



A COMPARATIVE STUDY OF NIFEDIPINE VERSUS NITRO GLYCERINE IN PREVENTION OF PRETERM LABOUR

Gynaecology

Dr. Seema kumari Senior resident, Department of obstetrics and gynaecology, Jawaharlal Nehru Medical College, Bhagalpur, Bihar

Dr. Mritunjay Kumar Associate professor, Department of surgery, Jawaharlal Nehru Medical College, Bhagalpur, Bihar.

ABSTRACT

Aim: this study aims to compare the effectiveness of nifedipine and nitroglycerine in prevention of preterm labour. Our main goal was the postponement of delivery. **Methods:** This study was done for a period of one year from March 2016 to February 2017 in patients who were admitted for delivery in obstetrics and gynaecology department of JLNMC, Bhagalpur. Thorough examination, investigations and management were performed. A total of 120 cases were taken in the study. Patients were divided in to two groups of 60 each. Among them 60 women received Nitroglycerine Patch (Group I) and 60 women received oral Nifedipine (Group II). **Results :** Both groups were matched gestational age, history of pregnancy, abortion, delivery, and stillbirth, primary body temperature, and systolic and diastolic blood pressure. Those who received Nitroglycerine had more prolonged delay of delivery. And babies have better Apgar scores. Both groups had minimal side effects. Tachycardia and nausea were reported more frequently in GTN patients. **Conclusions:** Transdermal GTN was shown to be more effective in controlling PTL compared to oral nifedipine. **Conclusion:** Transdermal nitro glycerine was shown to be more effective in controlling preterm labour as compared to oral nifedipine.

KEYWORDS:

Nitroglycerine, Nifedipine, preterm labour, delivery.

Introduction-

PRETERM birth remains one of the main causes of perinatal mortality and long-term morbidity. More than 70% of the total perinatal mortality can be attributed to preterm birth.

According to World Health organization (WHO) preterm is defined as a gestational age of <37 completed weeks (259 days) from the first day of the last menstrual period. The tocolysis used to prevent preterm labour basically aims at prolonging the pregnancy at least for 48-72 hours, so as to provide adequate time to administer two doses of corticosteroid which would help in preventing respiratory distress syndrome in the newborn if delivery occurs within 7 days of steroid administration. It will also provide opportunity to transfer the woman to a higher medical centre where adequate NICU facilities can be provided to the neonate as and when required. Preterm labor must be considered whenever abdominal or pelvic symptoms occur after 18 to 20 weeks of gestation. Symptoms like pelvic pressure, increased vaginal discharge, backache, and menstrual-like cramps are common with advancing pregnancy and suggest preterm labor more by their persistence than by their severity. Preterm birth is the leading cause of perinatal morbidity and mortality and is a major public health problem in terms of long-term disability and health care costs in industrialized countries. From 2006 to 2007 in Canada, approximately 8.1% of pregnancies were delivered preterm (<37 completed weeks of gestation). Among them, about 1% of pregnancies were delivered before 32 weeks and 0.3% before 28 weeks. In extremely preterm births (<28 weeks of gestation), the occurrence of severe neonatal complications, such as chronic lung disease, necrotizing enterocolitis (NEC), intraventricular hemorrhage (IVH), and periventricular leukomalacia (PVL), is quite common. These conditions often require extensive use of neonatal intensive care units (NICUs). Medical and technological advances in the care of premature infants, although substantially increasing the chance of survival for these infants, have imposed high costs to the health care system. In the United States, the total annual expenditure for prematurity has been estimated recently to be approximately US \$26 billion. Based on data released by the Canadian Institute for Health Information (CIHI) in 2006, hospitals in Canada (excluding those in Quebec and rural Manitoba) spent roughly CAN \$295 million on neonatal care, and the burden on society would be even greater if the consequent long-term costs were taken into account. It is estimated that the Canadian health system spends almost CAN \$2 billion a year to take care of premature babies and their medical complications.

Most available tocolytic agents used for preterm labor, such as adrenergic receptor agonists (e.g., ritodrine), magnesium sulfate (e.g., MgSO₄), calcium channel blockers (e.g., nifedipine), and oxytocin

antagonists (e.g., atosiban), had no effect (or even caused adverse effects in some cases) on neonatal outcomes. In 1907, Simpson referred to a birth on December 25, 1642 when a widow gave birth prematurely to a male child who was "so small that he could have been put into a quart mug". The infant survived and grew up to be Sir Isaac Newton, who subsequently described gravity. Indeed, this is one of the earliest descriptions of preterm labour. However, a significant proportion of preterm births do not survive, let alone grow to become Newtons, and prematurity still remains a major contributor of neonatal morbidity and mortality today. However, during the past forty years the rate of preterm birth has not drastically declined. Earlier the classical approaches of hormones and gastrointestinal spasmolytics were used to control uterine contractility. But in the early 1960s much research was done on agents like nylidrine, isoxsuprine and orciprenaline that they could suppress uterine contractility as they had many beta agonist properties.

