

Original Article

EFFICACY IF PROGESTERONE THERAPY IN THE PREVENTION IF PRETERM LABOUR

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Objective: To determine the efficacy of progesterone therapy in prevention of preterm labour.

Methods: This Experimental Study was designed at Department of Gynaecology and Obstetrics (Unit-II), Lady Willingdon Hospital, Lahore. Non-probability, purposive sampling technique was used and 100 patients were taken who had singleton pregnancy with previous history of one or 2 preterm delivery or cervical length of <25 mm between 16 to 20 weeks of gestation were included in the study. The drug was given according to the proposed dosing regimen i.e. weekly intramuscular injection of 250gm of 17 alpha hydroxyprogesterone caproate beginning at 16weeks 0days to 20weeks 6days gestation and used till 36 weeks 6days gestation and the patients were followed till delivery to see the efficacy of the drug (as per operational definition) information was noted on predesigned proforma. The data was analyzed by using SPSS-20 software.

Results: In this study, the mean age of patients presented in active phase of labor was 25.85+3.13 years. The mean gestational age at time of presentation was 19.2+1.13weeks. Out of the 100 females given progesterone therapy showed that there were 71 (71.0%) females who delivered after 37 weeks of gestation while 29 (29.0%) females delivered before 37 weeks of gestation and had gone into preterm delivery. In this study, Progesterone therapy showed efficacy in 71 (71.0%) females who delivered after 37 weeks of gestation according to the operational definition of efficacy, while 29 (29.0%) females did not fulfill the operational definition of efficacy and delivered before 37 weeks of gestation.

Conclusion: Through this study, we come to know that progesterone therapy is effective in prevention of preterm labor.

Keywords: preterm labor, progesterone therapy, efficacy, and gestational age.

Introduction

Preterm birth, defined as childbirth occurring at less than 37 completed weeks or 259 days of gestation.¹ The prevalence of Preterm birth are increasing even in developing countries that is up to 12% of newborns.² The morbidity associated with preterm birth often extends to later life, resulting in enormous physical, psychological and economic costs.^{1,3} Pakistan is leading with 748,100 preterm births annually and has fourth highest number after India China and Nigeria.⁴

Many available treatments for preterm labor can prolong pregnancy sufficiently but efforts are therefore being directed towards finding alternatives that are safer, better tolerated as well as efficacious in prolonging pregnancy.^{5,6} Various studies have shown the reduction of preterm labour using Progesterone therapy. In 2003, a large randomized placebo controlled trial conducted by the national institute of child health and human development (NICHD) Maternal Fetal Medicine Units network found a significant reduction in recurrent preterm birth before 37 week gestation in

women who received 17 alpha hydroxyprogesterone caproate versus a control group receiving placebo.⁷

This regimen is not being used in our setup. It is evident from previous literature that the effectiveness of progesterone therapy is 63.7%.⁷ The objective of this study is to determine the efficacy of progesterone therapy in the patients of threatened preterm labour.

Methods

This study was done in Department of Gynaecology and Obstetrics (Unit-II), Lady Willingdon Hospital. 100 cases were taken and calculated with 95% confidence level, 9.5 % margin of error and taking expected percentage of efficacy i.e. 63.7% in patients. Non-probability purposive sampling technique was used. Patients with singleton pregnancy, had previous history of one or 2 preterm delivery or cervical length of <25 mm between 16 to 20 weeks of gestation measured by last menstrual period or first dating scan were included in the study. Pregnant women with twins or high order pregnancy, with gestation gestational

Diabetes (BSF >100 or BSR>200 mg/dl, females with pregnancy induced hypertension (BP>140/90 mmHg on two separate occasions and severe medical disorder like anemia (Hb<10g/dl), asthma, chronic liver disease, renal disease were excluded. Total hundred patients were included in the study that fulfills inclusion criteria from Unit II of lady Wallingdon Hospital Lahore. Informed consent was taken. Complete demographic record of patients was recorded. 17 alpha hydroxyprogesterone caproate is synthetic progesterone available in Pakistan in the form of intramuscular injection. The drug was given according to the proposed dosing regimen i.e weekly intramuscular injection of 250gm of 17 alpha hydroxyprogesterone caproate beginning at 16weeks 0days to 20weeks 6days gestation and used till 36 weeks 6days gestation and the patients were followed till delivery to see the efficacy of the drug. Efficacy of therapy was considered effective if it prevents preterm labour in patients and pregnancy continues till 37 week. The data was analyzed by using SPSS-20 software. All metric (quantitative) variables like age (in years) and gestational age was presented in form of mean \pm S.D. The non-metric (qualitative) variables like efficacy were presented as frequency tables and percentages. Data was stratified for history of preterm labour in antecedent pregnancy or number of period preterm labour (≤ 2 , >2) to address effect modifiers.

Results

In this study, the mean age of patients presented in active phase of labor was 25.85+3.13 years having minimum and maximum age as 19 years and 38 years respectively (age range = 19 years). The mean gestational age at time of presentation was 19.2 \pm 1.13weeks. Minimum gestational age was 16 weeks and maximum age was 20 weeks. (Gestational age range = 4 weeks). There were 55 (55.5%) females who had parity 1, 34 (34.0%) females had parity 2, 9 (9.0%) had parity 3 while there were only 2 (2.0%) females who had parity 4. Out of the 100 females given progesterone therapy showed that there were 71 (71.0%) females who delivered after 37 weeks of gestation while 29 (29.0%) females delivered before 37 weeks of gestation and had gone into preterm delivery. In this study, Progesterone therapy showed efficacy in 71 (71.0%) females who delivered after 37 weeks of gestation according to the operational definition of efficacy, while 29 (29.0%) females did not fulfill the operational definition of efficacy and delivered before 37 weeks of gestation.

