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■ Original Research Article

Effect of Intramuscular Hyoscine N-Butyl Bromide on the Duration of the First stage of Labour in Nulliparous Women: A Randomized, Double-blind, Placebo-controlled Trial

Edimek Yibala Akpama[1], Alu Francis E.[2], Nwachukwu Chiemezie N.D.[3], Ezeugo Joyce Chika[4], Shadrach Pius[5], Edimek Jonathan Anietie[6]

1.Department of Obstetrics and Gynaecology, Wuse District Hospital Abuja; Email: yibiakpama@yahoo.com. 2. Department of Obstetrics and Gynaecology, Asokoro District Hospital Abuja and Nile University of Nigeria, Abuja; Email: drfrankalu@yahoo.com; francis.alu@nileuniversity.edu.ng. 3. Department of Obstetrics and Gynaecology, Maitama District Hospital, Abuja; Email: nduum@yahoo.co.uk. 4. Ezeugo Joyce Chika; Department of Obstetrics & Gynaecology, Wuse District Hospital Abuja/Nile University of Nigeria Abuja. Email: joyce_chychy@yahoo.com. 5. Department of Obstetrics & Gynaecology, Maitama District Hospital Abuja/Baze University Abuja. 6. Nigerian Army Medical Corps, Army Headquarters Abuja. Email: jonathan.edimek@yahoo.com

ABSTRACT

Background: Prolonged labour is common among nulliparous women and is associated with significant adverse feto-maternal outcomes. The complications associated with oxytocin-augmented labours have led to the search for other agents that can accelerate cervical dilatation, and aid in shortening the duration of the first stage of labour, without serious side effects. Previous studies have demonstrated that antispasmodic agents influence the course of labour. One of such antispasmodic agents is Hyoscine N-Butyl Bromide (HBB). **Aim:** To evaluate the effect of intramuscular HBB on the duration of the first stage of labour in nulliparous women. **Materials and Method:** This was a randomized, double-blind, placebo-controlled study conducted at Wuse District Hospital Abuja. 136 consecutive nulliparous women in active phase of labour were recruited, and randomized into two groups (HBB and placebo), by computer generated number sequence. A single intramuscular 20mg (1mL) of HBB, or 1mL of distilled water as placebo, was administered on diagnosis of active phase of labour. The mean durations of the three stages of labour and maternal drug side effects were compared between the two groups. Data analysis was on an intention-to-treat principle, using Statistical Product and Service Solutions (SPSS) version 26. Continuous variables were described using means and standard deviations while categorical variables were expressed as frequency and percentages. Chi-square test and Student t-test were used to test for statistical significance between categorical and continuous variables respectively. The level of statistical significance was set at $P< 0.05$ at a confidence interval of 95%. **Results:** The mean duration of the first stage of labour was significantly shorter in the HBB group than in the control group (321.6 ± 20.50 min vs 381.7 ± 27.59 min, P=0.02; mean difference of 60.1 minutes). There were no statistically significant differences in the duration of the second and third stages of labour, maternal drug side effects and neonatal outcomes. **Conclusion:** Hyoscine N-Butyl Bromide was found to be safe and effective in shortening the duration of the first stage of labour in nulliparous women.

Key Words: Hyoscine N-Butyl Bromide, nulliparous, first stage of labour, duration of labour.

Correspondence:

Dr. Francis E. Alu
Department of Obstetrics and Gynaecology,
Asokoro District Hospital/Nile University of Nigeria Abuja
drfrankalu@yahoo.com;
francis.alu@nileuniversity.edu.ng
+2348037206243

INTRODUCTION

Prolonged labour is associated with increased incidence of maternal and neonatal morbidity and mortality.[1-4] Its prevention is critical to reduce these unfavourable outcomes.[5-7] Oxytocin-augmented labours may lead to uterine hyperstimulation, fetal distress and increased operative delivery.[4] Consequently, interventions that can shorten the duration of labour without adverse feto-maternal effect are highly recommended. The rate of cervical dilatation is a major determinant of the progress of labour. The need for an agent that can aid in acceleration of cervical dilatation led to studies on the effect of antispasmodic agents.[8-14] Hyoscine N-butyl bromide (HBB), is an antispasmodic agent which is readily available and cheap and, often used to overcome cervical spasm and accelerate cervical dilatation without serious foeto-maternal effects. Antispasmodics, such as drotaverine hydrochloride, rociverine and camylofin, act by relieving spasms of smooth muscle tissue through their musculotropic effect (direct muscle relaxation).

