ABSTRACT

OBJECTIVE: To compare the response of Nifedipine and Salbutamol in inhibiting the uterine contraction in preterm labor in respect of their duration and side effects

STUDY DESIGN: A Comparative study

PLACE AND DURATION: The study was conducted at Al Tibri Medical College & Hospital, Isra University Karachi Campus and in Private practice from 1st June 2013 till 30th May 2014.

METHODOLOGY: Pregnant women having preterm labor pain admitted through Consultant OPD were included and divided into 2 groups of 30 each, Group A was treated with Oral Nifedipine and Group B was treated with intravenous Salbutamol. The Sample technique was convenience (Non - Probability). The patients included in study were of gestational age 32-36 weeks. Singleton pregnancy cervical dilation < 3 cm. Patient with any medical disorder, gestational age > 36 weeks, cervical dilation > 3 cm, those with multiple gestation were excluded. Consent was taken from the patients and the method was explained in detail before providing them any medicine.

RESULT: The average gestational age of the patients was found 33.14 + 1.02 weeks. There was no significant difference between the success rate on Nifedipine and Salbutamol to inhibit the uterine contraction. The frequency of the side effects faced by women was significantly lower in Nifedipine than Salbutamol.

CONCLUSION: The data supported that Nifedipine has a little advantage over Salbutamol especially in their side effects, Nifedipine is a safer drug. It was also found that there was no significant relation with age, parity, gestational age with two drugs.

KEY WORDS: Preterm Labour, Nifedipine, Salbutamol

INTRODUCTION

Birth at less than 37+0 weeks of gestation is defined as Preterm birth. In the world incidence of Preterm birth is around 5% to 11% of total world’s birth. It represents the single largest cause of mortality and morbidity for newborns and a major cause of morbidity for pregnant women.

It has been widely accepted that the prevention and effective management of preterm labour will improve neonatal outcome and have a profound effect on society and long term public health care cost. The management of threatened preterm labour includes tocolysis. The objective of tocolytic drugs is to reduce neonatal morbidity and mortality by prolonging the pregnancy, allowing for corticosteroid administration and maternal transfer to tertiary care centre. A variety of agents are used as a tocolytic, it includes β-2 agonist, Calcium Channel blocker, prostaglandin synthetase inhibitor, nitric oxide donor, oxytocin receptor antagonist (Atosiban) and magnesium sulphate. Since 1980 selective β-2 agonists such as ritodrine and salbutamol have been used in hospital for preterm labour. These drugs impair intracellular cyclic AMP concentration and relax the myometrium. Calcium channel blockers decrease intracellular free calcium concentration and relax myometrium. That’s why some authors have recommended that nifedipine, a calcium channel blocker, could be used as a first-line tocolytic agent.

METHODOLOGY

This analytical experimental study was conducted at Department of Gynaecology & Obstetrics, Al Tibri Medical College Hospital and private practice. 60 pregnant women who were admitted through Consultant OPD; from 1st June 2013 till 30th May 2014 were include. The patients were divided into 2 groups of 30 each, Group A was treated with Oral Nifedipine and Group B was treated with intravenous Salbutamol. The inclusion criteria were Gestational age 32 - 36 weeks, presence of Pre-term labour (persistent uterine contraction 4 - 8 times for 20 seconds) for every 60 minutes with documented cervical change (> 1 cm)) Cervical dilation > 3 cm, Singleton pregnancy. The exclusion criteria were Gestational age > 36 weeks or < 32 weeks (22 - 32 weeks), Multiple gestations, Pregnancy with medical disorder, Pregnancy with APH, Cervical dilation > 3 cm, and Intra uterine fetal demise.

All patients were admitted, a detailed history and examination conducted in gynaec ward for management of pre-term labour. All informed consents that will fulfill inclusion criteria of study will be included through structured performa. After admission and history taking with routine investigation (Blood CP, Blood group, Urine DR, RBS, Rhesus factor and Ultrasonolgraphy) proposed plan will be explained to the patient. The diagnosis of pre-term labour would be made by defined method and after excluding the contraindication for tocolytics, management will be started to stop premature contractions by Nifedipine (Tablet
A total of 60 patients were included in the study. Out of 60 patients, 30 patients treated with Nifedipine (Group A) and 30 treated with Salbutamol (Group B). The average age of the pregnant woman was found 27.83 ± 5.12 (Ranging from 21 to 37) Years. The success of therapy was estimated by complete tocolytic response on clinical ground. In group-A there were 11 (36.7%) patients and in group-B 7 (23.3%) patients having full success while 15 (50%) patients and 19 (63.3%) patients having relative success in group-A and Group-B respectively. There were no significant difference between the success rate on Nifedipine and Salbutamol to inhibit the uterine contraction (P>.05) as shown in Figure - 1.

The average gestational age of the patients was found 33.14±1.02. The minimum and maximum range of gestational age was 32 to 35 and these ranges were compared between groups individually as wells. In group-A there were 12 (45%) patients while in group-B 14 (47%) patients of 2 to 3 Gravida. Comparison between groups for uterine contraction in 10 minutes and cervical dilation are shown in Figure 2 and Figure - 3.

Average time taken to inhibit the uterine contraction in Nifedipine and Salbutamol was not significant P > .05 as shown in Table - I. In Group-A gestational age prolonged eight days to 36 weeks in 11 (36.7%) patients and two days to seven days in 16 (53.3%) patients while in group-B gestational age prolonged eight days to 36 weeks in 7 (23.3%) patients and two days to seven days in 20 (66.7%) patients (Table - II).

