

Original Research Article

Successful tocolysis: Does cervical dilatation affect time to delay in delivery

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Abstract: Infants born as a result of premature labour suffer significant morbidity and mortality. Prematurity and its prevention continue to be a major challenge for the obstetrician. Since neonatal intensive care is the most expensive health care service present in the health care delivery system and neonatal morbidity still remains high, so the obstetrician faces the challenge of affecting the delivery in a way so as to optimize the status of fetus-infant at birth. Isoxsuprine is one of the most commonly used drugs to arrest preterm labour. This study was done to assess the effect of cervical dilatation on prolongation of pregnancy. 50 pregnant patients with gestational age 28-37 weeks with cervical dilatation not more than 3cm and cervical effacement not more than 50 % with intact membranes with regular uterine contractions with a frequency of 2 or more per 10 minutes lasting for at least 30 seconds were put on isoxsuprine. Isoxsuprine was successful in attaining tocolysis in majority of the patients. There was an inverse relationship between cervical dilatation and success of tocolysis. Time from admission for initial preterm labour episode to delivery was inversely related to initial cervical dilatation. Increasing cervical dilatation reduces the mean time gained.

Keywords: Isoxsuprine, preterm labour, tocolytic agent, cervical dilatation, mean time gained.

INTRODUCTION

Preterm labour is defined as the onset of regular, painful uterine contractions, two or more per 10 minutes each lasting for at least 30 second with cervical effacement upto 50% or cervical dilatation upto 3 cm between 28-37 completed weeks of gestation. Infants born as a result of preterm labour suffer significant morbidity and mortality. Preterm labour is responsible for almost 75% of all neonatal deaths [1,2]. Premature labour is responsible for 50% of childhood neurological complications [3,4]. Preterm labour also leads to prolonged hospitalization and increased hospital charges [5]. As the cause of labour still remains elusive, the exact cause of preterm labour is still unsolved. Four different pathways have been identified that can result in preterm birth and have considerable evidence: precocious fetal endocrine activation, uterine overdistention, decidual bleeding and intra uterine infection or inflammation [6]. Although survival of preterm infants exceeds 90% by 30 completed weeks of gestation and 90% of otherwise uncomplicated preterm births occur between 30 and 36 weeks of gestation, neonatal morbidity assumes paramount importance during this latter period of preterm gestation [7]. There are a number of demographic, social and medical characteristics of pregnancy with preterm delivery [8].

Faulty placentation, intrauterine infection, immunological factors, maternal factors, cervical incompetence, uterine factors, trauma and fetal anomalies are various group of possible causes that lead to preterm labour [9]. Increasing rate of preterm labour could be due to artificial reproductive techniques, psychosocial stress or medically induced prematurity [10]. Underlying causes are unknown in nearly 50% of cases [11]. About one in six preterm births is from multifetal pregnancies [12]. Preterm delivery affects almost 23% pregnancies in developing countries like India [13]. Estimates of preterm birth range from a relative stable 5-10% in developed countries to as high as 25% in some of the worst hit developing countries [14]. It is far more preferable to prevent the initiation of preterm labour than once the cascade of events has already been established [15]. Early recognition of the signs and symptoms of preterm labour is important in order to establish a tocolytic therapy and to allow antenatal corticosteroids. Dilatation of cervix is one of the key parameters to be evaluated for the diagnosis of preterm labour and it may have an important role in the risk stratification of women presenting with preterm labour. The currently used method to arrest preterm labour is by inhibiting uterine contractions with tocolytic agents. Tocolytic agents delay the delivery and

permit the use of glucocorticoids to facilitate the transfer of pregnant lady to a unit where intensive neonatal care facilities are available [16,17]. Over the years treatment protocols have achieved tocolysis with beta-sympathomimetics like ritodrine, isoxsuprine, salbutamol and terbutaline [18].

MATERIALS AND METHODS

This study was carried out in the Department of Obstetrics and Gynaecology, in a teaching hospital. The study included 50 patients with preterm labour who were put on isoxsuprine.

Selection criteria:

1. Gestational age 28-37 weeks.
2. Regular uterine contractions, 2 or more than 2 per 10 minutes each lasting for at least 30 seconds.
3. Cervical dilatation not more than 3 cm.
4. Cervical effacement not more than 50%.
5. Membranes intact.

