ORIGINAL RESEARCH

Evaluating Labor Outcomes with Various Concentrations of Hyoscine Butylbromide

[1]Dr. Pratima Sharma, [2]Dr. Neeti Chaturvedi

[1,2]Assistant Professor, Department of Obstetrics and Gynaecology, National Capital Region Institute of Medical Sciences, Meerut, India

Corresponding author
Dr. Neeti Chaturvedi
Assistant Professor, Department of Obstetrics and Gynaecology, National Capital Region Institute of Medical Sciences, Meerut, India

Received: 24 June, 2023 Accepted: 27 July, 2023

ABSTRACT:
Background: Efforts to reduce labor duration for both mother and fetus are valuable. The current study aimed to evaluate the impact of varying concentrations of Hyoscine Butylbromide on labor.
Methods: The study involved 60 first-time pregnant women at full term gestation, who were divided into two groups, each containing 30 individuals. In Group I, an intravenous dose of 40 mg of Hyoscine Butylbromide (HBB) was administered during the early active phase of labor, while in Group II, a 60 mg intravenous HBB dose was administered.
Results: Each of the two groups comprised 30 patients. In Group I, patients were administered 40 mg of intravenous Hyoscine Butylbromide (HBB), while in Group II, patients received 60 mg of intravenous HBB. The mode of delivery differed slightly between the two groups, with 5 cases of abdominal delivery in Group I and 4 in Group II. Vaginal delivery was observed in 10 cases in Group I and 11 in Group II. It's worth noting that the difference between the groups was not statistically significant ($P > 0.05$).
Conclusion: The authors of the study concluded that both 40 mg and 60 mg of Hyoscine Butylbromide (HBB) were effective at their respective concentrations. Importantly, there was no statistically significant difference in their outcomes.
Keywords: Labor, HBB, Mother

INTRODUCTION

Efforts to expedite labor are of paramount importance for the well-being of both mothers and infants. The concept of active management of labor, introduced in the 1960s, has significantly contributed to mitigating the risks associated with prolonged labor. Prolonged labor is a key concern in the field of obstetrics, as it ranks among the most critical risk factors for perinatal complications. When prolonged labor results from obstructed or difficult labor, it can lead to severe and potentially life-threatening outcomes, such as uterine rupture, postpartum hemorrhage (PPH), puerperal sepsis, and maternal mortality[1]. To understand and address the duration of labor, it's essential to consider two primary factors that play a pivotal role: uterine contractility and the rate of cervical dilation. These factors represent the physiological processes that dictate the pace of labor. Various interventions, both mechanical and pharmacological, have been explored to facilitate the labor process.Mechanical interventions include the sweeping of membranes, cervical stretching, and amniotomy (the artificial rupture of the amniotic membranes)[2]. These procedures can contribute to cervical dilation and expedite labor in certain cases. On the pharmacological front, the use of oxytocin and prostaglandins has become a globally accepted method for labor augmentation. These medications are administered to enhance uterine contractions, promoting the progress of labor and facilitating the cervical dilation required for childbirth.Additionally, there is growing interest in the localized application of hyaluronidase, a substance that has shown promise in helping to facilitate cervical dilation. This approach is an innovative development in the quest to optimize the labor process for the safety and well-being of both mother and baby.In conclusion, the active management of labor, combining mechanical and pharmacological interventions, seeks to ensure that labor progresses efficiently and safely. This approach is crucial in reducing the risk of perinatal complications and maternal mortality. It exemplifies the ever-evolving field of obstetrics, where medical science continually strives to enhance the childbirth experience and outcomes for expectant mothers and their newborns[3].The onset of labor typically occurs within a window of approximately 2 weeks before or after the estimated due date. The precise triggers that

initiate the start of labor remain largely unknown and are a subject of ongoing research. Labor duration can vary significantly from one woman to another and from one pregnancy to the next. In a woman's first pregnancy, labor often lasts for an average of 12 to 18 hours. Subsequent pregnancies tend to have shorter labor durations, typically ranging from 6 to 8 hours on average. However, it's important to note that every woman's labor experience is unique, and individual factors, including the position of the baby, the mother's health, and other considerations, can influence the length and progress of labor. As a result, no two labor experiences are exactly the same, and healthcare providers closely monitor and adapt care to each woman's specific needs during the labor and delivery process[4]. Hyoscine Butylbromide (HBB) is an alkaloid that exerts its effects by inhibiting cholinergic transmission in the parasympathetic ganglia of the abdominal and pelvic regions. By doing so, it effectively alleviates spasm in the smooth muscles of the female genital organs. This spasm relief is particularly instrumental in facilitating cervical dilatation, a critical aspect of the labor process.The study at hand was conducted to evaluate and compare the effects of varying concentrations of Hyoscine Butylbromide on the labor process. The research seeks to shed light on the efficacy of different concentrations of HBB in terms of their impact on cervical dilatation and overall labor outcomes. This investigation is valuable in contributing to our understanding of how pharmacological interventions like HBB can be optimized to aid and streamline the labor process for the benefit of both mothers and infants.