Others, such HBB and valethamate bromide, act through their neurotropic (antimuscarinic or parasympatholytic) effects, acting as antagonists of acetylcholine at muscarinic receptors, thus inhibiting smooth muscle contraction. This action is also observed in the gastrointestinal, biliary, and urinary tracts. Uterine contractions are, however, not affected by the action of HBB.[8] Reported side effects of HBB include dry mouth, nausea and vomiting, blurred vision, tachycardia, and hypotension.[15-16] Several studies have evaluated the effects of HBB on cervical dilatation and duration of labour.[10-28]

The findings from some of the studies have been inconsistent, with a greater number demonstrating its efficacy and safety in augmenting cervical dilatation and shortening the duration of labour, while a few showed no such effect.[8-15]A Cochrane review which included 17 randomized controlled trials (RCTs) on the use of spasmolytics and duration of labor found a statistically significant reduction in the mean duration the first stage of labour of 74 minutes.[8] Another systematic review that involved 20 RCTs and **a** meta-analysis including 9 RCTs reported a mean reduction in the duration of labour of 58 minutes and 55 minutes respectively, in nulliparous women treated with HBB.[9,10]The study by Aldahhan et al, however, reported that HBB significantly reduced cervical dilatation rate and increased the duration of the first stage of labour with associated increased caesarean section rate and minimal fetal risk.[16]

Most of the studies involved women of varied parity, and employed various routes of administration and varied doses of HBB.[19-29] Studies on nulliparous women who are at a higher risk of dysfunctional labour, such as prolonged labour, may help in determining the efficacy of the drug in this category of parturients. The administration of the drug by the intramuscular route will also make its use a viable option in labour management at the primary level of healthcare compared to the intravenous route. This study aimed to evaluate the effect of intramuscular administration of a single dose of 20mg HBB on the duration of the first stage of labour in nulliparous women in a secondary level healthcare facility in Abuja, North Central Nigeria. The paucity of studies that have explored the effect of HBB on labour duration in the study area also necessitated this study.

MATERIALS AND METHODS

Study Design

This was a randomized, double-blind, placebo-controlled study on the effect of intramuscular hyoscine N-butyl bromide (HBB) on the duration of the first stage of labour among 136 nulliparous parturients. The participants were randomized into two equal groups (A and B) of 68 participants each. Group A (study group) received a single intramuscular dose of 20mg (1mL) of HBB on diagnosis of active phase of labour, while Group B (control group) received a single intramuscular dose of 1mL of distilled water as placebo.

Study Setting

This study was conducted in the labour ward unit of the Department of Obstetrics and Gynaecology of Wuse District Hospital, Abuja, Northcentral Nigeria, over an 8-month period from January 1st 2023 to August 31st 2023. The hospital is a secondary level healthcare institution and has an annual delivery rate of about 2,100. It serves as a referral centre for both private and public health facilities in the Federal Capital Territory (FCT) Abuja and its environ and is accredited for residency training in Obstetrics and Gynaecology. It runs an electronic medical records system that ensures a secure database and data retrieval.

Study Population: The study population comprised nulliparous women in active phase of labour that met the inclusion criteria.

Inclusion Criteria: The study included nulliparous women in spontaneous labour with singleton pregnancy, cephalic presentation at term (37 completed weeks-42 weeks), in active phase of labour with cervical dilatation of 4cm, and who consented to the study.

Exclusion Criteria: Excluded from the study were multiparous women; women with multiple pregnancy or with uterine scar; fetal malpresentation; women with chronic medical conditions such hypertensive disorders of pregnancy, diabetes mellitus; hypersensitivity to hyoscine, or contraindication of use of hyoscine such as glaucoma, myasthenia gravis, ulcerative colitis,

obstructive uropathy; and any contraindications to vaginal delivery.

