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Research Article

Effectiveness Of Oral Micronized Progesterone in The Prevention of Preterm Labour in Women with Previous History of Preterm Birth

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ABSTRACT

Background: Births that happen before term still account for a large proportion of neonatal morbidity and mortality around the world. Women who have experienced a history of preterm birth are recurrence candidates and at a much higher risk. The potential preventive role of progesterone supplementation, especially oral, has come under scrutiny.

Objective: To evaluate the effectiveness of oral micronized progesterone in preventing preterm labour among women with a history of previous preterm birth.

Methods: For this particular quasi-experimental study, it was carried out at Sheikh Zayed Medical College and Hospital, Rahim Yar Khan, Punjab, Pakistan for a period spanning 06 months. 120 expecting mothers with a history of preterm delivery were registered for this study and were divided into 2 groups: intervention (oral micronized progesterone 200 mg daily from 16–36 weeks) and control (routine antenatal care). The data on gestational age at delivery, neonatal outcomes and maternal side effects were analyzed with SPSS v26.

Results: The incidence of preterm birth (<37 weeks) was significantly lower in the micronized progesterone group (18.3%) compared with controls (38.3%) ($p<0.01$). Mean gestational age at delivery was higher in the intervention group (37.9 ± 1.4 weeks) versus control (35.8 ± 2.1 weeks). Neonatal outcomes, including birth weight and NICU admissions were significantly better among women receiving oral micronized progesterone. Adverse effects were minimal.

Conclusion: Oral micronized progesterones are effective, safe and feasible option for reducing preterm labour in women at high risk of immature births. Introduction of this medication in antenatal care may reduce neonatal morbidity and burden on healthcare providers.

Keywords: Oral micronized progesterones, preterm labour, preterm birth, pregnancy outcomes, neonatal morbidity.

INTRODUCTION

Global public health concern preterm birth takes into account any delivery that occurs prior to completion of 37 weeks of gestation. Approximately 11% of live births and 35% of neonatal deaths are caused by preterm birth [1]. Having a previous preterm delivery puts a woman at a two-to-three-fold risk of having a preterm delivery again, highlighting the necessity of effective strategies to prevent it [2].

Sustained uterine quiescence throughout pregnancy is advances by the action of progesterone which, within the pregnancy and its subsequent stages is more easily recognized across-the-board by its absence [3]. It is not the case that there is no sophisticated and broadly accepted understanding to tether progesterone deficiency and the initiation of labour, but it is certainly the case that there are far more recognized compartments explaining its absence and protracted interplay than there are frameworks that explain its surplus [3]. 17-OHPC, intramuscular 17-hydroxyprogesterone, caproate as well as progesterone capsules (both of which are time-tested interventions in the preterm birth field), are but two of the class of interventions describing the many alternatives that exist, all of which are rapidly mushrooming [4,5].

In many low-income and middle-income countries, oral micronized progesterone has not been studied widely and is assumed to exist at a occult level of sophistication at solving the problems facing these populations. This study aims to evaluate the effectiveness of oral micronized progesterone in preventing preterm labour among women who have previously given birth preterm.

MATERIALS AND METHODS

Quasi-experimental research had been carried out in the Department of Obstetrics and Gynecology at Sheikh Zayed Medical College and Hospital, Rahim Yar Khan, Punjab, Pakistan, from June to November 2025. Collaboration agreements, alongside institutional approvals and participant consent, were morally cleared prior to the study commencement.

Study Population: Women participants were aged between eighteen and forty. One hundred and twenty women were recruited and have only one pregnancy that is spontaneous and is less than thirty-seven weeks. Women who have the following were eliminated from the study: multiple pregnancies, congenital conditions, incompetent cervix, or having contraindications to progesterone.

Study Design: Each of the two groups comprised of sixty individuals from 16 weeks to 36 weeks of pregnancy. The intervention group received oral micronized progesterone, 200 mg each day in addition to routine prenatal support. The control group was provided with routine prenatal care only.

Data Collection: Demographic record and detail obstetric history was taken and then analyzed with the help of a structured proforma. The day participants were delivered, the number of preterm pregnancies, the weight of the neonates at birth and the number of neonates admitting to the NICU, were all recorded.

Statistical Analysis: SPSS v. 26 was employed in the analysis of the study. Continuous variables were articulated, assuming a normal distribution with a mean and standard deviation, while other variables were articulated utilizing percentages. The groups were analyzed utilizing the chi square and t test, and assuming a p value of less than 0.05, it is said to be of significant value.

RESULTS

Characteristics pertaining to the maternal age, BMI, Socioeconomic status (SES), and parity were similar across baseline characteristics of the participants and both groups (Table 1).

Incidence of Preterm Birth: Incidence of preterm birth in the progesterone group was significantly lower than the control

group experiencing progesterone withdrawal (18.3% versus 38.3% respectively, p=0.008).

Gestational Age and Neonatal Outcomes: Neonatal and gestational age outcomes indicate the mean birth weight to be 2.86 kg in the neonatal group and 2.43 kg in the control group. Active preterm birth control leads to 16.6% and 36.6% NICU admissions in the intervention and control groups respectively (p=0.02).

Maternal Adverse Effects: Maternal adverse effects. 8.3% of participants in the intervention group exhibited the minor side effects of nausea and fatigue, which were reported and did not result in discontinuation of medication.

