

THE EVALUATION OF THE EFFECT OF BUSCOPAN (HYOSCINE-N-BUTYL BROMIDE) ON THE DURATION OF LABOUR**Fouad H Aldahhan[#], Faiz A Alwaeely* & Fawzia Raheem[@]**[#]FRCOG, Professor. ^{*}CABOG, Assist. Professor. [@]MBChB, Department of Obstetrics & Gynaecology, Basrah Medical College, Basrah -Iraq.**Abstract**

A double-blind study included 200 women attending labour ward. They were divided into two groups; group A (cases) received Buscopan 20mg I.V and group B (controls) received placebo intravenously. Assessment of cervical dilatation was carried out every hour post injection. The duration of the stages of labour, maternal and neonatal outcome was determined.

The study revealed that cervical dilatation at 1 hour was significantly lesser in group A (6.8+1.8) cm compared to (7.6 + 2.1) cm in the control group (P<0.05). The duration of the first stage of labour was significantly longer among group A (4.1+1.8) hours as compared with the controls (3.4 + 1.6 hours) P<0.05.

The frequency of caesarean section was significantly higher among group A (12 %) compared to controls (4%), P.value < 0.05.

Fetal heart rate was significantly higher among group A (137.8+11.2 beat/min) compared to control (133.5+9.9 beat/min), P < 0.001.

We conclude that the administration of Buscopan decelerate the cervical dilatation in the first stage of labour and causes prolongation in its duration. Also it is associated with small, but obvious fetal risk, and an increase in the rate of Caesarean section.

Introduction

Spasmodics and spasm-analgesics are administered to facilitate the dilatation of the cervix during delivery and, also to shorten the duration of the first stage of labour¹.

Hyoscine N-butyl bromide (Buscopan) inhibits the muscarinic action of acetyl choline on structures innervated by post-ganglionic cholinergic nerve as well as on smooth muscle that respond to acetyl choline but lack cholinergic innervation².

Buscopan has spasmolytic action on smooth-muscle organs including the uterus. It is claimed that it will reduce the duration of the first stage of labour by over coming cervical spasm and promoting cervical dilatation³.

Buscopan crosses placenta and it may cause fetal tachycardia, however, the fetus apparently is not affected and fetal respiration is not depressed⁴. If given

before onset of labour, it causes depression of the central nervous system of the neonate and also, may contribute to neonatal hemorrhage due to reduction in vitamin K dependent clotting factor in neonates².

The aim of the study is to demonstrate the effects of Buscopan on cervical dilatation, the duration of labour and on maternal as well as fetal outcome.

Material and Methods

This is a prospective double blind controlled clinical study carried out in Basrah Maternity and Children Hospital and Al-Muwani General Hospital, from August 2005 throughout August 2006.

A systemic random sample of 200 women aged 16-42 years old attending labour who did not present with abnormalities such as cephalopelvic disproportion,

antepartum haemorrhage, prolapse of the cord, malpresentation and conditions required elective Caesarean Section or induction of labour. Patients were grouped randomly into group A and B.

The patients in the two groups are very much alike and therefore comparable. The management of labour in the two groups was done in the same manner; artificial rupture of the membranes was performed as a routine in every patient in both groups when the cervix was 4 cm dilated (since the presence of the forewater might have an effect immediately on the duration of labour). After that, the patients in the group A (cases group) were given solution A (Buscopan 20 mg in 2 ml syringe) I.V. and those in group B were given solution (placebo) 2 ml and acted as a control. In either group, labour was augmented by oxytocin in the usual way.

Assessment of cervical dilatation at time of intervention and at 1 hour, 2 hours, 3 hours and 4 hours intervention was carried out. Time between intervention to full dilatation, and at the end of second stage of labour was recorded; Intrapartum and post partum maternal observation for vital signs and vaginal bleeding was done every hour. Assessment of neonatal Apgar score was done at one and five minute respectively.

Comparison of the two groups regarding the effect of Buscopan on several variables of labour and the outcome of labour was studied.

