THE MAGNESIUM SULFATE AS A PRIMARY TOCOLYTIC AGENT

by

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SUMMARY

The efficacy of Magnesium Sulphate as Primary tocolytic agent was done. Over all success rate was 66.6%. Success rate was inversely proportional to the dilatation and effecement of the cervix. It was maximum (93.75%) when cervix was 1 Cm dilated and 50% effeced. Drug is more effective in Primi than in multigravida. There was no significant adverse effect on maternal vital signs and foetal heart rate. Therapy should be discantinued if patteller reflex become sluggish.

Introduction

Tocolytic effect of magnesium sulfate was reported by Hall in 1959 by demonstrating inhibition of uterine muscle contraction excised from gravid human uteri and prolonged labour was noted when magnesium was used to prevent convulsions in Pregnancy induced hypertension. Steer (1977) suggested use of magnesium as primary tocolytic agent and reported that it offers comparable success with minimal maternal and fetal physiological changes compared to other agents. Kiss and Szoke (1975) used magnesium sulfate as primary tocolytic agent in threatened premature labour and reported 95% success rate. Though the magnesium sulfate as a primary sedative agent is used extensively for treating P.E.T. and eclampsia but its use as primary tocolytic agent has not received much attention in our country. Present study is carried out to evaluate it as primary tocolytic agent in established premature labour and its safety for mother and baby.

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Material and Methods

Study was conducted on 30 patients admitted in Zanana Hospital Udaipur with premature labour, patients fullfilling following criterias were included.

- — Duration of gestation 24 to 37 weeks.
- — Cervix dilatation not more than 4 Cm.
- — Cervix should not be 100% effaced.
- — Membranes should be intact.
- — Known L.M.P. with regular menstrual cycle.
- — There was no known complication for continuation of pregnancy such as P.E.T., A.P.H. etc.

Complete urine examination, BT, CT, C.R.T. Serum magnesium and calcium levels were estimated before and at conclusion of therapy. If patient delivered then cord blood was collected for magnesium and calcium estimation. During therapy patients were monitered every half hourly for pulse, blood pressure, respiratory rate, pateller reflex foetal heart,

uterine contraction and urine out put. 2% Solution of magnesium sulfate in 5% glucose water was started for 1st hour at rate of 7 ml/minute (.14 gm/minute) i.e. total 8.4 gm, then in next hour 4 ml/min total 4.8 gm. after that a maintanance dose of 2 ml/min was continued till 12 hours of last uterine contraction, patients were kept in hospital preferably for 5 to 7 days and then were followed weekly in antenatal clinic. Therapy was discontinued if pateller reflex became sluggish.

Observation

Over all success rate was 66.6%. Success rate was more in primi as compared to multi i.e. 88.8% and 57.1% respectively, cervical dilatation and effacement had inverse relation with success rate as shown in Table I.

Pregnancy was prolonged for one week in 35%, for more than 3 weeks in 65%, for 4 weeks in 50%, 5 week in 35%, 6 weeks in 30%, 7 weeks in 15% and 8 weeks in 5%.

Sucess rate was 100% if uterine contractions were suppressed within 2 hours of start of therapy.

There was no significant influence of therapy on maternal vital signs and foetal heart except slight rise (8 beats/min) of pulse rate. Nausea and vomiting (1 to 2) was reported in 66.6% and drowsiness was noted in 13.32%. Only 2 cases had 6 vomits which responded to I.V. metachlorpropamid hydrochloride. In 1 case therapy was discontinued on account of sluggish pateller reflex and 10 ml calcium gluconate was injected intravenously.

There was rise in mean serum magnesium level after therapy and decrease in mean serum calcium level. The rise in magnesium was stastically significant. Table II. Cord serum magnesium was

TABLE I

Influence of Cervical Condition on Success Rate

S. No.	Cervical dilatation in Cm.	Success rate in %	Failure rate in %	P. Value	Cervical effacement	Success rate in %	Failure rate	P. value
1.	1	93.75 (15)	6.25 (1)	.001 (HS)	25%	100 (3)	Nil	.01 (HS)
2.	2	57.14 (4)	42.86 (3)	.01 (HS)	50%	85 (17)	15 (3)	.01 (HS)
3.	3	16.66 (1)	83.34 (5)	.05 (S)	75%	Nil	100 (7)	.001 (HS)
4.	4	Nil	100 (1)	.001 (HS)	—	—	—	—

TABLE II

Effect of Maternal Serum Magnesium and Calcium

Serum Level	Before therapy in mg%			After therapy in mg%			P. value
	Range	Mean	S.D.	Range	Mean	S.D.	
Magnesium	0.8-2.53	1.89 ±	0.38	2-3.2	2.68 ±	.34	.05 (S)
Calcium	9.1-11.7	10.51 ±	0.85	5.3-10	8.24 ±	2.29	(NS) <0.05