In group-A side effect were seen in 5 (16.7%) patients while in group-B side effect were seen in 18 (60%) patients. The frequency of the woman with side effects were significantly lower in Nifedipine than Salbutamol (P<.01). In group-A 1 (3.3%) patient has palpitations, 2 (6.7%) have flushing and 2 (6.7%) have hypotension. In group-B 3 (10%) have palpitation, 8 (26.7%) patients have nausea and vomiting, 4 (13.3%) have headache, 2 (6.7%) have pulmonary edema, 1 (3.3%) has chest pain (Table - III).

Adalat Retard 20mg stat and maximum dose upto 160mg in 24 hours) and Salbutamol (Inj Ventolin 0.5mg/ml in infusion form in which 5mg Salbutamol add in 500 ml of 5% dextrose water). The maternal pulse would be monitored in both cases. The data will be collected through Performa. Patients will be selected by non-probability convenience technique.

Data analysis procedure: Data was analyzed by using statistical packages for social science (SPSS-10) on computer. Relevant descriptive statistics were computed for categorical variables like success rate, gestational age, parity, uterine contractin, cervical dilation, prolongation of gestational age, maternal side effect for Nifedipine (Group A) and Salbutamol (Group - B). Mean and standard deviation was computed for quantitative variables like age, gestational age, Time taken to inhibit the uterine contraction for Nifedipine (Group A) and Salbutamol (Group - B).

Chi-Square test was applied to test for hypothesis 1 and 3 with 0.05 level of significance. Independent sample t-test was used to test for hypothesis 2 with 0.05 level of significance. Multiple bar diagrams were used to present groups comparison between for Nifedipine (Group A) and Salbutamol (Group - B).

RESULT

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Chi-Square = 1.36,    Df = 2,   P-Value = .507

**FIGURE-1: SUCCESS RATE IN NEFEDIPINE AND SALBUTAMOL (n = 60)**

**FIGURE - 2: UTERINE CONTRACTION IN NEFEDIPINE AND SALBUTAMOL n = 60**

Keys

Success= Delivery delayed for at least 1 week till term.
Relative Success= Delivery occurring from 48 hours to 1 week.
Failure= Delivery occurring within first 24 hours.
TABLE - III: MATERNAL SIDE EFFECT IN NIFEDIPINE AND SALBUTAMOL (n = 60)

<table>
<thead>
<tr>
<th>SIDE EFFECTS</th>
<th>GROUP A NIFEDIPINE</th>
<th>GROUP B SALBUTAMOL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of Patients</td>
<td>Percentage</td>
</tr>
<tr>
<td>Chest pain</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Flushing</td>
<td>2</td>
<td>6.7</td>
</tr>
<tr>
<td>Headache</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Hypotension</td>
<td>2</td>
<td>6.7</td>
</tr>
<tr>
<td>Nausea &amp; Vomiting</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Palpitation</td>
<td>1</td>
<td>3.3</td>
</tr>
<tr>
<td>Pulmonary Edema</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>No Side effect</td>
<td>25</td>
<td>83.3</td>
</tr>
</tbody>
</table>

DISCUSSION

For doctors and expecting mothers both, preterm labour is a clinical challenge. It has been seen in 7 – 9% of all births and has even increased recently. In our study two drugs Nifedipine and Salbutamol are used in inhibiting preterm labour to elongate gestation enough till fetus is completely matured. This is done to delay delivery for at least 48 hours so that corticosteroid administration is effective or for transfer of patient to tertiary care center with neonatal intensive care facility. In our study the age of patients in both groups was above 20 years which was similar with the study of Iqbal J et al. where no patient was below the age of 20 years. Mean age in this study for group A was 28.10 + 5.29 and group B 27.57 + 5.02 years which is comparable to the study of Ghazi A et al.

In our study the treatment with Nifedipine has been effectively reported, it inhibit uterine contractions without causing any side effects and delivery of the baby was deferred for >48 hours and > 72 hours in 15 and 11 patients respectively. Failure of tocolysis occurs in 4 cases (13.3%). A study conducted by N. Maitra comparing nifedipine with ritodrine, they found 91.5% of subjects on nifedipine in which labour was delayed >two weeks as compared to ritodrine (62.9%), this observation was statistically significant. Different regimes of nifedipine have been used in different study groups. In current study nifedipine was administered as a single course of 20mg followed by 20mg orally if needed, maximum of 60 mg in 1st hour, followed by 20mg orally at 8 hours interval for 3 days in comparison of Read and Wellby where they gave an initial loading dose of 30mg of nifedipine and a maximum maintenance dose of 20mg every 8 hours for 3 days.

In our study 5 patients had mild side effects with Nifedipine in comparison to 12 patients had side effects with Salbutamol which is comparable to the study of Naseem J et al.

CONCLUSION

Management of uterine contractions associated with preterm labour with first-line tocolytic therapy can prolong gestation. Among the tocolytics, however Calcium Channel blockers appear to be better than other drugs in their class and do pose no significant potential harms for mothers. From this study, the data supported that Nifedipine has a little advantage over Salbutamol, especially in case of side-effects Nifedipine is a safer drug. It was also found that there was no significant relation with age, parity, gestational age with the two drugs.

REFERENCE

4. Malik KK. Comparison of Nifedipine with Salbutamol as tocolytic – agent in preterm labour. Biomedica