Table-1: Descriptive statistics of Age (Years) and Gestational age (weeks) .

Age (in years)	Mean \pm SD	Gestational age (weeks)	Mean \pm SD
38 - 19	25.85 \pm 3.13	20 - 16	19.2 \pm 1.13

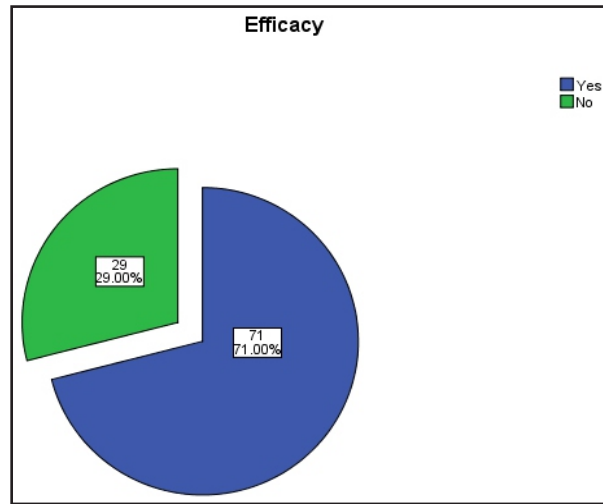


Fig-1: Efficacy of Progesterone therapy.

Discussion

Pre_term labor (PTL) is a challenging situation, which requires a delicate judgment regarding the appropriate management. The use of tocolytics is associated with numerous and serious maternal, fetal and neonatal side effects, long hospitalization and questionable benefits. In addition, clinical experience has shown that PTL frequently progresses to true labor and delivery, irrespective of any conservative management.⁸⁻¹¹ The role of progesterone in pregnancy is unclear; however, it is known that the effects of progesterone on the myometrium are 2-fold: it suppresses the action of estrogen by inhibiting the replacement of cytosolic estrogen receptors and it exerts a direct effect on the biosynthetic processes of the uterus through its own cellular receptor.¹²⁻¹⁴ In this study we have evaluated the prophylaxis role of progesterone for preterm labour. In this study, the mean age of patients was 25.85 \pm 3.13 years having minimum and maximum age as 19 years and 38 years respectively (age range = 19 years). In one study conducted in Egypt in 2010, the mean age of females presented in preterm labor managed with progesterone therapy was 25.32 \pm 4.15 years.¹⁵ The mean gestational age at time of presentation was 19.2 \pm 1.13weeks. Minimum gestational age was 16 weeks and maximum age was 20 weeks. (Gestational age range = 4 weeks). According to study conducted in Egypt, the mean gestational age of females at time of presentation in preterm labor was 37.47 \pm 1.56 weeks.¹⁵

There were 55 (55.5%) females who had parity 1, 34 (34.0%) females had parity 2, 9 (9.0%) had parity 3 while there were only 2 (2.0%) females who had parity 4. According to our study results, out of the 100 females given progesterone therapy showed that there were 71 (71.0%) females who delivered after 37 weeks of gestation while 29 (29.0%) females delivered before 37 weeks of gestation and had gone into preterm delivery. Thus, Progesterone therapy showed efficacy in 71 (71.0%) females who delivered after 37 weeks of gestation according to the operational definition of efficacy, while 29 (29.0%) females did not fulfill the operational definition of efficacy and delivered before 37 weeks of gestation. According to Egyptian study, 68% females, who presented in preterm labor and managed with progesterone therapy, delivered after 37 weeks of gestation which shows significant decrease in preterm delivery.¹⁵ Recently, interest in progesterone prophylaxis has been rekindled with the publication of two studies. The incidence of preterm delivery was reduced from 28.5% to 13.8% in women given progesterone. The incidence of delivery before 34 weeks' gestation was also less.¹⁶ Intramuscular 17-alpha hydroxyprogesterone caproate was given weekly until delivery or 36 weeks' gestation. In the progesterone group, 36.3% of women delivered before 37 weeks' gestation. The rates of delivery before 35 weeks' gestation (20.6%) and before 32 weeks' gestation (11.4%)

were also reduced. There was a concomitant prolongation of pregnancy, a reduction in birth weight less than 1500 g, necrotizing enterocolitis, intraventricular haemorrhage and the need for supplemental oxygen therapy in neonates. This is important because few studies have convincingly demonstrated an improvement in neonatal outcome with a reduction in risk of preterm delivery.^{7,17}

Although these results are extremely promising, it is difficult to suggest an immediate change in routine clinical practice for the following reasons. Firstly, the long-term safety of 17-alpha hydroxyprogesterone caproate needs to be established. Secondly, the results of Meis et al. may not be appropriate for women with risk factors other than previous preterm delivery. Thirdly, the results have been questioned as the rate of preterm delivery was so high in the placebo group. One suggestion is that the vehicle may have increased uterine contractility in women receiving placebo. So, although the data are encouraging, further work is required before universal progesterone prophylaxis can be recommended to all high-risk women.^{7,17}

Conclusion

This study concluded that progesterone therapy is effective in prevention of preterm labor.

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Picture Quiz

WHAT IS DIAGNOSIS?



See answer on page # 88