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Research Article

**ANALYSIS OF MATERNAL AND PERINATAL OUTCOME
IN PRETERM LABOR**

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Abstract:

Introduction: Spontaneous preterm birth (PTB), defined by the World Health Organization as birth before 37 completed weeks of gestation, is one of the main causes of perinatal death in the developed countries. **Objectives of the study:** The main objective of the study is to analyze the maternal and perinatal outcome in preterm labor. **Material and methods:** This cross sectional study was conducted in SIMS, Lahore during June 2019 to December 2019. Sample size was calculated with WHO sample size calculator using following figures: CI 95%, Power of study 80% proportion of outcome variable (p1) 21%. Patients with multiple gestation, obstetric bleeding, fetal anomaly, allergic reactions, intrauterine death and patients who refused to participate in the study were excluded. **Results:** A total of 72 female patients were included in the study. Mean age and gestational age of the patients was 25.36 ± 3.8 years and 32.09 ± 1.78 weeks. 56.9% (n=41) patients had 15-25 years of age and 43.1% (n=31) patients fell in age group 26-40 years. Gestational age distribution showed that majority of the patients i.e. 58.3 (n=42) had gestational age 29-32 weeks and 41.7% (n=30) had 33-36 weeks of gestational age. **Conclusion:** It is concluded that nifedipine is a better tocolytic agent than nitroglycerin for the preterm patients, when used for pregnancy prolongation.

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INTRODUCTION:

Spontaneous preterm birth (PTB), defined by the World Health Organization as birth before 37 completed weeks of gestation, is one of the main causes of perinatal death in the developed countries. PTB has multifactorial causes and a heterogeneous outcome. For surviving preterm neonates, there may be significant health consequences with lasting disabilities, including respiratory problems, hearing and vision impairment, cerebral palsy, and mental retardation [1].

Delivery of foetus before thirty-seven weeks (259 days) is labelled as preterm birth. Preterm birth is multifactorial and its incidence has increased one and half fold in last few years and is a leading cause of fetal mortality worldwide. About 75% mortality and morbidity of foetus and mother occurs during preterm birth [2]. Pattern and mechanism of preterm labor is unknown but in all cases force full uterine contractions are common. Uterine contractions may be physiological and pathological that ends with preterm delivery of foetus [3].

Preterm labour is an unresolved issue in obstetrical profession and has lot of challenges for fetal and maternal outcomes. Preterm labour can be stopped with use of tocolytic medication, antibiotics and corticosteroids; in cases of preterm labor progesterone can be used for maintenance of tocolytic effect [4]. Many techniques have been used and recommended to stop the preterm labour. Use of excessive water to prevent dehydration and complete bed rest are famous but do not have any effect in inhibition of preterm labour. It has been shown that parenteral to colytic agents have better outcome as compared to oral [5].

In preterm babies, corticosteroids are used for fetal lung maturity. Not multiple but a single dose of corticosteroids reduced the incidence risk of respiratory distress and parental mortality rate. Efficacy of transdermal nitro-glycerine has been observed in 64% tocolysis successfully within 48 hours [6].

Objectives of the study

The main objective of the study is to analyze the maternal and perinatal outcome in preterm labor.

MATERIAL AND METHODS:

This cross sectional study was conducted in SIMS, Lahore during June 2019 to December 2019. Sample size was calculated with WHO sample size calculator using following figures: CI 95%, Power of study 80% proportion of outcome variable (p1)

21%. Patients with multiple gestation, obstetric bleeding, fatal anomaly, allergic reactions, intrauterine death and patients who refused to participate in the study were excluded. Successful tocolysis was labelled as prolongation of pregnancy for minimum 48 hours (corticosteroids were given in this time for fetal lung maturity) after therapy of tocolysis. Failed or unsuccessful tocolysis was labelled when delivery occurred within 48 hours.

All patients were admitted and all fetal and maternal monitoring was started. Pelvic examination was done and then continuous monitoring of contractions started. To overcome the nitro-glycerine induced hypotension, 500 ml of normal saline was infused. Patients were divided into two equal groups; group N and group NG. Patients were allocated in two groups by using lottery method. After confirmation of diagnosis and initial investigations, tocolytic therapy was started in group N with 20 mg Nifedipine oral stat, if contractions persisted, 20 mg was given after 30 minutes for two further doses; maximum 160 mg can be given safely as stated and approved by Royal Hospital for women. Tocolysis in group NG was done with 10 mg patch of nitro-glycerine applied at abdomen. If there was no improvement observed another patch was applied; never used more than 2 patches.