Sample Size Determination

The sample size of 136 participants was calculated using the formula for group comparison and considering 10% attrition rate.[30,31]

$$n = \frac{1}{1-f} \times \frac{(Z_{1-\alpha} + Z_{1-\beta})^2}{(\mu_1{}^2 - \mu_2{}^2 - \delta)^2} \times (\sigma_1{}^2 + \sigma_2{}^2)$$

n = Minimum sample size for each study arm

$Z_{1-\alpha}$ = Standard normal deviate corresponding to the desired level of statistical significance=1.96 for α =0.05

$Z_{1-\beta}$ = standard normal deviate corresponding to the desired power=1-β=80%=0.84

σ_1 =Variance of the study group, derived from a previous study with standard deviation of 28 minutes.[24]

σ_2 =Variance of the control group, derived from a previous study with standard deviation of 55 minutes.[24]

μ_1 =Mean duration of labour in the study group (in minutes), derived from a previous study with mean duration of labour of 186 minutes.[24]

μ_2 =Mean duration of labour in the control group (in minutes), derived from a previous study with mean duration of labour of 268 minutes.[24]

δ =Desired smallest clinically meaningful difference in duration of labour between the two groups (effect size) = This was set at 60 minutes.

F = The proportion of study participants that may not be involved in the final analysis due to factors that may lead to caesarean section (loss to attrition). For this study f=10% (0.1).

$$n = \frac{1}{1-0.1} \times \frac{(1.96+0.84)^2}{(268-186-60)^2} \times (28^2 + 55^2) = 68.4$$

The sample size was 68 per study arm and the total sample size was 136.

Sample Recruitment

Following ethical approval for the study, all consecutive nulliparous women who met the inclusion criteria were thoroughly counselled on the purpose of the study on admission in the ward. A written informed consent was obtained. Structured proformas were interviewer-administered to the participants. Information obtained included patients age, marital status, booking status, gestational age and maternal height. Participants were recruited consecutively until the desired sample size was achieved.

Randomization, Allocation and Blinding

The allocation sequence was based on computer generated random numbers. The treatment drug was concealed in 2mL sterile syringes with the generated sequential numbers. Sixty-eight (68) syringes contained 1mL of 20mg hyoscine N-butyl bromide (*Sanofi*® Dublin, Ireland) while the other 68 contained 1ml of distilled water (*Juhel* ®, Enugu, Nigeria) as placebo. The drug and placebo were prepared in batches under aseptic conditions by a pharmacist who was not part of the study. They were stored in the refrigerator in the Labour ward concealed in opaque envelopes with the designated random numbers. Fresh batches of the treatment drugs were prepared only when the previous ones were exhausted.

A total of four batches only was prepared for the study. HBB and sterile water were identical in appearance (colourless); hence the content of the syringes was indistinguishable. Eligible participants received the contents of the syringe as a single intramuscular dose (administered at the upper lateral quadrant of the gluteal region) as soon as cervical dilatation was confirmed to be 4 cm, after obtaining a written informed consent. The pharmacist was the only one unblinded to which treatment the participant received and the treatment given was only made known to the research team at the end of the study. The study participants and the research team were blinded to the medication administered. In case of any serious adverse event, unblinding was done by opening the woman's envelope.

All the participants received standard care as per the departmental ward protocols. Ethical clearance was obtained from the Health Research and Ethics Committee of the Health and Human Services Secretariat, Federal Capital Territory Administration, with approval number: *FHREC/2022/01/175/05-09-22*. The trial was registered with the Pan African Clinical Trials Registry (PACTR) at www.pactr.org with the unique identification number: *PACTR202402717378543*. The study was conducted in accordance with the Declaration of Helsinki and International Conference on Harmonization of Good Clinical Practice.

Study Procedure

Following admission of the patient in the labour ward, a detailed history was obtained, and physical examination conducted, by a member of the study team to determine eligibility. The study proforma was interviewer-administered by a member of the study team. A written informed consent was obtained, if the woman met the inclusion criteria, before enrolment into the study. The injection was administered by the Principal Investigator or trained Research Assistants intramuscularly at 4cm cervical dilatation. A partograph was used to monitor progress of the labour. Further management of the patient

was as per the labour ward protocol, which included placing the woman in the left lateral position, cardiotocographic monitoring of fetal heart rate, and adequate pain relief.

