatal benefit. Norman JE et al 2009 investigated the use of progesterone for prevention of preterm birth in twin pregnancy in a double-blind placebo-controlled trial. The meta-analysis confirmed that progesterone, administered vaginally, does not prevent early preterm birth in women with twin pregnancy **[12].**

Conclusion

Progesterone supplementation reduces preterm birth with a significantly reduced rate of preterm labor, preterm birth, and birth weight <2500 g in a select very high-risk group of women.

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