Statistical analysis was carried out using Chi-square test. P value <0.05 considered as statistically significant.

Results

Table I presents the mean age and parity of cases and controls. The distribution with respect to age and parity was comparable between the two groups ($P > 0.05$).

Table II shows comparison of cases and controls regarding cervical dilatation in the first stage of labour. Cervical

dilatation at zero time and at 1 hour was significantly lesser among cases (5.1 ± 1.0 and 6.8 ± 1.8 cm respectively compared to control 5.8 ± 1.5 and 7.6 ± 2.1 cm respectively) $P < 0.05$. On the other hand, no significant differences noted between the two groups at 2 and 3 hours, with figures of 8.0 ± 1.6 cm and 9.1 ± 1.3 cm respectively among cases, and 8.3 ± 1.7 cm and 8.8 ± 1.8 cm respectively among control $P > 0.05$.

As presented in Table III, the duration of the first stage of labour was significantly longer among cases (4.1 ± 1.8 hrs) as compared with control (3.4 ± 1.6 hrs) $P < 0.05$. However, differences in the duration of the second as well as third stages of labour were not significant between cases (15.6 ± 13.7 minute), and 5.3 ± 4.8 minute respectively and control 12.7 ± 10.2 min. and 5.6 ± 4.9 min) $P > 0.05$.

Table IV shows comparison between cases and control with regard to the mode of delivery as well as the risk and type of birth complications.

The frequency of normal delivery was significantly lower among cases compared to control, with frequencies of 88% and 96% respectively, $P < 0.05$, while the frequency of Caesarean Section was significantly higher among cases (12%) compared to controls (4%), $P < 0.05$, the risk of birth complications was similar in the two groups (6%), $P > 0.05$.

Among the observed complications in cases and control were postpartum haemorrhage (4%) and (3%) respectively. Retained placenta (2% and 3% respectively), maternal tachycardia (58.0% and 0.0% respectively) and flushing (22% and 0.0% respectively).

Indicators of fetal status (fetal heart rate, apgar score and birth weight), and neonatal admission to Neonatal Care Unit (NCU) among cases and controls are illustrated in Table V.

Fetal heart rate was significantly higher among cases (137.8 ± 11.2 beat/min) compared to control (133.5 ± 9.9 beat/min), $P < 0.001$. Where as, the other

two indicators (Apgar score and birth weight), showed no significant differences between the two groups, with figures of 8.3+1.4 and 3.0+0.5 kg respectively among cases and 8.5+1.3 and 3.0+0.4 respectively among control, $P>0.05$. Although the frequency of admission of neonates to N.C.U. among cases (17%) was higher than among controls (13%), however, the difference was statistically not significant ($P>0.05$).

Discussion

There is a long standing traditional belief in obstetric still exercised in our country and in some countries elsewhere, that belief involving the use of Buscopan with aim of shortening of the first stage of labour and promoting cervical dilatation. Such practice still gaining popularity among some obstetrician, in addition to many midwives although it lacks scientific evidence for its use.

The present study clearly demonstrated significant negative effect of Buscopan on the degree of cervical dilatation at 0.0 hour and one hour. In addition, there was also negative effect of Buscopan on dilatation of cervix at 2 hours, although statistically not significant. Thus, in contrast to the known belief, Buscopan significantly lessens the degree of cervical dilatation which is definitely unfavourable in obstetric practice for its harmful and adverse effects both from maternal as well as fetal sides particularly in susceptible women.

The duration of the first stage of labour showed significant prolongation due to the use of Buscopan. In addition, the duration of the second stage of labour showed non-significant prolongation in association with Buscopan administration. This finding, which is in controversy to the expected result based on the widely accepted belief of Buscopan use in obstetric practice, demonstrated the adverse influence of Buscopan on the first stage of labour, and to a lesser extent, the second stage of labour. However, this result support the

earlier described negative effect of Buscopan on cervical dilatation at zero hour and one hour of labour, these observation lead us to say that, Buscopan causes unfavourable, rather than promoting, effects on cervical dilatation as well as the duration of first stage of labour, and thereby, on the maternal and fetal conditions.