Amniotomy was performed for those with intact membranes at 4cm cervical dilatation. Subsequently, cervical assessment was done every two hours till 8cm cervical dilatation, and then hourly thereafter till full cervical dilatation. The period from 4cm cervical dilatation to full dilatation (10cm) was regarded as the active phase of the first stage of labour; the period from full cervical dilatation to delivery of the baby was the second stage of labour, while the third stage was the period from delivery of the baby to delivery of the placenta and membranes. If labour progress was adjudged unsatisfactory at any time, without any signs of mechanical obstruction, oxytocin augmentation was initiated.

Participants with signs of cephalopelvic disproportion and those that had abnormal fetal heart rate pattern had emergency caesarean section. The durations of the first, second and third stages of labour (in minutes) were recorded as were any maternal drug adverse effects. The Apgar scores of the baby at 1 minute and 5 minutes, special care baby unit (SCBU) admission, and need for augmentation of labour or caesarean section were also documented for each participant.

The primary outcome measure was the duration of the first stage of labour while the secondary outcome measures were the duration of the second and third stages of labour, maternal drug side effects, and neonatal outcome.

Data Analysis

Data were analyzed on an intention-to-treat, to ensure unbiased comparison between both groups. The result was analyzed using Statistical Product and Service Solutions (SPSS) for windows version 26 software (IBM Corporation, Chicago, IL USA). The level of statistical significance was set at $P<0.05$ at 95% confidence interval. Continuous variables were reported using means and standard deviation while categorical variables were expressed as frequencies and percentages. Chi -square test and student t-test were used to test for statistically significant difference between categorical and continuous variables, respectively.

RESULTS

Two hundred (200) nulliparous women at term who presented in spontaneous labour were assessed for eligibility. Sixty-four (64) were excluded (60 due to early intervention in the first stage of labour, while four did not give consent). The remaining one hundred and thirty-six (136) eligible women were randomized.

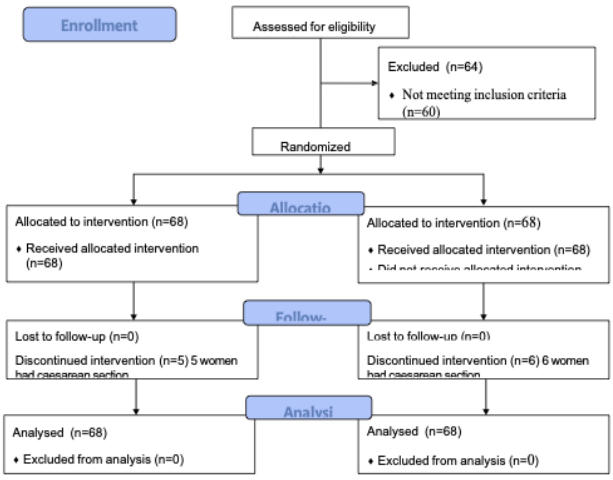

Figure 1: Flow chart of participants progress through each stage of the trial (Adapted from CONSORT (2010)

Table 1: Comparison of baseline characteristics of the participants in both groups

Variables	Group A Hyoscine (n=68) n (%)	Group B Placebo (n=68) n (%)	Pearson chi square value/ t-test	P-value
Mean Age ± SD (yrs)	27.7±3.8	28.0±4.3	0.008[a]	0.993
Marital Status Single Married	 1(1.5) 67(98.5)	 2(2.9) 66(97.1)	0.341[b]	0.559
Mean Height ± SD (cm)	159.7±3.0	161.2±3.5	0.017[a]	0.986
Mean Gestational Age ± SD (weeks)	39.2±1.0	39.2±1.0	0.014[a]	0.989
Booking status Booked Unbooked	 66(97.1%) 2(2.9%)	 65(95.6%) 3(4.4%)	0.208[b]	0.649
Spontaneous rupture of membrane before active phase Yes No	 10(14.7%) 58(85.3%)	 9(13.2%) 59(86.8%)	0.061[b]	0.805

Table 2: Comparison Of Labour Events Between the Study (HBB) and Control (Placebo) Groups

