Original Article

Is Hyosine Butylbromide a Good Choice for Shortening Labour Duration?

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Abstract

Objective: To find out the role of Hyoscine butyl bromide (HBB) in the form of buscupan in reducing the length of the active first stage of labour.
Methodology: A total of 124 pregnant women fulfilling inclusion criteria were included in the study. Group A received a stat dose of intravenous 20mg Hyoscine Butyl bromide (Buscopan), while Group B had 2ml of water for injection (placebo) at full cervical effacement and ≥5 cm of dilatation. Labour was monitored throughout by using partogram. The mean outcome was the duration of the active Ist stage of labour. Data was analysed using SPSS version 20. The duration of labour and the rate of cervical dilation were expressed as means+SDs). The difference between groups was compared using independent t-test for continuous data and chi square for categorical data. The p value of ≤0.05 was considered as significant.
Results: The mean duration of the active first stage of labour was 206.51 ±5.49 minutes in the Buscupan group as compared to 267±6.38 minutes in the placebo group (mean difference= 61.44 minutes) which is statistically significant (p<0.001). There was also a slight reduction in second stage duration in women receiving buscupan (p=0.016).
Conclusion: Buscopan is an effective and safe drug for shortening the active first stage of labor, with no negative effects on the mother or newborn.
Keywords: Active first stage, Hyoscine butylbromide, Buscopan, Labour.
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Introduction

Labour is a natural process in which the delivery of fetus occurs. It has three stages. During the first stage, the cervix is effaced and fully dilated and is further divided into latent (full cervical effacement up to 5 cm dilation of cervix) and active phase (from 5cm till full dilatation).[1] The second and third stages are delivery of fetus and expulsion of placenta, respectively.[1] Excessive bleeding, sepsis, operative delivery, neonatal admission to nursery, and other maternal and foetal complications are associated with a prolonged active phase of labor.[2]

Buscopan is antispasmodic Para sympatholytic drug which relieves smooth muscle spasm in gastrointestinal system, urinary tract and cervix and lower segment of uterus thus causing cervical dilation and effacement without affecting uterine contraction.[3] Hyoscine butylbromide is considered a safe drug both in pregnancy and breastfeeding.[4]

The main factors which determine labour duration are uterine contractility and cervical dilation rate. So far different mechanical techniques (sweeping of membranes, cervical stretching and amniotomy) and pharmacological agents (oxytocin and prostaglandins) have been used to accelerate cervical dilation.[5] Evidence showed that antispasmodics reduce the labour duration and also increase the rate of dilatation of cervix 6 Spasmolytic agents such as hyoscine butylbromide have been used to manage cervical spasm such as hyoscine butylbromide thus shortening the duration of labour.[7-9] Several studies showed conflicting results regarding its effect on labour duration.[8-10] No adverse effect on fetus has been shown so far by the previous studies.[9-11] Thus, more research is needed to assess the effectiveness of spasmolytic agents on labour duration.[6] This study was conducted to determine the role of Buscopan in shortening the length of the first stage of labour.

Methodology

It was a randomized control trial study conducted in the labour room of Patel Hospital Karachi from September

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2020 to February 2021 after approval from the ethical review committee (ref no.101/2020). A total of 124 pregnant women aged 18 years or older with a single cephalic fetus presenting in spontaneous labour at term were included in the study after written informed consent. Those with previous caesarean section, fetal malpresentation, per vaginal bleeding, twin pregnancy, hypertension, and diabetes were excluded. Participants were randomly allocated to group A or B by an electronically generated random number.

Considering a previous study by Samuel et al, a minimum difference of sixty minutes in mean duration of active first stage of labour will be taken as significant between the two groups with an SD of 68.9 min, confidence interval of 95% , power of 90% and type one (alpha)error of 0.05.By taking 10 % as a possible dropout rate 124 women will be included.[7]

Group A received a single dose of intravenous 20mg Buscopan, while Group B had 2ml water for injection (placebo) when cervix was fully effaced and 5cm or more dilated. Labour was monitored throughout by using a partogram. Vaginal examination was carried out every 2 hours to assess the progress. Amniotomy was done for all patients, and oxytocin augmentation was started for inadequate uterine contractions (<3/10 minutes). Operative delivery was performed for obstetric indications such as fetal distress. Electronic fetal monitoring (cardiotocography) was done for fetal wellbeing.

The duration of the first, second, and third stages of labour, mode of delivery and APGAR scores were recorded on the partograph. Patients who received buscupan were monitored for adverse reactions such as tachycardia, rash, pruritus, dry mouth, and difficulty in swallowing.