Exclusion Criteria:

1. Multiple pregnancy
2. Ante-partum haemorrhage
3. Hydramnios
4. Pregnancy with heart disease and diabetes mellitus
5. Fetal malformations.

After selecting the patients, the following details were noted: age of the patient, parity, number of abortions and history of preterm deliveries, exact date of last menstrual period, duration of pregnancy and time of onset of preterm labour. Detailed history and clinical examination of the patients was done which included record of vitals, systemic examination and per-vaginum examination. In per-vaginum examination, cervical dilatation and cervical effacement were recorded. The

investigations which were carried out in all the patients were haemoglobin, bleeding time, clotting time, ABO Rh grouping, urine complete examination, vaginal swab for culture and sensitivity and urine for culture and sensitivity. After selecting the patients, they were given intravenous infusion of isoxsuprine. The intravenous drip was tapered over next 12 hours after uterine quiescence was achieved or patient developed adverse effects in the form of maternal tachycardia (heart rate more than 130/minute) or hypotension (systolic blood pressure less than 80 mmHg or diastolic blood pressure less than 40 mmHg), intolerable nausea and vomiting or foetal tachycardia (foetal heart rate greater than 160 beats/minute). After 15 minutes of stoppage of infusion, intramuscular injection of isoxsuprine hydrochloride 10mg 6 hourly was given for 24 hours. 30 minutes before discontinuing the intramuscular therapy, one tablet (10 mg) of isoxsuprine was given 8 hourly and it was continued till 37th completed week or delivery. Treatment was considered successful if the uterine quiescence was maintained for at least 48 hours.

RESULTS

In the present study isoxsuprine was successful in attaining tocolysis in 66% of patients. As the cervical dilatation increased, the chances of successful tocolysis decreased. Successful tocolysis was attained in 80% of cases with cervical dilatation up to 1 cm at the time of presentation. The success rate was marginally lower at 73% in patients who presented with cervical dilatation between 1-2 cm. The success rate dropped to 22.22% in patients with cervical dilatation of more than 2 cm at the time of presentation as shown in Table-1. This difference in successful tocolysis for patients with less than 1cm cervical dilatation at the time of presentation and more than 2 cm cervical dilatation at the time of presentation was statistically significant (p value < 0.01).

Table-1 : Table showing relationship between cervical dilatation and success rate.

Cervical dilatation (cms)	No. of Cases	Successful cases	% age
Up to 1	15	12	80%
1-2	26	19	73.08%
2-3	9	2	22.22%

The patients who had cervical progression had a shorter delay to delivery. The mean time gained was 21.08 days in patients presenting with cervical dilatation of 0-1 cm. It dropped to 11.42 days in patients with cervical dilatation 1-2 cm at the time of

presentation and was just 3.5 days in patients presenting with cervical dilatation of 2-3 cm as shown in Table 2. The difference in mean time gained in patients presenting with cervical dilatation of 0-1 cm and 2-3 cm was statistically significant.(p-value<0.01)

Table-2 : Table showing relationship between cervical dilatation and mean time gained.

Cervical dilatation(cms)	No. of cases	Mean time gained(days)
0-1	15	21.08
1-2	26	11.42
2-3	9	3.50

DISCUSSION

Prevention of preterm delivery continues to be a major challenge for the obstetricians worldwide. The currently used method to arrest preterm labour is by early detection and inhibition of uterine contractions by tocolytic agents. In the present study isoxsuprine was able to attain tocolysis in 66% cases. The results of this study are consistent with other studies [19-24]. In the present study successful tocolysis was obtained in 80% cases with cervical dilatation up to 1 cm. As the cervical dilatation increased, the success rate came down. In patients with cervical dilatation between 2-3 cms, the success rate was 22.22%. These results are comparable to results of other studies [25]. Aggressive tocolytic therapy has decreasing success rate with increasing cervical dilatation [26]. The results in our study pointed that the time from admission for preterm labour episode to delivery was inversely associated with cervical dilatation. These results are consistent with observations made by other studies [27-32].

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