

Transdermal Nitroglycerine in Management of Preterm Labour

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ABSTRACT

Aim: To estimate the prolongation of gestation following transdermal nitroglycerine and to assess the changes in maternal arterial pressure before and after administering glyceryl trinitrate patch.

Methods: This is a Quasi experimental study carried out in the Department of Obstetrics and Gynaecology, Divisional Headquarter Teaching Hospital, Mirpur Azad Kashmir from January 2014 to December 2014. Fifty patients of all parity between 24-37 weeks of gestation were included and transdermal nitroglycerine applied 10mg/24 hours to see its efficacy and maternal and foetal effects.

Results: Eight (16%) patients gestation prolonged less than 24 hours, 6 (12%) patients had prolongation of gestation between 24-48 hours. Twelve (24%) patients gestation was prolonged 48 hours to one week and in 24(48%) gestation prolonged above 1 week of which 6 patients reached till 37 weeks. No change in maternal blood pressure or pulse noted.

Keywords: Preterm labour, salbutamol, tocolysis, preterm birth, perinatal morbidity, premature.

INTRODUCTION

Preterm labour is occurs from age of viability of fetus from 24 weeks up till completion of 37 weeks of gestation. Incidence is 5-10%. The consequences of preterm labour and preterm birth occur with increasing severity and frequency with earlier the gestational age of the newborn¹. Besides perinatal death in a very young fetus, common complications of preterm birth includes; respiratory distress syndrome, sepsis, seizures, hypothermia, feeding problems and metabolic disturbances. Long term morbidity associated with preterm labour and delivery includes bronchopulmonary dysplasia and developmental abnormalities. The significance of preterm birth can be seen by the fact that 10% of babies born premature². For obstetric point of view, a lot of drugs have been tried to prevent and treat preterm labour but current drug therapies have not shown in randomized controlled trials to significantly affect perinatal morbidity and mortality. Salbutamol and ritodrine have profound effects on maternal cardiovascular and metabolic systems and even cause arrhythmias, symptomatic myocardial.

Ischaemia and pulmonary oedema derange the glycemic control in diabetic pregnancy. Fetal side effects are tachycardia and hypoglycemia. Beta adrenergic agonists should not be first choice in women with cardiac diseases, diabetes mellitus or hyperthyroidism³. Glyceryl-trinitrate reduces amplitude and frequencies of uterine contractions in a dose dependant manner, so a potent uterine relaxant and tocolytic effect of glyceryl trinitrate can be reversed with ease by oxytocis⁴. The safety of glyceryl trinitrate during tocolysis appears high with

no adverse maternal and neonatal outcome. No fetal side effects noted, only maternal side effects are headache and hypotension⁴. The use of nitrovasodilators for achieving rapid uterine relaxation in obstetrical emergencies has been documented for nearly 120 years⁵.

MATERIAL AND METHODS

This study was carried out from January 2014 to December 2014 in the Department of Obstetrics and Gynaecology at Divisional Headquarter Teaching Hospital, Mirpur Azad Kashmir. Fifty pregnant patients were admitted in hospital with signs and symptoms of preterm labour. All patients with preterm labour 24-37 weeks gestation with singleton pregnancy of any gravidity were admitted. All the patients were randomly assigned to receive transdermal glyceryl trinitrate. On admission patients were randomly assigned to receive transdermal glyceryl trinitrate. Patients were evaluated through detailed history. Various risk factors like urinary tract infection, vaginal discharge were identified. The examination of patients was included general physical examination (pulse and blood pressure). Systemic, abdominal and per-speculum and pervaginal examination carried out. Obstetric ultrasound was done in all patients to assess gestational age, liquor volume, placental localization, approximate fetal weight, lie and presentation to rule out foetal anomalies and for foetal well being and baseline cardiotocography was also performed. During first 3 hours after administering of drug, pulse rate and arterial blood pressure of all patients were observed every 30 minutes and then 2 hourly onwards. All the data was collected and entered in computer software version 20 and analyzed. Mean and standard deviation was calculated for gestation

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prolonged. Frequency distribution and gestational prolonged and side effects were calculated.

RESULTS

There were 26(52%) patients from 18-24 years, 23 (46%) from 25-35 years and 1(2%) above 35 years of age. Twelve (24%) patients were primigravidas, 33 (66%) patients having parity 2-4 and 5 (10%) patient parity more than 5. Ten (20%) patients presented with preterm labour were 28-31 weeks of gestation. Thirty three (66%) presented at 32-34 weeks of gestation and 7(14%) presented between 35-36 weeks of gestation. About cervical dilatation 2(4%) patients were having cervical dilatation less than 1cm, 32 (64%) patients had cervical dilatation between 1-2cm and 16(32%) patients had dilatation 3-4cm. All patients were evaluated for prolongation of gestation for >48 hours till 37 weeks of gestation 8 (16%) patients gestation prolonged less than 24 hours. Six (12%) patients gestation prolonged to 24-48 hours and 12(24%) patients had prolongation of gestation between 48 hours to one week and 24(48%) patients gestation prolonged above 1 week of which 6 patients reached till 37 weeks. Mean prolongation of pregnancy was 14 days. Each patient was evaluated for any maternal complication. No change in blood pressure or pulse was noted.

Table 1: Parity of patients

Parity	n	%age
Primigravida	12	24.0
2-4	33	66.0
5 or more	5	10.0

Table 2: Gestational age at the time of presentation

Gestational age (weeks)	n	%age
28 - 31	10	20
32 - 34	33	66
35 - 36	7	14

Table 3: Cervical dilatation at the time of presentation

Cervical dilatation (cm)	n	%age
< 1cm	2	4.0
1 – 2cm	32	64.0
3 – 4cm	16	32.0

Table 4: Prolongation of gestational age

Duration (hours)	n	%age
< 24	8	16.0
24 - 48	6	12.0
48 hrs to 1 week	12	24.0
> 1 weeks	24	48.0
Till 37 weeks	6	12.0

DISCUSSION

In my study mean prolongation of gestation after application of nitroderm patch is 14.1 days similar results were seen in another observational study conducted at Jinnah Hospital, Lahore⁶ in which 70

women were treated with glyceryl trinitrate patch. Mean prolongation of gestation in that study was 19 days. A study presented by Less⁷, 13 women with preterm labour which were treated with transdermal nitroglycerine 10mg/24 hours. In this study mean prolongation of pregnancy was 34 days with a median of 28 days. Comparable to our study there is more prolongation of gestation. In our study 66% patients had cervical dilatation more than 2cm, wherever in their study only 30% patients had cervical dilatation more than 2cm. Another study by Smith⁸ in which 30 women in preterm labour were randomized in double blind fashion to receive either transdermal nitroglycerine (n=17) or placebo (n=16). Primary outcome measure was delivery within 48 hours of randomization, fewer women 6 out of 17(23%) as compared to 11 out of 17(64%) in placebo group delivered in 48 hours with glyceryl trinitrate and there were no significant or maternal side effects comparable to my study. Two other small case series suggest that transdermal administration of nitroglycerine may be effective in management of premature labour⁷ and cervical incompetence⁹.

CONCLUSION

Transdermal glyceryl trinitrate appears to be a safe, effective and non-invasive method of tocolysis with no significant effect on maternal blood pressure and foetal heart rate. Large multicentre trials are needed to assess optimal dosage, overall efficacy and foetal safety.

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