Statistical analysis

All data were analysed using SPSS version 23. Post stratification chi square test was applied to see effect modification. P? 0.05 was considered as significant.

RESULTS:

A total of 72 female patients were included in the study. Mean age and gestational age of the patients was 25.36 ± 3.8 years and 32.09 ± 1.78 weeks. 56.9% (n=41) patients had 15-25 years of age and 43.1% (n=31) patients fell in age group 26-40 years. Gestational age distribution showed that majority of the patients i.e. 58.3 (n=42) had gestational age 29-32 weeks and 41.7% (n=30) had 33-36 weeks of gestational age.

Mean age and gestational age of patients in group N was 25.33 ± 2.49 years and 31.13 ± 1.55 weeks, respectively. Mean age and gestational age of patients in group NG was 25.38 ± 4.8 years and 33.05 ± 1.47 weeks, respectively. Mean age and gestational age of the patients in which the drug was found to be affective was 26.42 ± 3.27 years and 32.01 ± 1.83 weeks, respectively while the mean age and gestational age of the patients in which the drug was in effected was 22.16 ± 3.53 and 32.33 ± 1.64 weeks, respectively

Table 01: Demographic characteristics of patients

Prolongation of Pregnancy for 48 Hours			
Groups	Presence	Frequency	Percent
N	Yes	32	88.9
	No	4	11.1
	Total	36	100.0
NG	Yes	22	61.1
	No	14	38.9
	Total	36	100.0
Descriptive Statistics			
Groups	Variable	Mean±S.D	
N	Age	25.33±2.49 years	
	Gestational Age	31.13±1.55 Weeks	
NG	Age	25.38±4.8 years	
	Gestational Age	33.05±1.47 weeks	
Descriptive Statistics With respect to Efficacy of Drugs			
Efficacy of Drug	Variable	Mean±S.D	
Yes	Age	26.42±3.27 Years	
	Gestational Age	32.01±1.83 weeks	
No	Age	22.16±3.53 years	
	Gestational Age	32.33±1.64 weeks	

Table 2. Association of efficacy of drug with effect modifiers

Effect Modifiers		Efficacy of Drugs		Total	P-value
		Yes	No		
Groups	N	32	4	36	0.006*
	NG	22	14	36	
Total		54	18	72	
*P-value is statistically significant with Pearson Chi-Square value = 7.40, d.f=1					
Stratified Age	15-25 Years	27	14	41	0.039*
	26-40 Years	27	4	31	
Total		54	18	72	
* P-value is statistically significant with Pearson Chi-Square value = 4.25, d.f=1					
Stratified Gestational Age	29-32 Weeks	35	7	42	0.053*
	33-36 Weeks	19	11	30	
Total		54	18	72	
* P-value is statistically insignificant with Pearson Chi-Square value = 3.73, d.f=1					

DISCUSSION:

The main outcome variable of our study is efficacy of drug. Efficacy of nifedipine was 88.9% and that of nitroglycerine was 61.1%. A study concluded that nifedipine was a better tocolytic drug when used in preterm labor as compared to nitroglycerine. Efficacy of nifedipine was reported 74% and 52% in nitroglycerine cases [7]. Due to their adverse effects and short outcomes these drugs were replaced with oxytocin, Ca⁺ channel openers and blockers. A new drug nifedine has been introduced for reduction of uterine contractions [8]. It is a Ca⁺ channel antagonist that blocks the Ca⁺ influx in cells of myometrium and oral intake gains peak plasma level within 45 minutes and has half life 2-3 hours their use [9]. In our study, we observed that in nifedipine 88.9% patients had prolonged pregnancy while in

nitroglycerine 61.1% patients had prolong pregnancy. Conde-Agudelo et al conducted a study in 2011 on comparison between nifedipine and magnesium sulphate in management of preterm labor. They reported that nifedipine was more effective in β_2 -adrenoregic agonist as Mg sulphate is also [10-11].

CONCLUSION:

It is concluded that nifedipine is a better tocolytic agent than nitroglycerin for the preterm patients, when used for pregnancy prolongation.

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