

The Effect of Hyoscine Butylbromide and Drotaverin on First Stage of Labor

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Abstract

Active management of labor is a part and parcel of modern obstetrics. Various drugs have been tried to hasten cervical dilatation so that problems and hazards of prolonged labor both for the mother and fetus are minimized without increasing maternal or perinatal mortality and morbidity. To compare the effect of drotaverin versus hyoscine on shortening duration of 1st stage of labor is assessed. *Methods:* A prospective study conducted in Department of Obstetrics and Gynecology, ESIMC PGI MSR Bangalore, Karnataka. Data collected from One Hundred pregnant women in active labor, labor accelerated using drotaverin and hysocin, duration of labor was compared among groups. *Result:* The two groups Group A using hyoscine butylbromide, Group B using Drotaverin, were compared with regards to rate dilatation of cervix and duration of first stage labor. Average time to full cervical dilatation was significantly less in Group B in both nulliparas and in multipara. Similarly, the average rate of cervical dilatation was significantly more in Group A, both in nulliparas and in multipara. *Conclusion:* Hyoscine butylbromide is more efficacious than drotaverine hydrochloride for cervical dilatation and reducing duration of active phase of 1st stage of labor.

of 1st Stage; Cervical Dialation; Labor Augmentation.

Introduction

Active management of labor reduces the number of cesarean deliveries, the number of prolonged labors, and labor duration, without having any adverse effects on the mother or the fetus [1-5]. The aim of the obstetrician is likely to accomplish the delivery in the shortest possible time.

Without compromising maternal and fetal safety. Prolonged labor often ends up in great suffering to the parturient because of dehydration, confusion and infection [6]. The fetus is exposed to high risk of infection and asphyxia. Spasmolytics and spasmolytic mixtures are administered to facilitate dilatation of cervix during delivery and to shorten first stage of labor [7]. An ideal antispasmodic for acceleration of cervical dilatation should have prompt and long lasting action, no adverse effect on uterine contractility and it should have minimal side effects on mother and fetus [8].

Drotaverine hydrochloride is a spasmolytic agent, which selectively inhibits phosphodiesterase IV causing smooth muscle relaxation and is accompanied by a mild calcium channel-blocking effect to facilitate dilation of the cervix [9]. It is excreted by the non-renal route and has a half-life of 7-12h. It has shown mild maternal side effects such as hypotension, vertigo, nausea, and palpitation, but is not associated with fetal side effects [10].

Hyoscine butylbromide is a derivative of atropine (anticholinesterase) thus act by inhibiting cholinergic transmission,

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relieving smooth muscle spasm aiding cervical dilatation [11].

Hyoscine-N-butylbromide, a quaternary ammonium compound, is a muscarinic antagonist and hence acts as a cervical spasmolytic agent [12]. It is also highly polar and, therefore, only partially absorbed following oral administration (8%); After intravenous administration the substance is rapidly distributed into the tissues. The half-life of the terminal elimination phase is approximately 5 h. The total clearance is 1.2 L/min, and approximately half the clearance is renal. The main metabolites found in urine bind poorly to the muscarinic receptor.

Hyoscine-N-butylbromide does not pass the blood-brain barrier and plasma protein binding is low. Side effects include dry mouth, facial flushing, dryness of the skin, photophobia, loss of accommodation, urinary urgency and retention, and constipation [13].

Method

A prospective study conducted in Department of Obstetrics and Gynecology, ESIMC PGI MSR Bangalore, Karnataka. Data collected from One Hundred pregnant women in active labor, labor accelerated using drotaverin and hysocin, duration of labor was compared among groups.

Primigravidae or multi-gravidae with gestational age of 37 to 40 weeks with full term pregnancy, with single fetus, vertex presentation and no major antenatal complication were included in the study and informed consent was taken from them. Those who developed any complications during labor, necessitating caesarian section or any other interference, and contracted pelvis, multiple pregnancy and malpresentation were excluded.

