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Role of Progesterone in Prevention of Preterm Labour

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Abstract

Objectives: To evaluate the effect of vaginal progesterone in the prolongation of duration of pregnancy in women at high risk of developing preterm labour. **Material and Method**: This is a prospective case control study carried out in the department of Obstetrics & Gynaecology S.N. Medical College Agra on 100 patients chosen from in patients and outpatient department (50 cases and 50 control). Women with singleton pregnancy having history of preterm labour, uterine malformation, prophylactic cerclage, currently suffering from premature pains were given daily vaginal progesterone 200mg from 24 weeks and discontinued at 34 weeks of gestation. In both groups rate of preterm labour and neonatal outcome was determined. **Results**: The incidence of preterm labour in progesterone group was 17.8% and in control group 36%, p value is <0.05. **Conclusion**: Administration of progesterone in women at high risk developing preterm labour reduces the incidence of preterm labour, neonatal mortality and morbidity and increases baby weight.

Keyswords: Preterm labour; Progesterone.

Introduction

Preterm birth continues to provide an enormous challenge in the delivery of perinatal health care, and is associated with considerable short and long-term health consequences for surviving infants.

Preterm labour is defined by WHO as contraction of sufficient strength and frequency to effect progressive effacement of cervix between 20-37 weeks. Worldwide incidence of preterm labour is 6-10%.[1] Csapo et al promoted the progesterone see-saw theory, according to which high progesterone level prevent u terine contractions and low level facilitate such contraction.[2]

In general, the evidence seems to favor 2 mechanisms:

- an anti inflammatory effect that counteracts the inflammatory process leading to Preterm Birth
- local increase in progesterone in gestational tissues that counteracts the functional decrease in progesterone.

Aims of Study

To compare the effect of vaginal progesterone Vs placebo on the prevention of preterm labour, among women at increased risk of preterm labour.

Material and Methods

Study was conducted at the department of obstetrics and gynaecology S. N. Medical College Agra (U.P.). High risk patients seen in out- patient department and admitted in emergency were recruited. Women with singleton pregnancy with age group 20-35 years having history of preterm labour, prophylactic cerclage, uterine malformation or currently suffering from premature pains on

Table 1: Distribution of Women According to Profile

Patient profile	Group A (progesterone)	GroupB (placcebo)
Mean age (years)	28.6yrs	27.6 yrs
Gravida 2	24 (48%)	22 (44%)
Gravida >3	26 (52%)	28 (56%)
Socioeconomic status	Class III- 20 (40%) Class IV- 30 (60%)	Class III- 28 (44%) Class IV - 22 (56%)
Preterm deliveries		
<2	16 (32%)	24 (48%)
=2	24 (48%)	18 (36%)
>2	10 (20%)	8 (16%)

the basis of clinical information and evaluation of USG were included in study. 50 antenatal women were given 200mcg micronized sustained released progesterone while another 50 antenatal women were provided placebo. Daily micronized sustained released vaginal progesterone 200mcg 12 hourly was started beyond 12 -14 weeks and discontinued after 36 weeks gestation or early if passes in labour.

Patients with multiple pregnancy, major fetal anomaly, allergy to progesterone, premature rupture of membrane, cervical dilation >4cm, coexisting maternal medical disease, fetal distress and chorioamnionitis were excluded from the study.

Result and Discussion

The incidence of preterm labour was 36% in placebo and 17.8% in progesterone group in our study ($p<0.05$)(Table 1).

The incidence of preterm labour was 54.9% in placebo group 36.3% in progesterone group in study of Meis et al3. In study of fonseca EB4 et al it was 28.5% and 13.8% respectively. 35.9% and 26.2% in study of Luis sanchez et al. In Meis *et al*[5] babies with birth weigth <2.5kg were 27% in progesterone treated group and 41% in control with relative risk (0.66) CI 0.51-0.87. In our study babies with

Table 2: Incidence of Preterm Labour in Progesterone Treated Group v/s Placebo

Study done by	In cases (In progesterone treated group)	In controls(In placebo group)
Meis *et al*	36.3%	54.9%
Fonseca *et al*	13.8%	28.5%
Luis Sanchez Ramos *et al*	26.2%	35.9%
Johnson JW *et al*	12.8%	40.9%
Present study (p=<0.05)	17.8%	36%

Table 3: Birth Weight (<2.5kg) in Progesterone Group vs Placebo

Study	In cases	In controls
Meis *et al* (RR=0.66)	27%	41%
Present study (RR=0.65)	38.02%	55%

Table 4: Mean Gestational Age in Progesterone Group vs Placebo

Study	Cases	Controls
Jhonson *et al*	38.6weeks	35.2 weeks
Da fonseca *et al*	37weeks	36 weeks
Our study	38weeks	34.5 weeks

birth weight <2.5kg were 28% in progesterone treated group and 54% in control (table 2).

It was found that labour was postponed by 2-4 weeks in 88% of cases. In study done by Jhonson *et al*[6] and Da fonseca[7] delivery occur at 38.6 weeks and 35.2 weeks respectively of cases, 37 weeks and 36 weeks respectively of controls. In our study delivery of cases postponed up to 38 weeks and of controls up to 34.5 weeks.

In the study of Meis *et al*[8] infant treated with progesterone had significantly lower rate of necrotizing enterocolitis, intraventricular haemorrhage and need for supplemental oxygen. Joddie M Dodd *et al*[9] found that infant with itraventricular haemorhage were very less in progesterone treated group. In our study it was found that number of days of NICU stay was significantly reduced in infant delivered to progesterone treated group.

Conclusion

Preterm birth complicates one in eight deliveries and remains a major cause of perinatal morbidity and mortality. Appropriate candidates should be counseled about the potential benefits of progesterone supplementation from 16 - 20 weeks up to 36 weeks of gestation to prevent preterm birth in any subsequent pregnancy. The result of current study has shown promising result in reducing the incidence of preterm birth and low birth weight babies.

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