Event	N	Group A (Hyoscine)	N	Group B (Placebo)	t-test	P-value
Mean duration of 1st stage (minutes)		321.6±20.5	62	381.7±27.6		
All women	63	327.8±23.3	20	406.5±17.4	0.005	0.02*
Augmentation	19	319.0±18.8	42	369.9±23.4		
No Augmentation	44					
Mean duration of 2nd stage (minutes)		33.0±7.3	62	29.2±8.5		
All women	63	29.7±6.7	20	26.2±8.3	0.006	0.739
Augmentation	19	34.4±7.2	42	30.7±8.3		
No Augmentation	44					
Mean duration of 3rd stage (minutes)		4.8±2.0	62	4.3±1.6		
All women	63	5.1±1.9	20	4.2±1.5	0.00	0.331
Augmentation	19	4.7±2.0	42	4.3±1.6		
No Augmentation	44					
Need for augmentation						
Yes		21(30.9%)		24(35.3%)		
No		47(69.1%)		44(64.7%)		0.585
Had C/S						
Yes		5(7.4%)		6(8.8%)		0.753
No		63(92.6%)		62(91.2%)		
Indication for C/S						
Cephalopelvic Disproportion		2(40%)		2(33.3%)		0.927
Foetal distress		3(60%)		4(66.7%)		

Table 3: Comparison of Neonatal Outcome in the study (HBB) and Control (Placebo) Groups

Parameter	Group A (Hyoscine)	Group B (Control)	P-value
1-minute Apgar score (Mean)	7.8±0.8	7.8±0.7	
< 7	4(5.9%)	3(4.4%)	0.639
> 7	64(94.1%)	65(95.6%)	
5-minute Apgar score	8.8±0.7	8.7±0.7	
< 7	1(1.5%)	1(1.5%)	1.000
> 7	67(98.5%)	67(98.5%)	
Need for SCBU admission			
Yes	4(5.9%)	3(4.4%)	0.698
No	64(94.1%)	65(95.6%)	

SCBU =special care baby unit

Table 4: Comparison of maternal drug side effects in the HBB and placebo groups

Parameters	Group A Hyoscine n (%)	Group B Control n (%)	Pearson chi square value	P-value
Nausea and vomiting				
Yes	2(2.9)	1(1.5)	0.341	0.559
No	66(97.1)	67(98.5)		
Headache				
Yes	4(5.9)	2(2.9)	0.697	0.404
No	64(94.1)	66(97.1)		
Dry mouth				
Yes	5(7.4)	0(0)	0.531	0.466
No	63(92.6)	68(100)		
Tachycardia				
Yes	1(1.5)	1(1.5)	0.00	1.00
No	67(98.5)	67(98.5)		

Table 1 shows the comparison of the baseline characteristics of the participants in the two groups. The mean age of the participants was comparable in both groups (27.7±3.8 vs 28.9±4.3 years, P=0.993; range: 19 to 35 years). There was no statistically significant difference in the other maternal baseline characteristics suggesting uniformity of both groups.

The duration of the first stage of labour was significantly shorter in the HBB than in the placebo group (321.6±20.5 minutes vs 381.7±27.6 minutes, P=0.02, mean difference = 60.1 minutes). Similarly, the mean duration of the first stage of labour was significantly shorter in both oxytocin-augmented and non-augmented labour in the HBB group. There was however no statistically significant difference in the duration of the second and third stages of labour, or the need for augmentation of labour and caesarean section. (Table 2) There were no statistically significant differences in the mean Apgar scores at 1 and 5 minutes between both groups, with 64(94.1%) and 65(95.6%) neonates recording Apgar scores >7 at 1 minute respectively. Overall, seven neonates needed SCBU admission for mild birth asphyxia, but there was no statistically significant difference in the need for SCBU admission. (Table 3)

Table 4 shows the comparison of maternal drug side effects in the two groups. Although 5(7.4%) participants in the hyoscine group had dry mouth as side effect compared to none (0%) in the placebo group, this was not statistically significant (P=0.466). The other observed differences in maternal drug side effects were also not statistically significant.

DISCUSSION

Our study evaluated the effect and safety of a single intramuscular administration of HBB on the duration of the first stage of labour and the overall duration of labour in nulliparous women at term. The results show that the two groups share comparable socio-demographic and clinical characteristics in consonance with findings in previous studies, hence the outcomes were not likely to be influenced by these factors.[14,20,21]

The administration of HBB in the active first stage of labour significantly shortened the duration of the first stage without serious maternal and fetal adverse events. The duration of the first stage of labour in the HBB group was 321.6 ± 20.5 minutes versus 381.7 ± 27.6 minutes in the placebo group; the difference was statistically significant (P=0.02), with a mean difference of 60.1 minutes, or 15.8% reduction in mean duration of the first stage. This is consistent with findings from the study by Akiseku et al[20] in Southwestern, Nigeria, which showed a mean difference of 68 minutes or a 17.3% reduction in duration of the first stage.