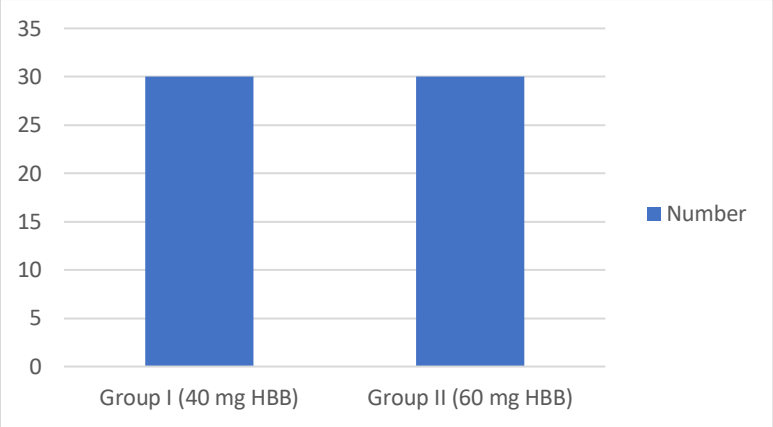
MATERIALS AND METHODS

The research was conducted within the Department of Obstetrics & Gynaecology, a specialized medical unit dedicated to women's reproductive health. It centered around a carefully selected group of 30 women who were experiencing their first pregnancy and were at full term gestation. Before initiating the study, a pivotal step was to secure ethical approval from the institute where the research was conducted. This step underscores the commitment to maintaining ethical standards and ensuring that the study adhered to all relevant regulations and guidelines. Ethical approval serves as a fundamental safeguard to protect the rights and well-being of the participants[5].Each prospective participant was provided with detailed information regarding the study's purpose, objectives, and the procedures involved. This transparency is vital in upholding the principles of informed consent, which is a cornerstone of ethical research. Informed consent empowers individuals to make voluntary and informed decisions about their participation in a study. It ensures that participants understand what will be expected of them and the potential risks and benefits involved. Furthermore, the participants were given the opportunity to ask questions and seek clarification on any aspects of the research they found unclear or concerning.Written consent, obtained from each participant, serves as a tangible and documented affirmation of their voluntary participation in the study. This legally binding document reinforces the commitment to respecting the autonomy and choices of the participants.In summary, the research study was conducted with the utmost regard for ethical principles and participant well-being. It involved a rigorous process of obtaining ethical approval, providing comprehensive information to the participants, and obtaining their written consent. These ethical considerations are not only a regulatory requirement but also an ethical imperative to safeguard the rights and interests of the individuals involved in the study.Data collection for the study included information such as the participants' names, ages, and other relevant details. The study population was then evenly divided into two groups, each comprising 30 participants. In Group I, each participant received an intravenous dose of 40 mg of Hyoscine Butylbromide (HBB) during the early active phase of labor, while in Group II, the dose administered was 60 mg of intravenous HBB.Both groups were subjected to a comprehensive comparison that encompassed several crucial factors. These included assessing the participants' gestational age, APGAR scores at both the 1st and 5th minutes after birth, blood loss during the labor process, and the mode of delivery.[7]To ensure the robustness of the study's findings, all the data collected from these comparisons were subjected to statistical analysis. The significance of the results was determined by examining the P value, and a threshold of less than 0.05 was set as the criterion for statistical significance. A P value below 0.05 indicates that the observed differences in the data are unlikely to have occurred by chance and are, therefore, considered statistically significant, lending strength to the study's findings