The primary outcome measures were the first stage of labour duration and cervical dilatation rate. Secondary outcome measures were the length of second and third stages of labour, mode of delivery, neonatal Apgar score at one minute and the number of newborns admitted to nursery.

Data was analyzed using the SPSS version 20. Duration of labour and cervical dilation rate was expressed as means ± standard deviations. The difference between groups was compared using independent sample t-test for continuous data and chi square for categorical data. P-value of ≤0.05 was considered as significant.

Results

Total 124 pregnant women participated in the study (Buscupan=62; Placebo=62). The mean age of patients was 26.3± 1.5 in group A and 26.2±2.25 in group B. Mean gestational age was 38.3±0.98 in both groups. Majority of the participants were multipara (Buscupan =34 multipara and 28 primipara; Placebo=32 multipara and 30 primipara). The mean estimated blood loss was 208.87±46.7 and mean birth weight was 2.78±0.18 which was same in both groups. Most of the participants were 5-7cm dilated at time of presentation which is comparable in both groups (HBB=54, Placebo=47).

Total 60 patients from group A delivered vaginally and 02 had caesarean section while in group B, 59 delivered vaginally and 03 had caesarean delivery. Three newborns were shifted to nursery whose mother received buscupan as compared to two neonates in placebo group. Neonatal apgar score at 1 minute and blood loss at delivery was same in both groups. None of the participants from intervention group reported any side effects. (Table I) In Hyoscine butyl bromide group 77.4% had cervical dilation rate at 1cm/hour as compared to only 51.6% in control group which was statistically significant(p=0.0026).

Table I: Baseline characteristics of both groups (n=124)

Parameter	HBB (n=62)	Placebo (n=62)	P value
Mean Age	26.3±1.5	26.22±2.25	
Mean Gestation	38.3±0.98	38.3±0.98	
Primigravida	28(45%)	30(48%)	0.710
Multigravida	34(55%)	32(52%)	
Cervical dilation at time of admission(centimeters)			
5-7	54(87%)	47(76%)	0.100
≥8	08(13%)	15(24%)	
Cervical dilation rate (centimeters per 2 hours)			
1	48(77.4%)	32(51.6%)	0.002
<1	14(22.5)	30(48.3%)	
Mode of delivery			
Vaginal	60(96.7%)	59(95.2%)	0.460
Ceaserean	2(3.22%)	3(4.8%)	
Apgar score at 1 min			
0-3	0	0	0.990
4-6	00	00	
7-10	62(100%)	62(100%)	

The mean duration of active first stage of labour was 206.51±5.49 minutes in those receiving Buscopan as compared to 267±6.38 minutes in those who received placebo (p<0.0001) (Table II). No significant change in the duration of third stage of labour(p=0.950) was found. However, there was a slight reduction in second stage

duration in group A as compared to placebo which was significant(p=0.016).

Oxytocin augmentation further reduced the labour length as compared to non-augmentation. In addition, this effect was more significant in multigravida as compared to primi-gravida as shown in table III.

Table II: Comparison of labour duration between the hyoscine butyl-bromide and the placebo groups. (n=124)

	Study group(n=124)	Duration Mean±SD (min)	P value
Ist stage	Buscupan (n=62)	206.51±5.49	0.000
	Placebo(n=62)	267.95±6.38	
Second stage	Buscupan(n=62)	30.51±3.15	0.016
	Placebo(n=62)	32±3.66	
Third stage	Buscupan(n=62)	6.98±7.48	0.950
	Placebo(n=62)	7.06±7.6	

Table III: Mean duration of active Ist stage of labour with respect to augmentation with oxytocin (n=124)

Category	Study group	Duration of active Ist stage Mean±SD (minutes)	P value
Augmented	72		
Primigravida	HBB (17)	250±15.36	0.000
	Placebo (20)	284±10.00	
Multigravida	HBB (18)	208±7.78	0.000
	Placebo (17)	266±3.36	
Non-Augmented	52		
Primigravida	HBB (11)	284±3.26	0.000
	Placebo (10)	309±6.06	
Multigravida	HBB (16)	214±3.46	0.000
	Placebo (15)	235±4.61	

Discussion

In the current study, there was a shorter active Ist stage of labour in those who received Buscupan. The mean duration of the active first stage of labour was 206.51±5.49 minutes in group A as compared to 267±6.38 minutes in group B with a mean difference of 61.44 minutes (p 0.0001). This finding is consistent with various other research studies published so far.[12-15] In a study by Kandil et al conducted in Egypt there was a difference of fifty minutes in labour duration between the study and the control groups.[16] Kirim et al performed a double- blind randomized controlled trial and found that labour was shortened by fifty seven minutes in those who got HBB.[17] Hyoscine butylbromide mainly promotes cervical dilatation without affecting the uterine contraction.[12,15,18] It is effective in accelerating the first stage of labour without causing any complication to both mother and fetus.[19,20] Hence, buscupan can be of benefit if given in active phase of labour to reduce the incidence of prolonged labour thus improve obstetric outcome.