Aseptic per vaginal examination was done to note

the dilatation and effacement of cervix. Duration of first stage of labor was calculated from time of injection to the time of full cervical dilatation. Fetal heart sounds were auscultated every half hourly. Frequency and intensity of uterine contractions were also noted. Cervical dilatation and station of fetal head by per vaginal examination was noted every four hourly. They were divided into 2 groups.

The women in group A were injected one ampoule of hyoscine butylbromide at 5 cm dialation repeated every one hourly maximum of 3 doses.

The women in Group B were injected drotaverine 40mg intravenously at 5cm dilatation, if admitted in latent labor and repeated every 30 minutes maximum of 3 doses.

Both the groups were compared for duration of first stage of labor and mean rate of cervical dilatation to study the drug effectiveness and its side effects.

Result

Maternal characteristics were comparable in the two groups. The average time taken from time of injection of antispasmodic to the full cervical dilatation of cervix in nulliparas with baseline dilatation >5cm in group A was 190 minutes and in group B was 220 minutes.

In multipara the average time to full dilatation was 160 minutes in group A and 180 minutes in group B.

The rate of cervical dilatation with baseline cervical dilatation >5 cm in group A was 2.5cm/hour and in group B it was 3cm/hour.

The duration of 2nd and 3rd stage of labour between 2 groups are not significant.

No maternal and fetal side effects are seen in present study between the 2 groups.

Table 1: Duration of first stage of labour in active phase:(min)

Group B	Group A	
220	190	Nulligravida
180	160	Multigravida

Table 2: Rate of cervical dialation

Group B	Group A	
3cm	2.5cm	Rate of Dialation

Table 3: Duration of 2nd & 3rd stage of labour:

Group B (Min)	Group A (Min)		Stage of Labour
30/18	24/15	Nulli/Multi	2 ND
5/4	5/4	Nulli/Multi	3 RD

Table 4: Apgar score

Group B	Group A	Apgar Score
9	9	1 ST Min
9	9	5 TH Min

Discussion

Labor pain is among the most severe pain experienced by women. Acceleration of labor to shorten its duration without adverse events on mother and fetus would therefore minimize the maternal and fetal morbidity and mortality. During active management of labor along with good uterine contraction, simultaneous softening and cervical dilatation is required.

However sometimes, in spite of good uterine contractions cervical dilatation is hampered due to spasm caused by inhibitory impulse. For such reasons antispasmodics are being used to hasten the cervical dilatation and hence it reduces the duration of first stage of labor as well as total duration of labor too. In this study, both hyoscine butylbromide and drotaverine hydrochloride showed significant reduction in first stage of labor. Thus as regards the duration of first stage as well as total duration of labor, the study group A showed a significantly shorter time as compared to the study group B.

In present study duration of first stage of labour in group A 190 min and 160 min in nulli and multipara respectively is correlated with LA Samuels et al [14] study 176 min and 137 min respectively .

In present study duration of first stage of labour in group B 220 min and 180 in nulli and multipara respectively is correlated with Kumkum Srivastava et al [15] study 214 min.

The rate of cervical dilatation with baseline cervical dilatation >5 cm in group A was 2.5cm/hour and in group B it was 3cm/hour correlates with Bindiya Gupta et al [16] with 2.36cm/hr with hyoscine and 2.57cm/hr with drotavarin. There was no difference in the duration of the second and third stages of labor was seen in our study in both groups.

In our study, APGAR SCORE at 1st and 5th minute in both groups was normal.

The action of hyoscine butylbromide was consistently found to be much better than that of drotaverine hydrochloride for cervical dilatation and reducing 1st stage of labor without an increase in any untoward maternal or fetal side effects.

No maternal and fetal side effects are seen in present study between the 2 groups.

Conclusion

In our study Hyoscine butylbromide is more efficacious than drotaverine hydrochloride for cervical dilatation and reducing duration of active phase of 1st stage of labor.

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