Original Article

Assessment Of Oral And Vaginal Natural Micronised Progesterone In Preventing Preterm Labor

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Abstract

Background: Preterm birth is an essentially rising global problem, however more than 60% of those occur in South Asia and Sub-Saharan Africa. The present study was conducted to compare oral and vaginal natural micronised progesterone 300 mg in preventing preterm labor.

Materials & Methods: 80 pregnant women with gestational age between >24 week to <36 weekswere divided into 2 groups of 40 each. Group I patients were administered oral micronized progesterone 300 mg and group II were administered vaginal micronized progesterone. APGAR scoreat 5 minutes and birthweight were recorded. Number of neonates who required NICU admission were noted.

Results: Gestational age 24-28 weeks had 10 patients in group I and 12 in group II, 29-32 weeks had 24 in group I and 20 in group II and 32-36 weeks had 6 in group I and 8 in group II. Perinatal outcome was asymptomatic at birth seen in 30 and 34, meconium aspiration syndrome in 1 and 2, birth asphyxia in 5 and 1, neonatal sepsis in 2 and 1 and hypoxemic ischaemic encephalopathyin 2 and 1 in group I and II respectively. The difference was significant (P< 0.05).NICU admission was seen in 4 in group I and 2 in group II, APGAR score at 1 minute was 7.25 in group I and 8.15 in group II and at 5 minutes was 7.85 in group I and 8.69 in group II. The mean birth weight<2.5 kgs was seen in 11 and 4, 2.5-3 Kgs in 15 and 11 and >3 kgs in 14 and 25 in group I and II respectively. The difference was significant (P< 0.05).

Conclusion: Vaginal mode of administration is considered more efficaciousas compared to oral progesterone. It plays a vital role in the reduction of pre- term labor, reduces the rate of neonatal NICU admissions, neonatal mortality and morbidity.

Key words: neonatal mortality, NICU admissions, progesterone

INTRODUCTION

Preterm labor (PTL) and delivery pose a significant impact on health of the baby, as they continue to be the principal cause of perinatal morbidity and mortality and its long- term sequelae. Preterm birth is an essentially rising global problem, however more than 60% of those occur in South Asia and Sub-Saharan Africa.[1] In the developing countries, on average, 11.9% of babies are born preterm as opposed to 9.1% in higher-income countries. Newborn are perhaps one of the most susceptible populations worldwide. In the current scenario, prematurity is already playing a lead role for the prime cause of death among children under five age group and the cause of disability and low quality of life in later period all over the world.[2]

Progesterone used for prevention of PTB is divided into 2 types: 17-alpha hydroxyprogesterone caproate (17α-OHPC) and natural micronized progesterone.[3]Micronized progesterone, a natural progesterone, is similar to that produced in corpus luteum and placenta. Micronized progesterone can be utilized as oral capsule, vaginal gel or vaginal suppository, and all of them are self-administered.[4] When it is orally administered, it is metabolized in the liver and loses its potency, entailing irregular blood concentration and more frequent side effects.[5] When administered through vagina, however, it avoids the first-pass effect by the liver, is absorbed quickly, has increased bioavailability, directly affects the uterus, and is maintained in a high concentration in the serum.[6]Vaginal progesterone gel is administered through a specific applicator and a dose of 90 mg was used in all published studies. Vaginal progesterone suppository is inserted in the vagina with clean hands or plastic gloves.[7] The present study was conducted to compare oral and vaginal natural micronised progesterone 300mg in preventing preterm labor.

MATERIALS & METHODS

The present study comprised of 80 pregnant women with gestational age between >24 week to <36 weeks. All gave their written consent for the participation in the study. Data such as name, ageetc. was recorded.

Patients were divided into 2 groups of 40 each. Group I patients were administered oral micronized progesterone 300 mg and group II were administered vaginal micronized progesterone. Pregnancies continuing beyond 36 weeks were assessed

for intervention for delivery. In neonates, APGAR score at 5 minutes were recorded. Number of neonates who required NICU admission were noted.Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Gestational age (Weeks)	Group I (OMP)	Group II (VMP)
24-28	10	12
29-32	24	20
32-36	6	8

Table I shows that gestational age 24-28 weeks had 10 patients in group I and 12 in group II, 29-32 weeks had 24 in group I and 20 in group II and 32-36 weeks had 6 in group I and 8 in group II.

Table II Assessment of perinatal outcome

Outcome	Group I (OMP)	Group II (VMP)	P value
Asymptomatic at birth	30	34	0.05
Meconium aspiration syndrome	1	2	0.12
Birth asphyxia	5	1	0.01
Neonatal sepsis	2	1	0.12
Hypoxemic ischaemic encephalopathy	2	1	0.12

Table II, graph I shows that perinatal outcome was asymptomatic at birth seen in 30 and 34, meconium aspiration syndrome in 1 and 2, birth asphyxia in 5 and 1, neonatal sepsis in 2 and 1 and hypoxemic ischaemic encephalopathy in 2 and 1 in group I and II respectively. The difference was significant (P< 0.05).