In an Iranian study, there was a remarkable reduction in duration of first and second stages but no significant decrease in the third stage of labour in patients who received hyoscine butylbromide.[21] The cervical dilation rate was 1.88± 0.88 centimetres per hour in group A and 1.09±0.59 centimeter per hour in group B (p=0.0001) in the present study. The same is shown in the work of Kandil et al with a rate of 1.71 ± 0.13 and 1.05 ± 0.06 in the study and control groups respectively.[16] However, the rate of dilatation of cervix was reported to be 2.78±0.54 in HBB and 1.97±0.28 in placebo by Shwetha et al in her study.[22]

Similar other studies have also reported the beneficial effect of HBB on cervical dilation.[23,24,25] Fardiazar et al. studied the effect of atropine versus HBB as accelerators and analgesics during labour; in the HBB group, the dilation stage was significantly shorter, and there were also fewer adverse events reported than in the atropine group.[26] Sarbhjit et al. compared three different antispasmodic drugs for cervical dilation, with their results favouring HBB over the other two arms.[10] In another study the mean length of the first stage of labour was shorter in the HBB group for both the primigravidas and for multigravidas.[27,28]

In this study, there was a slightly shorter second stage of labour in those receiving Buscopan with a mean difference of up to 1.49 minutes (p=0.017). This finding is in line with numerous other research work.[22,25] However, no notable change was found in the length of third stage of labour. A short 2nd stage can result in third and fourth degree perineal tears so obstetricians and midwives should always apply perineal support to control the speed of delivery.[29]

Buscopan resulted in reduction of active Ist stage duration in both augmented and non-augmented participants, and this effect was more significant in multigravidas as compared to primigravidas. In a study by Imaralu et al there was a marked difference of 38.73 minutes in labour duration of multigravida augmented with oxytocin between the two groups, whereas this reduction was not statistically significant in primigravidas (p = 0.32).[12] A research study by Al- Khishali in Iraq showed that hyoscine butylbromide reduced the duration of first stage of labour among multipara. However, a difference in oxytocin augmented labour was not

mentioned in his study.[30] In multipara labour dystocia usually occurs due to thick cervix or cervical spasm and HBB exerts its action by overcoming cervical spasm without affecting uterine contractions thus accelerating labour without the risk of uterine rupture. There was no difference in the mode of delivery, neonatal APGAR score at 1 minute and maternal or fetal complications among the two groups which is similar to other research studies.[9,13,25]

Prolonged labour is a serious problem which all maternity healthcare providers tries to prevent. The utmost goal of an obstetrician and midwife is to deliver labouring women as quickly as possible without causing any harm to mother or fetus. Thus, labour management is not only a science but also an art. Apart from ensuring safe labour, reduction in caesarean section rate is also an important aim of healthcare team. Contraction of uterus and rate of dilatation of cervix are two main determinants of labour duration. Although the routine use of spasmolytic agents is not recommended by the world health organization updated guidelines on intrapartum care.[1] However, hyoscine butylbromide is used as an off label drug to ease cervical dilation. HBB typically acts on cervix without affecting uterine contractility, thus preventing the risk of atonic uterus which can cause postpartum hemorrhage and retained placenta.[25]

Spasmolytic agents help in reducing the duration of labour by overcoming cervical spasms.[22] A short first stage of labour has many benefits, including decrease risk of infection, the need for pain relief and fetal distress. Shorter first stage is also important for women with placental insufficiency, oligohydramnios, high blood pressure and sickle cell anemia, which is very common in our population, and prolonged labour in this subgroup can result in poor maternal and fetal outcome.[9] Hence, Buscopan can be considered as a safe and effective drug in shortening labour especially in low income countries.

Conclusion

Hyoscine butylbromide is effective drug in reducing the length of the first and second stages of labour without causing any harmful effects on the mother and the fetus. It is an inexpensive drug which is easily available to especially in low income settings.

However, the limitation of the study is that currently there are no standard guidelines for the accurate dosage, frequency and route of administration of the drug. So, more research studies are needed in this regard.

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