RESULTS

Table I: Distribution of patients

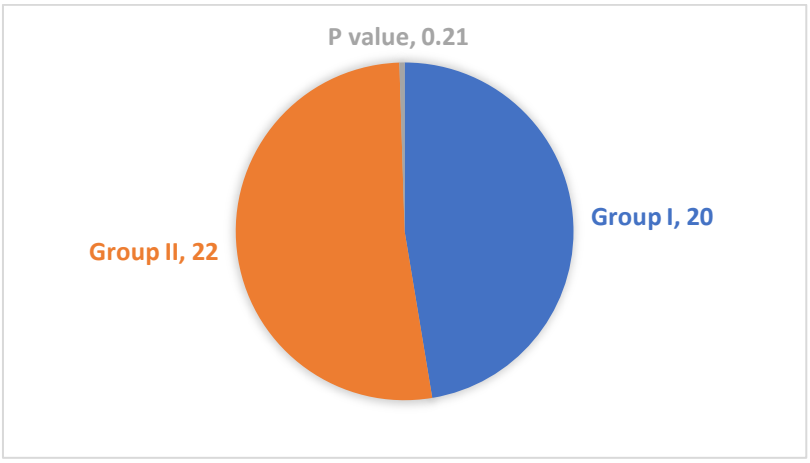
Groups	GroupI(40mgHBB)	GroupII(60mgHBB)
Number	30	30



As depicted in Table I, each of the two groups was comprised of 30 patients. Group I received an intravenous dose of 40 mg of Hyoscine Butylbromide (HBB), while Group II was administered 60 mg of intravenous HBB. This table succinctly summarizes the distribution of participants and their respective HBB dosages in the study.

Table II: Mode of delivery

Mode	Group I	Group II	P value
Vaginal	20	22	0.21
Abdominal	10	8	



As depicted in Graph II, the mode of delivery in Group I was characterized by abdominal delivery in 5 cases and vaginal delivery in 20 cases. In Group II, abdominal delivery was observed in 4 cases, while vaginal delivery occurred in 11 cases. Importantly, the data analysis indicated that the observed difference in the mode of delivery between the two groups was not statistically significant ($P > 0.05$). This suggests that the choice of HBB dosage (40 mg in Group I and 60 mg in Group II) did not significantly influence the mode of delivery in the study participants.

DISCUSSION

Spasmolytic drugs play a crucial role in managing cervical spasm during labor, effectively reducing its duration. One of these spasmolytic agents is Hyoscine Butylbromide, which has been employed to expedite the labor process.Hyoscine Butylbromide primarily operates by blocking the transmission of neural impulses in the intraneural parasympathetic ganglia located within abdominal organs. This mechanism involves the inhibition of cholinergic transmission in the neural synapses. Following intravenous administration, the substance is rapidly distributed in the body, with a half-life (t1/2) of approximately 30 minutes. It's worth noting that Hyoscine Butylbromide does not cross the blood-brain barrier, and its binding to plasma proteins is low. Roughly half of its clearance occurs through renal excretion, and the primary metabolites found in urine do not possess significant clinical effects. The study at hand was conducted to assess and compare the effects of different concentrations of Hyoscine Butylbromide on the labor process. This research aims to enhance our understanding of how varying concentrations of this spasmolytic agent impact the dynamics of labor, ultimately contributing to more effective and efficient obstetric care. In the present study, each of the two groups consisted of 30 patients. Group I received an intravenous dose of 40 mg of Hyoscine Butylbromide (HBB), while Group II received 60 mg of intravenous HBB. In a related study conducted by Singh et al[8], a