The study by Imaralu et al, involving both nulliparous and multiparous women, also demonstrated a significantly shorter mean duration of the first stage of labour in the HBB group compared to placebo in both nullipara and multipara labours (365.11±37.32 min vs 388.46±51.65 min, mean difference 23.35 min).[22] Several other studies also reported similar findings.[9-13] The antispasmodic effect of HBB on the cervix at the cervico-uterine plexus is thought to relieve spasm from contraction of the smooth muscles of the cervix thereby aiding acceleration of cervical dilatation.[18]

Our finding, however, is in contrast to that reported by Ezeike et al[14] in a study in Abuja, a city where this present study was also conducted. Their study, which involved both nulliparous and multiparous women, showed no statistically significant difference in the duration of the first stage of labour between the HBB and control groups (P=0.15). However, a sub-group analysis of their result revealed that the duration of the first stage of labour was significantly lower in the HBB group in the multiparous women (P=0.004), but was not significant in the nulliparous women (P=0.43).

It has been shown that the efficiency of the labour process increases with increasing parity.[22] On the other hand, Gaudernack et al[15] in Norway, reported that HBB use in the active first stage of labour in nulliparous women, who received a single dose of intravenous 20mg HBB, did not significantly affect the duration of the first stage of labour and cervical dilatation rate. Interestingly, Aldahhan et al[16] reported significantly longer duration of the first stage of labour in both multiparous and nulliparous women treated with HBB. Both studies employed the intravenous route of administration compared to the intramuscular used in our study.

Our study did not find any statistically significant difference in the mean durations of the second and third stages of labour between the two groups (P=0.739; P=0.331 respectively). This is consistent with the findings in some studies.[11,20,22,29] This is not unexpected in view of the action of HBB, which is predominantly limited to the cervix, with no proven uterotonic effect.[29] Other studies have, however, reported significant decrease in the duration of the second stage of labour in the HBB group compared with placebo.[19,27] In these studies, the significant reduction in the duration of the second stage of labour was mainly observed in multiparous women, which tends to suggest that the influence of parity could have been contributory.[28] The study by Makvandi et al, which employed the rectal route of administration of HBB, also demonstrated a significant reduction in the duration of the second stage of labour.[27]

Our study showed that the duration of the first stage of labour was significantly lower in HBB group in both augmented and non-augmented labours than in the placebo group. These findings further buttress the fact that HBB affects mainly the cervix and not the pattern of uterine contraction. Akiseku et al[20] reported similar findings in their study. In contrast, Imaralu et al reported a significant reduction in the first stage of labour only among multipara in the HBB group in oxytocin-augmented labour.[22]

The rate of caesarean section in the HBB and control groups in our study was not statistically significant, similar to findings in some studies.[11,20] In contrast, Aldahhan et al reported significantly increased caesarean section rate in the HBB group compared to the placebo group (12% versus 4%).[16] As with other studies, our study did not find any statistically significant difference in maternal drug side effects and neonatal outcomes.[10,18,20-24] Al-Kishali et al,' however, reported a difference in Apgar scores at the first minute between the groups, although this effect was transient and disappeared within 5 minutes.[26] In contrast, Ibrahim et al[23] reported a significant difference in the incidence of vomiting, while Guadernack et al[15] also reported significantly higher incidence of tachycardia and visual disturbances in the HBB group. Both studies employed the intravenous route of administration of HBB, while 40mg of HBB was used by Ibrahim et al. The higher peak serum concentration and bioavailability when drugs are given intravenously may have accounted for these findings.

We postulate that the observed differences in the findings from our study and those of other studies may be attributable to the different doses and routes of administration of HBB, the heterogeneous nature of the study population comprising of varied sample sizes, and varied parity, among others. In addition, some of the studies employed the current WHO definition of active phase of labour of 5cm or more cervical dilatation.[32]

CONCLUSION

This study shows that HBB is effective in significantly shortening the duration of the first stage of labour with no serious adverse feto-maternal effects. A large multicenter randomized controlled trial is recommended to further validate these findings, including the effect and safety of increased and/or repeated doses of HBB.