Table 1: Baseline Characteristics of Participants

Characteristic	Progesterone Group (n=60)	Control Group (n=60)	p-value
Maternal Age (years)	28.6 ± 4.2	29.1 ± 4.5	0.48
Parity ≥2	36.6	38.3	0.84
BMI (kg/m²)	26.8 ± 3.4	27.3 ± 3.6	0.55
Socioeconomic status (low %)	46.6	48.3	0.72

Table 2: Comparison of Obstetric and Neonatal Outcomes

Outcome	Progesterone Group (n=60)	Control Group (n=60)	p-value
Preterm birth <37 weeks (%)	18.3	38.3	0.008
Mean gestational age (weeks)	37.9 ± 1.4	35.8 ± 2.1	<0.001
Mean birth weight (kg)	2.86 ± 0.38	2.43 ± 0.45	<0.001
NICU admission (%)	16.6	36.6	0.02

Table 3: Maternal Side Effects

Side Effect	Progesterone Group (n=60)	Control Group (n=60)	p-value
Nausea	5 (8.3%)	3 (5.0%)	0.44
Fatigue	4 (6.6%)	2 (3.3%)	0.38
Headache	2 (3.3%)	2 (3.3%)	1.00
Epigastric discomfort	1 (1.6%)	1 (1.6%)	1.00

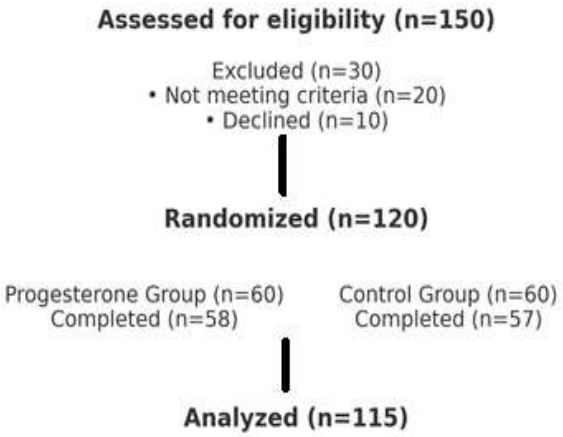

Figure 1: Study Flow Diagram

Flowsheet of participants through the study showing enrollment, allocation, follow-up, and analysis.

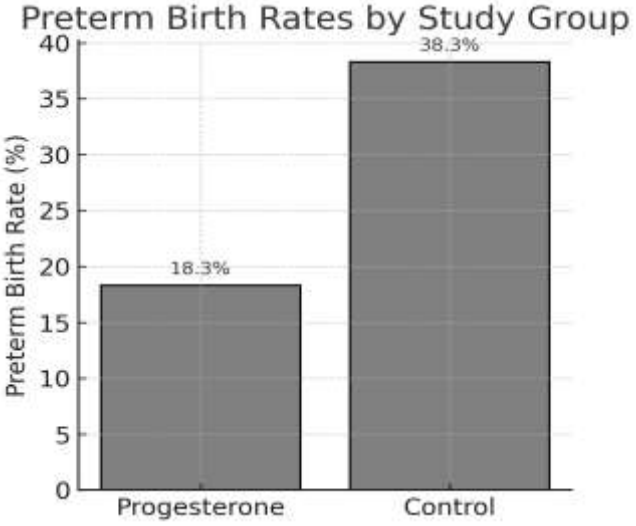

Figure 2: Preterm Birth Rates by Study Group

Comparison of preterm birth rates between progesterone and control groups. The progesterone group demonstrated significantly lower incidence (p=0.008).

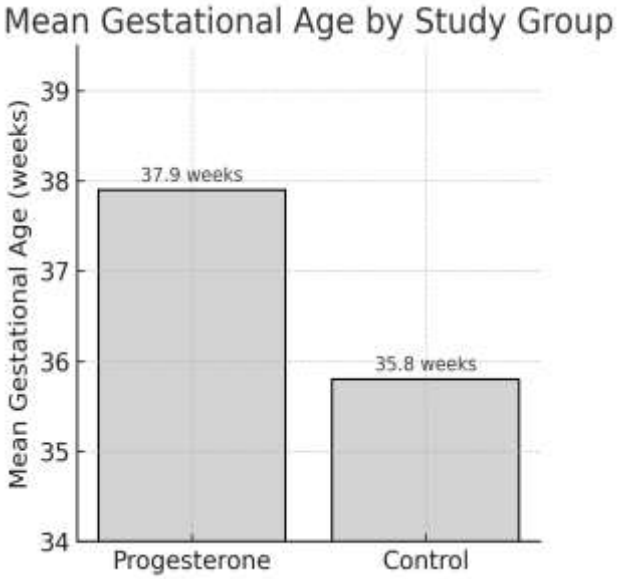

Figure 3: Mean Gestational Age by Group

Mean gestational age at delivery was significantly higher in the progesterone group compared with control (p<0.001).

DISCUSSION

This research shows that oral micronized progesterone lowers the risk of preterm birth in women with risk of preterm birth. These results are in agreement with the literature that micronized progesterone prolong quiescence of the uterus and prevent preterm birth [6,7].

The decrease in the preterm birth rate together with the improvement in certain neonatal parameters of health underlines the clinical effectiveness of oral micronized progesterone as a substitute to the intramuscular and local routes of administration in developing countries. Oral administration promotes adherence

as the regimen is simple and results in low levels of discomfort [8].

The results are in agreement with the meta-analysis conducted by Saccone et al. [9] who found that oral micronized progesterone is more effective than placebo in decreasing recurrent preterm birth. In addition, the improvement in neonatal outcomes is consistent with the biological rationale that sustained progesterone levels block the inflammatory and contractile pathways of preterm labour [10].

CONCLUSION

The prevention of preterm labor can be achieved effectively, safely and without discomfort by oral micronized progesterone therapy. Starting this treatment alongside routine antenatal care for high-risk pregnant women has the potential to optimize maternal and neonatal health outcomes even in low-income settings.

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