Graph I Assessment of perinatal outcome

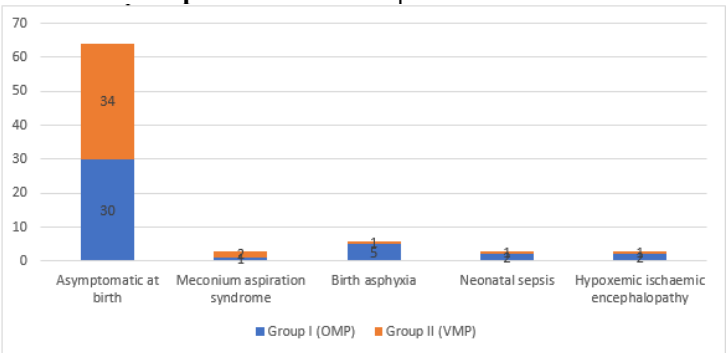

Table III Comparison of parameters

Parameters	Variables	Group I (OMP)	Group II (VMP)	P value
NICU admission	Yes	4	2	0.05
	No	36	38	
APGAR score	1 minute	7.25	8.15	0.04
	5 minutes	7.85	8.69	0.02
Birth weight (Kgs)	<2.5	11	4	0.02
	2.5-3	15	11	0.15
	>3	14	25	0.05

Table III shows that NICU admission was seen in 4 in group I and 2 in group II, APGAR score at 1 minute was 7.25 in group I and 8.15 in group II and at 5 minutes was 7.85 in group I and 8.69 in group II. The mean birth weight<2.5 kgs was seen in 11 and 4, 2.5-3 Kgs in 15 and 11 and >3 kgs in 14 and 25 in group I and II respectively. The difference was significant (P< 0.05).

DISCUSSION

A complex multifactorial etiopathogenesis for PTL occurs as a result of various maternal and fetal factors such as maternal demographic, socio-economic characteristics and obstetric history.[8] The interplay between maternal physiological and fetoplacental parturition which triggers premature cervical dilatation, effacement and premature activation of uterine

contractions resulting in preterm birth. Preterm births are managed by tocolysis and steroid coverage.[9] With the advent of advanced NICU and obstetric facilities, in developed countries, the fetal survival is possible even at 20 weeks and in developing countries at best setups even at 28 weeks of gestation.[10] The incidence of PTL is 23.3% while in India being 10-69%. The current world stressors and ART techniques has added on to the risks associated with PTL.[11]The present study was conducted to compare oral and vaginal natural micronised progesterone 300 mg in preventing preterm labor.

We observed that gestational age 24-28 weeks had 10 patients in group I and 12 in group II, 29-32 weeks had 24 in group I and 20 in group II and 32-36 weeks had 6 in group I and 8 in group II. Das et al[12]studied the perinatal outcome of both mother and neonate revolving around premature deliveries by using two different routes for progesterone administration. A prospective study was done on randomly selected 300 patients who complained of pain abdomen after 24 weeks of pregnancy, and were followed up till delivery after administration of progesterone, after dividing into 2 separate groups. Users of Oral micronized progesterone (OMP) presented at 31.37±1.94 weeks for delivery and that of Vaginal micronized progesterone (VMP) presented at 33.49±2.49 weeks of gestation. 78.7% neonates of Oral group were asymptomatic at birth than those 90.7% of vaginal neonates. Incidence of neonatal morbidity, like signs of birth asphyxia (16.7% vs 3.3%), mean APGAR Score of 1 min (7.77±2.11 vs. 8.07±1.63), mean birth weight (2.89±0.67 vs. 3.19±0.61), NICU admission (13.3% vs 3.3%) were found to be higher in Oral group than Vaginal group. Administration of Vaginal micronized progesterone helps in reduction of preterm labor and the rate of neonatal NICU admissions, neonatal mortality and morbidity as compared to oral micronized progesterone.

We observed that perinatal outcome was asymptomatic at birth seen in 30 and 34, meconium aspiration syndrome in 1 and 2, birth asphyxia in 5 and 1, neonatal sepsis in 2 and 1 and hypoxemic ischaemic encephalopathyin 2 and 1 in group I and II respectively. Fonseca et al[13]published the result of a randomized, double-blind trial of vaginal natural micronized progesterone suppository therapy in high-risk population in which over 90% of the subjects had history of PTB. The result of this study showed that daily administration of 100 mg of vaginal progesterone suppository resulted in the significantly lower rates of PTB <37 and <35 weeks of gestation than the placebo.

We observed that NICU admission was seen in 4in group I and 2 in group II, APGAR score at 1 minute was 7.25 in group I and 8.15 in group II and at 5 minutes was 7.85 in group I and 8.69 in group II. The mean birth weight<2.5 kgs was seen in 11 and 4, 2.5-3 Kgs in 15 and 11 and >3 kgs in 14 and 25 in group I and II respectively. Meis et al[14]published a randomized, double-blind trial, in which pregnant women with history of spontaneous PTB were injected with 250 mg of 17α-OHPC or its placebo every week from 16 to 20 weeks to 36 weeks of gestation. The result of this randomized study showed that the 17α-OHPC treatment group had the lower rates of PTB <37, <35, and <32 weeks of gestation than the placebo group. The 17α-OHPC treatment was only effective in preventing recurrent PTB in women whose previous PTB occurred before 34 weeks of gestation.

The limitation the study is small sample size.

CONCLUSION

Authors found that vaginal mode of administration is considered more efficaciousas compared to oral progesterone. It plays a vital role in the reduction of pre- term labor, reduces the rate of neonatal NICU admissions, neonatal mortality and morbidity.

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