Strength of the Study

This was a prospective, randomized, double-blind controlled trial, in nulliparous women, in which a single dose of 20mg (1mL) of HBB was used. The low dose of HBB, with its single intramuscular administration, makes it very simple to use in low-resource settings, with minimal side effects. In addition, the intention-to-treat principle which was employed in the study is preferred for superiority or inequality trials, and although it is associated with drawbacks, such as type 11 errors and non-compliance and drop-outs, none of these occurred in our study.

Limitation of the Study

The assessment of cervical dilatation is subjective and reproducibility is limited and this may have influenced study outcome, although attempts were made to reduce this to the barest minimum through strict adherence to the study protocol. The exact time of full cervical dilatation required timed-assessment which is fraught with difficulty. It was also difficult to predict patients who may eventually require augmentation of labour or caesarean section until late in labour. The single-centre

nature of the study, and small sample size, formed the basis for our recommendation for a larger multi-centre trial.

REFERENCES

1. Orhue A, Otubu J. Normal labour. In: Agboola A. (Editor): Textbook of Obstetrics and Gynaecology for Medical Students, 3rd Edition. HEBN Publishers Plc, Ibadan 2018; pp 336-355
2. McEwan A. Labour. In: Baker PN, Kenny LC, editors. Obstetrics by Ten Teachers. 19th ed. London: Hodder Arnold, An Hachette UK Company; 2011. pp 185-223.
3. Harper LM, Caughey AB, Roehi KA, Odibo AO, Cahill AG. Defining an abnormal first stage of labour based on maternal and neonatal outcomes. Am J Obstet Gynecol MFM 2014; 210(6):536e1-7
4. Nystedt A, Hildingsson I. Diverse definitions of prolonged labour and its consequences with sometimes subsequent inappropriate treatment. BMC Pregnancy and Childbirth 2014; 14(1):233
5. World Health Organization (WHO): Managing Prolonged and Obstructed Labour. Midwifery Education Module 3, 2nd Ed 2008; 15-37
6. Frigoletto FD, Lieberman E, Lang JM, Cohen A, Barss V, Ringer S et al. A clinical trial of active management of labour. N Engl J Med 1995; 333(12):745-50
7. Boylan PC. Active management of labour: results in Dublin, Houston, London, New Brunswick, Singapore and Valparaiso. Birth 1989; 16(3):114-118
8. Rohwer AC, Khondowe O, Young T. Antispasmodics for labour. Cochrane Database Syst Rev 2013; 6:CD009243
9. Mohaghegh Z, Abedi P, Fasi S, Jahanfar S, Surdock A, Sharifipour F et al. The effect of hyoscine n-butylbroide on labor progress: A systematic review: BMC Pregnancy and Childbirth 2020; 20(1):291.
10. Riemma G, La Verde M, Schiattarella A, Cobellis L, De Franciscis P, Colacurci N et al. Efficacy of hyoscine butylbromide in shortening the active phase of labour: Systematic review and meta-analysis of randomized trials. Eur J Obstet Gynecol Reprod Biol 2020; 252:218-224.
11. Samuels LA, Christie L, Roberts-Gittens B, Fletcher H, Frederick J. The effect of hyoscine butylbromide on the first sage of labour in term pregnancies. BJOG 2007; 114(12):1542-6
12. Maged AM, Sorour EH, El Sadek MM, Hassan SM, Shoab AY. A randomized controlled Study of the effect of hyoscine butylbromide on duration of labour in primigravida women with prolonged labour. Arch Gynecol Obstet 2021; 304:1513-1518
13. Ahmed A, Shedid A. Rectal Hyoscine-N-Butylbromide Safely Accelerates Progress of Labor in Primipara: A Placebo-Controlled Study. J Am Sci 2012; 8(8):512-516
14. Ezeike AC, Agboghoroma C, Efetie ER. The Efficacy of Hyoscine Butyl Bromide In Accelerating Cervical Dilatation In Labour: A Double-Blind, Randomized Controlled Trial. Trop J Obstet Gynaecol 2020; 37(3): 552-562