Material and Methods

This study was done for a period of one year from March 2016 to February 2017 in patients who were admitted for delivery in obstetrics and gynaecology department of JLNMC, Bhagalpur. Thorough examination, investigations and management were performed. A total of 120 cases were taken in the study. Patients were divided in to two groups of 60 each. Among them 60 women received Nitroglycerine Patch (Group I) and 60 women received oral Nifedipine (Group II).

Results

Both groups were matched gestational age, history of pregnancy, abortion, delivery, and stillbirth, primary body temperature, and systolic and diastolic blood pressure. Those who received Nitroglycerine had more prolonged delay of delivery.

Babies have better Apgar scores.

Both groups had minimal side effects. Tachycardia and nausea were reported more frequently in GTN patients.

Adverse effects	Number of patients in Nitro-glycerine group	Number of patients in Nifedipine group
Headache	12	10
Tachycardia	16	15
Nausea	07	09
Hypotension	02	03

DISCUSSION:

Prematurity is the greatest single problem in perinatal medicine (Zuspan 1972, Ried and Ryan et al 1972). Despite the availability of tocolytic agents the rate of prematurity has not declined over the past

few years for several reasons. Preterm birth is a leading cause of perinatal morbidity including respiratory distress syndrome (RDS), chronic lung disease, intraventricular haemorrhage, sepsis, cerebral palsy and other forms of neuro-developmental impairment. Numerous studies described the role of several tocolytic drugs in eliminating the incidence of preterm labor, but only few studies compared drugs of the same group. Several agents have been used for the inhibition of uterine contractility, but it remains unclear what the first-line tocolytic agent should be. Code-Aquedelo et al., agrees with the authors who proposed that nifedipine, a calcium channel blocker, could be used as a first line tocolytic agent. Dhawle et al., reported an incidence of RDS 17.1% in the NTG group and 9.3% in the nifedipine group, and the difference was not statistically significant. In our study, the incidence of RDS was 75% in the nifedipine group and 60% in the NTG group, and showed statistical significant difference between both groups.

Conclusion

Transdermal nitro glycerine was shown to be more effective in controlling PTL compared to oral nifedipine. Transdermal nitro glycerine was shown to be more effective in controlling preterm labour as compared to oral nifedipine. Despite the limitations, we found in our study that the use of nitro glycerine patch for preterm labor was the dominant strategy, with both lower costs and lower admission of babies.

References

1. SAIGAL S. and DOYLE L.W.: An overview of mortality and sequalae of preterm birth from infancy to adulthood. *Lancet*, (371):261-269, 2008)
2. American College of Obstetricians and Gynecologists Committee on Practice Bulletins: ACOG practice bulletin no. 43: Clinical management guidelines for obstetrician-gynecologists. May 2003. Management of preterm labor. *Obstet. Gynecol.*, (101):1039-1047, 2003)
3. CONDE-AQUDELO A., ROMERO R. and KUSANOVIC J.P.: Nifedipine in the management of preterm labor: A systematic review and metaanalysis. *Am. J. Obstet. Gynecol.*, (204 (2): 134.e1-20, 2011)
4. TSATSARIS V., PAPATSONIS D., GOFFINET F., DEKKER G. and CARBONNE B.: Tocolysis with nifedipine or beta-adrenergic agonists: A meta-analysis. *Obstet. Gynecol.*, (97):840-847, 2001)
5. KING J.F., FLENADY V., PAPATSONIS D., DEKKER G. and CARBONNE B.: Calcium channel blockers for inhibiting preterm labor: a systematic review of the evidence and a protocol for administration of nifedipine. *Aust. N.Z.J. Obstet. Gynaecol.*, (43):192-198, 2003)
6. SIMHAN H.N. and CARITIS S.N.: Prevention of preterm delivery. *N. Engl. J. Med.*, (357):477-487, 2007)
7. HAWLE A., KARLA J., BAGGA R. and AGGARWAL N.: Nifedipine versus nitroglycerine for acute tocolysis in preterm labor: A randomized controlled trial. *Int. J. Reprod. Contracept. Obstet. Gynecol.*, (2 (1): 61-6, 2013)
8. World Health Organization (WHO). 1993. International Statistical Classification of Diseases and Related Health Problems. 10th Revision, vol. II. Geneva, Switzerland: WHO. [8] Crowley, P. 2002. Prophylactic corticosteroids for preterm birth (Cochrane review).
9. Tan TC, Devendra K, Tan LK, Tan HK. Tocolytic treatment for the management of preterm labour: a systematic review. *Singapore Med J* (2006; 47: 361-6)
10. Martin JA, Hamilton BE, Ventura SJ, Menacker F, Park MM, Sutton PD. Births: final data for 2001. *Natl Vital Stat Rep* (2002;51:102-8)
11. Moutquin JM. Classification and heterogeneity of preterm birth. *BJOG* (2003; 20:30-3)