The observation in the present study is in contrary to the finding of the study of Sirohiwal et al⁵ of the high efficacy of Buscopan suppositories in the shortening the duration of the first stage of labour, although the route of administration was different. However, there is other studies reported the ineffectiveness of Buscopan regarding its effect in shortening the first stage of labour⁶⁻⁸.

The use of Buscopan in the labour may be associated with some but definite, increase in fetal risk, as illustrated by the significant increase in fetal heart rate, however this risk is slight as Apgar score did not differ significantly between cases and controls. Similarly, Buscopan use associated with increment in the rate of admission of neonate to Neonatal Care Unit (NCU). This observation may indicate that the use of Buscopan in labour is implying small but definite risk to fetus.

Furthermore, the finding that the rate of Caesarean Section showed marked elevation in association with Buscopan usage indicates that such use causes substantial burden on maternal and/or fetal condition, i.e. an increase in maternal and/or fetal risks. However, it has been suggested that Buscopan is safe for both mother and fetus despite its ineffectiveness⁸.

In conclusion, the present study clearly illustrated that the use of Buscopan decelerate the cervical dilatation in the first stage of labour and causes prolongation in its duration. Also, its use is associated with small, but obvious, fetal risk, and marked increase in the rate of Caesarean Section.

Table I: Distribution of cases and controls with respect to age and parity

	Cases		Controls		Total	
Age, X(SD)	24.9 (6.9)		24.3 (6.3)		24.6 (6.6)	
Parity	No.	%	%	No.	No.	%
Primi	50	50	50	50	100	50
1-5	45	45	41	41	86	43
5 +	5	5	9	9	14	7
Total	100	100	100	100	200	100

t-test = 0.33

P>0.05

Table II: Comparison of cases and control in respect to dilatation of cervix in the first stage

Stage	Cases mean + SD	Control mean + SD	P value
Zero time	5.1 + 1.0	5.8 + 1.5	P < 0.05
1 hr.	6.8 + 1.8	7.6 + 2.1	P < 0.05
2 hr	8.0 + 1.6	8.3 + 1.7	NS
3 hr	9.1 + 1.3	8.8 + 1.8	NS

Table III: Comparison of cases and control with respect to duration of labour

Stage	Cases Mean + S.D	Controls Mean + S.D	P value
First (hours)	4.1 + 1.8	3.4 + 1.6	< 0.05
Second (min.)	15.6 + 13.7	12.7 + 10.2	NS
Third (min.)	5.3 + 4.8	5.6 + 4.9	NS

Table IV: Comparison of cases and controls with respect to mode of delivery, risk of complication and type of complication

Variable	Cases		Control	
	No.	%	No.	%
A- Mode of delivery:				
Normal vaginal	88	88	96	96
Caesarean	12	12	4	4
B- Risk of complication:				
Yes	6	6	6	6
No	94	94	94	94
C- Type of complication:				
PPH	4	4	3	3
Retained placenta	2	2	3	3
D- Side effect of the drug used:				
Tachycardia	58	58	0	0
Flushing	22	22	0	0

Chi-square test for delivery mode=4.3, P<0.05 For risk of complication=0.0 P>0.05

Table V: Fetal status

Indicator	Cases	Controls
Fetal heart rate (X+SD)	137.8 + 11.2	133.5 + 9.9**
Apgar score 1 min. (X+ SD)	8.3 + 1.4	8.5 + 1.3 *
Birth weight mean (X+ SD)	3.0 + 0.5	3.0 + 0.4 *
Admitted to NCU No. (%)	17 (17%)	13 (13%)
Not admitted No. (%)	83 (83%)	83 (83%)

* : $P > 0.05$ ** : $P < 0.05$ Chi square = 1.47 $P > 0.05$.

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