prospective investigation involved 240 women with term gestation who were in active labor. The patients were selected through a simple randomization process and were divided into three distinct groups: A, B, and C, each consisting of 80 patients. Group A received an intramuscular injection of drotaverine hydrochloride (40 mg), Group B received an intramuscular injection of hyoscine butylbromide (20 mg), and Group C, serving as the control group, did not receive any medication. The results of the study indicated that the mean rate of cervical dilatation with buscopan (hyoscine butylbromide) was 2.23 cm per hour, while it was 2.03 cm per hour for the drotaverine group and 2.08 cm per hour for the control group. This finding suggests that buscopan had a more favorable impact on the rate of cervical dilatation, resulting in a shorter duration for the first stage of labor.Specifically, the mean duration of the active phase of the first stage of labor in the buscopan group was 156.13 minutes, in contrast to 181.25 minutes in the drotaverine group. However, it's important to note that buscopan appeared to have less of an effect on the duration of the second stage of labor.These findings provide valuable insights into the potential benefits of different spasmolytic agents, such as hyoscine butylbromide (buscopan) and drotaverine hydrochloride, in the management of labor and cervical dilatation rates. It highlights the complexity of labor dynamics and the importance of tailoring medical interventions to meet individual patient needs[9].In the current study, the mode of delivery in Group I was characterized by abdominal delivery in 5 cases and vaginal delivery in 20 cases. For Group II, 4 cases had abdominal delivery, and 11 cases experienced vaginal delivery. These findings provide insights into the outcomes associated with different dosages of hyoscine butylbromide (HBB) on the mode of delivery. In a study conducted by Wanjala et al, a total of 228 first-time pregnant women were recruited, and they were randomly allocated into two arms: the control arm (n=118) and the study arm (n=110). It's noteworthy that the 40mg and 60mg arms were similar in terms of socio-demographic and obstetric characteristics[10].The study evaluated the time from injection to delivery, which was 340 minutes in the 40mg arm and 305 minutes in the 60mg arm. Importantly, this difference was not statistically significant (p=0.905), indicating that the choice of dosage didn't significantly impact the time between medication administration and childbirth.Furthermore, the study assessed the need for cesarean section delivery, with 12% of patients in the 40mg arm and 9% in the 60mg arm requiring this intervention. This finding showed no statistically significant difference (p=0.602) between the two groups.Additionally, the 5-minute APGAR scores, which are indicators of newborn well-being, were reported as 9.7 in the 40mg arm and 9.8 in the 60mg arm, demonstrating good outcomes in both groups.When evaluating estimated blood loss, it was found to be 300ml in the 60mg arm and 350ml in the 40mg arm. While there was a numerical difference, it was not statistically significant (p=0.152). In conclusion, the study suggested that when comparing 60mg of parenteral HBB to 40mg, there was no superiority in terms of their effects on the duration of labor and fetomaternal outcomes. These findings contribute to our understanding of the impact of HBB dosage on childbirth and maternal-fetal well-being.

CONCLUSION

The authors' findings indicate that both 40mg and 60mg of Hyoscine Butylbromide (HBB) were effective at their respective concentrations. Importantly, there was no statistically significant difference in the outcomes between these two dosage levels. This suggests that both dosages of HBB had comparable efficacy in the context of the study, highlighting the potential for flexibility in dosing while maintaining effectiveness in managing labor and related outcomes.

REFERENCES

1. Moore, B. Appropriate Technology For Birth.” The Lancet 1985;326 (8458):787.
2. Samuels, LA, L Christie, B Roberts-Gittens, H Fletcher, and J Frederick. The Effect of Hyoscine Butylbromide on the First Stage of Labour in Term Pregnancies. BJOG: An International Journal of Obstetrics &Gynaecology 2007; 114 (12).
3. Aggarwal, Pakhee, Vijay Zutshi, and Swaraj Batra. Role of Hyoscine N-Butyl Bromide (HBB, Buscopan) as Labor Analgesic. Indian Journal of Medical Sciences 2008;62(5):179–84.
4. Apgar, V. A Proposal for a New Method of Evaluation of the Newborn. Classic Papers in Critical Care 1952;32(449):97.
5. Makvandi, Somayeh, Mitra Tadayon, and Mohammadreza Abbaspour. Effect of Hyoscine-N-Butyl Bromide Rectal Suppository on Labor Progress in Primigravid Women: Randomized Double-Blind Placebo- Controlled Clinical Trial. Croatian Medical Journal 2011;52(2):159–1631.
6. Say, Lale, Doris Chou, Alison Gemmill, Özge Tunçalp, Ann-Beth Moller, Jane Daniels, A Metin Gülmezoglu, Marleen Temmerman, and Leontine Alkema. “Global Causes of Maternal Death: A WHO Systematic Analysis.” The Lancet Global Health 2014; 2 (6): 323–33.
7. Bidgood, K. A., and P. J. Steer. 1987. “A Randomized control study of Oxytocin augmentation of labour. Obstetric outcome.” BJOG: An International Journal of Obstetrics and Gynaecology 1987; 94 (6): 2-6.
8. Sirohiwal, Daya, Krishna Dahiya, and Mandira De. “Efficacy of Hyoscine-N-Butyl Bromide (Buscopan) Suppositories as a Cervical Spasmolytic Agent in Labour.” The Australian & New Zealand Journal of Obstetrics &Gynaecology. 2005;45(2): 3-8.
9. Singh V, Goel JK, Sah S, Goel R, Arya SB, Agarwal N. Comparative study of efficacy of hyoscine butylbromide and drotaverine for augmentation of labor. JMS. 2016 Dec;1:7128.
10. Wanjala A, Kaihura D, Chemwolo B, Muruka K. Comparison of 60mg and 40mg doses of hyoscine

butylbromide on labor outcomes at Moi teaching and referral hospital, Eldoret, Kenya. Indian Journal of Obstetrics and Gynecology Research, October-December, 2018;5(4):447:453 447