15. Guadernack LC, Einarsen AES, Sorbye KI, Lukasee M, Gunnes N, Michelsen TM. The effect of intravenous hyoscine butylbromide on slow progress in labour (BUSCLAB): A double-blind randomized placebo-controlled trial. PLoS Medicine 2024; 21(3): e1004352
16. Aldahhan F, Alwaeely F, Raheem F. The evaluation of the effect of Buscopan (hyoscine-n-butylbromide) on the duration of labour. Bas J Surg 2011; 17:25-29
17. Akintan AL, Oluwsola TAO. Effectiveness of hyoscine butylbromide in shortening the first stage of labour- case series and review of literature. Trop J Obstet Gynaecol 2016; 33(1)32-36
18. Kamkong J, Pongsamakthai M, Sripipatanakul M, Tangsiriwatthana T. The Effect of Hyoscine Butylbromide for shortening the Active Phase of the First Stage of Labor: A randomized, double-blind, placebo-controlled trial. Thai J Obstet Gynaecol 2024; 32(3):245-253
19. Ejikeme TB, Eleje GU, Igberase GO, Ugwu EO, Ikwuka DC, Okpala BC. A double blind placebo-controlled trial on the effect of hyoscine-n-butylbromide for improving duration of labour in term pregnancies. J Obstet Gynaecol Res 2020; 46(6): 890-8
20. Akiseku AK, Jagun OE, Akadri AA, Imaralu JO, Olatunji AO, Sule-Odu AO. Effect of hyoscine butylbromide on labour duration among nullipara in a southwestern Nigerian teaching hospital:A randomozed controlled trial.Int J Gynecol Obstet 2021;153(2):254-9
21. Barau DD, Agida ET, Onafowokan O, Adebayo FO. Effect of Hyoscine Butyl Bromide on the Course of Labour. Open J Obstet Gynecol 2018; 8(12):1102-8
22. Imaralu JO, Kuti O, Badejoko OO, Loto OM, Olaleye A. Effect of hyoscine butyl-bromide on the duration of active phase of labour: A randomized controlled trial. Taiwan J Obstet Gynecol 2017; 56(6):725-30
23. Ibrahim R, Nwobodo EI, Tunau KA, Burodo At, Sulaiman B, Garba JA et al. The effect of hyoscine butyl bromide in shortening the duration of first stage of labour: A single-blind randomized controlled study. Trop J Obstet Gynaecol 2019; 36(1):28-32
24. Nagi M, Mohammed M, Eman F, Maha A. Does hyoscine butylbromide (spasmocin) shorten the first stage of labour in term pregnancies? Evidence-Based Women's Health Journal 2014; 4(1):52-54
25. Movahed F, Ghaleh TD, Lalooha F, Aziziyan S, Mashrabi O. Effects of Hyoscine on First stage of Labour in Full Term Pregnancy. Res J Biol Sci 2011; 6(12):648-51
26. Al-Khishali H, Weqar A, Rasheed F, Hussain SA. The effect of 20mg Hyoscine Butylbromide on Normal Labour in Iraqi Primi- and Multi-gravida Women. J Adv Sci Res 2012 2012; 3(4):70-73
27. Makvandi S, Tadayon M, Abbaspour M. Effect of hyoscine-N-butylbromide rectal suppository on labour progress in primigravid women: A Randomized, double-blind, placebo-controlled clinical trial. Croat Med J 2011; 52(2):159-63
28. Kirim S, Asicioglu O, Yenigul N, Mathyk BA, Bahat N, Bayrak M. Effect of intravenous Hyoscine-N-Butyl Bromide on active phase of labour progress: A Randomized, double-blind placebo-controlled trial. J Matern Fetal Neonatal Med 2014;28(9):1-18
29. Al Qahtani NH, Al Hajeri F. The effect of hyoscine butylbromide in shortening the first stage of labour: A double-blind, randomized, controlled trial. Ther Clin Risk Manag 2011; 7:495-500
30. Cook JA, Julious SA, Sones W, Hampson V, Hewitt C, Berlin JA et al. Practical help for specifying the target difference in sample size calculations for RCTs: The DELTA^2 five-stage study, including a workshop. Health Technol Asses 219; 23(60):1-88

31. Zong B. How to calculate sample size in randomized controlled trial. J Thorac Dis 2009; 1(1):51-54
32. World Health Organization. WHO recommendations: Intrapartum Care for a Positive Childbirth Experience. Geneva 2018