THERAPEUTIC AVENUES IN THE PHARMACOLOGICAL MANAGEMENT OF PRETERM LABOUR

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SUMMARY

A randomised prospective trial was carried out at the KEM Hospital to compare the efficacy of terbutaline v/s isoxsuprine in the management of preterm labour.

Patients in this study were randomly distributed into two groups such that each group consisted of 30 patients. Parenteral & oral terbutaline and isoxsuprine were given to these patients.

Preterm labour was arrested and pregnancy continued beyond 36 wks of gestation in 86% of patients receiving terbutaline in contrast to ony 70% of patients receiving isoxsuprine.

Maternal side-effects such as tachycardia & hypotension were significantly less in the group of patients treated with terbutaline.

Our study indicated that terbutaline was a more safe & well tolerated inhibitor of preterm labour than isoxsuprine.

INTRODUCTION

The challenge of treating preterm labour clearly illustrates one of the central dilemmas in obstetrics today. Various treatment modalities have been tried and used. A large number of tocolytic agents are available for the treatment of preterm labour, with varied advantages & disadvantages and dangerous side effects.

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MATERIALS & METHODS

A randomised prospective study was carried out at the KEM Hospital to compare the efficacy of terbutaline v/s isoxsuprine in the management of preterm labour.

Patients were randomly distributed in

two groups such that each group comprised of thirty patients.

Inclusion & exclusion criteria for patients are as shown below:

Inclusion criteria for patients :

1) Gestational age less than 36 wks.

2) Painful regular uterine contractions occuring at intervals of less than 10 minutes recorded for atleast 30 minutes.

3) No previous administration of tocolytics for 7 days.

Exclusion criteria :

1.Pregnancy induced hypertension
2.Diabetes
3.Heart disease
4.Fever
5.Urinay Tract Infection
6.Gestational age greater than 36 wks.
7.Fetal congenital anomalies incompatible with life.
8.Advanced cervical changes i.e. dilatation greater than 3 cms. & effacement greater than 70%.

Gestational age was estimated by dates and other corroborative evidences, such as early antenatal examination and USG. Uterine contractions were recorded by clinical methods and external cardiotocography. Patients were given bed rest and glucocorticoids. Tocolytics were administered as per the regimes given below:

Protocol for administraction of terbutatline :

A) Diluted intravenous terbutaline 5 ug/min upto 30 ug/min Drip continued for 12 hrs after cessation of uterine activity.

B) Subcutaneous terbutaline
250 ug 6 hrly for 24 hrs.

C) Oral maintenance therapy
5 mg 8 hourly orally

Protocol for administration of isoxsuprine :

A) Diluted intravenous isoxsuprine
0.5 mg/min upto 10 mg/min
Drip continued for 12 hours until after cessation of uterine activity.

B) Intramuscular Isoxsuprine
10-20 mg 6 hrly for 24 hours

C) Oral Maintenance therapy
10-20 mg 6 hrly orally

Tocolytic therapy was considered successful when duration of gestation could be prolonged beyond 36 weeks.

Criteria for comparision of efficacy included:

1.Duration of prolongation of gstation.
2.Gastational age at delivery.
3.Incidence of maternal side effects.
4.Birth weight.
5.Perinatal mortality.

The results of the trial are summarised below:

RESULTS

Preterm labour was arrested and pregnancy continued beyond 36 weeks of gestation in 86.6% of patients with terbutaline in contrast to 705 of patients receiving isoxsuprine.

Results are summarised in table I.

The duration of prolongation of pregnancy is as shown in Table II.

The study indicated that maternal tachycardia and palpitations were significantly less in the group of patients treated with terbutaline - 33% of patients treated with terbutaline compared to 56.6% of patients treated with isoxsuprine.

Table I
Prolongation of Gestation beyond 36 weeks

Regimen used	Number	Percentage
Isoxsuprine	21/30	70%
Terbutaline	26/30	86.6%

Table II
Duration of prolongation of gestation

Duration	Terbutaline		Isoxsuprine	
	No.	%	No.	%
24 hours	1/30	3.3	2/30	6.7
1-7 days	1/30	3.3	4/30	13.3
8-14 days	2/30	6.7	3/30	10
15 days	26/30	86	21/30	70%

Table III
Maternal side effects with terbutaline and isoxsuprine.

Drug	Tachycardia		Hypotension	
	No.	%	No.	%
Terbutaline	10/30	33	7/30	23
Isoxsuprine	17/30	56.6	20/30	66

Similarly the incidence of giddiness and hypotension was 23% with terbutaline and 66% with isoxsuprine.

Tachycardia was defined as a pulse rate of more than 120/min and hypotension as a systolic BP of less than 100 mm of Hg. The results are summarised in Table III.

The birth weights of the infants in both

Table IV
Birth weight of infants

Birth weight (kg)	Terbutaline	Isoxsuprine
1 kg	-	-
1 - 1.5 kg	1/30	4/30
1.5 - 2 kg	1/30	2/30
2 - 2.5 kg	6/30	3/30
2.5 - 3 kg	18/30	15/30
3 kg	3/30	2/30

Table V
Compartive studies of efficacy of terbutaline and Isoxsuprine : Prolongation of gestation beyond 36 weeks.

Investigator	Terbutaline	Isoxsuprine
1.Our series	86.6%	70%
2.Ingemarsson	80%	74%
3.Patki	-	75%
4.George	-	90%

groups are shown in Table IV.

In the terbutaline group 70% of infants had birth weights more than 2.5kg - compared to 56.6% of patients in the isoxsuprine group.

Neontal deaths in the terbutaline group were 3/30 whereas there were 5/30 deaths in the patients treated with isoxsuprine. The causes of death were prematurity, septicaemia, respiratory distress syndrome and necrotizing enterocolitis.

DISCUSSION

Preterm labour is an important problem

Table VI
Side effects of terbutaline & Isoxsuprine

Investigator	Maternal side effects Tachyeardia		Hypotension	
	Terbutaline	Isoxsuprine	Terbutaline	Isoxsuprine
1.Our series	3.3%	56.6%	23%	66%
2.Brown et al	63%	-	78%	-
3.Patki et al	-	50%	-	50%
4.Singh et al	36%	4%	9%	13%

in obstetrics due to its association with a high perinatal morbidity and mortality. Various treatment modalities have been tried in its management. Beta Adrenergic agents are the usual first choice for the treatment of these patients.

Our study showed that terbutaline arrested preterm labour & allowed prolongation of pregnancy beyond 36 weeks more efficiently than isoxsuprine. Similar findings were noted by various other investigators as shown below in Table V.

The study also indicated that maternal side, effects such as tachycardia and hypotension were more with isoxsuprine than terbutaline, Similar results are indicated by other studies as shown in Table VI.

In the terbutaline group birth weights were greater than in the isoxsuprine group (Ingemarrsson 1976, Stubblefield & Heye 1982). Also neonatal deaths were more in the isoxsuprine group (Patki et al 1993).

Thus our study indicated that terbutaline is a more effective, safe & well tolerated inhibitor of preterm labour than isoxsuprine.

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