

Effects of Hyoscine on First Stage of Labor in Full Term Pregnancy

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Abstract: This study was done in order to study the effect of IV injection of hyoscine upon delivery progression. This double blinded clinical trial study was done on 140 term, cephalic presentation pregnant women who have not natural vaginal delivery were admitted in Kosar hospital in autumn 1388 for pregnancy termination. A sample was selected based on inclusion and exclusion criteria and randomized divided into two groups, 20 mg (1 mL) hyoscine was given to group one and 1 mL distilled water was given to control group (group 2). These IV injections were done as single dose at the beginning of active labor. After that duration of the 1st, 2nd and 3rd stages of labor, maternal complications and caesarean section rate during labor and APGAR scores in the neonates were recorded. Then data was analysis by Chi-square (χ^2) and t-test. The mean time for the 1st stage in the control group was 113.5 ± 47.2 min, compared with 100.64 ± 48.3 min in the hyoscine group that was statistically significant ($p = 0.045$). There was no significant change in the duration of the 2nd and 3rd stages of labor and no difference in APGAR scores noted at 1 and 5 min, there was a slight (but statistically insignificant) increase in the caesarean section rate. No adverse effect was noted in the group of women receiving hyoscine, compared with the control group. Hyoscine butyl bromide is effective in significantly reducing the duration of the 1st stage of labor and it is not associated with any obvious adverse outcomes in mother or neonate.

Key words: Hyoscine, 1st stage of labor, APGAR scores, butyl bromide, pregnancy, Iran

INTRODUCTION

Labor is the most common obstetric emergency. In, only the 1st phase of labor takes 12-16 h for the 1st pregnancies and 8-6 h for multiparous women (Cunningham *et al.*, 2009). The duration of labor is one of the factors effective on pregnancy outcome and fetal and maternal complications (Beischer and Mackay, 1995). Prolonged 1st phase of labor leads to complications such as uterine flat muscle tiredness and physiological fatigue of mother.

Moreover, the incidence rate of endometritis, cesarean, fetal distress and fetal and infant mortality increase (Willson *et al.*, 1999). On the other hand, mother is exposed to post-delivery bleeding and infection and emotional distress due to anxiety, insomnia and fatigue (Beischer and Mackay, 1995). One of the experimental drugs used to improve cervical effacement and accelerate the 1st phase of labor is hyoscine. Hyoscine is an

anticholinergic, antispasmodic, analgesic and sedative drug. Its laxative effect directly impacts on flat muscles of gastrointestinal and genitourinary organs. In addition to environmental anticholinergic activity, this drug also affects the central nervous system and has a sedative and long lasting effect on the brain.

Hyoscine causes amnesia of events during surgery or labor which is the desired condition (Katzung, 1992). In obstetrics, hyoscine plus morphine is used to create a state of amnesiac condition and its use causes isthmus sleep. Scopolamine or hyoscine has been declared as the most known one of hallucinogenic drugs and is the most popular labor pain medication since 1960. This drug does not eliminate the pain but it fades its memory (Zeinali, 2003).

Spasmolytic drug is also claimed to be effective in improving cervical spasm and facilitating cervical dilation during the course (Kaur and Kaur, 2003; Mishra *et al.*, 2002; Wark *et al.*, 2003; Sirohiwal *et al.*, 2005; Sokol *et al.*,

1994). Therefore, spasmolytic drugs have been used in labor and examined with fewer side effects over time. Atropine, hyoscine and epidosin belong to this drug group (Zeinali, 2003; Kaur and Kaur, 2003; Mishra *et al.*, 2002; Wark *et al.*, 2003; Sirohiwal *et al.*, 2005). Hyoscine is reported to be used by doctors and some obstetricians in order to accelerate the 1st phase of labor not only in Iran but also in some other countries. Some researchers recommend injection of lidocaine and hyoscine on cervix and intravenous infusion of oxytocin for labor progress (Qian and Fu, 1991).

In a study conducted in 2007 in India, duration of the 1st phase of labor in the hyoscine group was significantly shorter than that in the placebo group. But duration of the 2nd phase of labor and infant's 1st and 5th min APGAR scores was not different in both groups (Samuels *et al.*, 2007). In addition in a study conducted in 2005 in Yazd, duration of the 1st phase of labor in the hyoscine group was significantly shorter than that in the placebo group. But no statistically significant differences were observed in duration of the 2nd phase of labor and infant's 1st and 5th min APGAR scores. This study was conducted to examine the effects of intravenous hyoscine on the labor process.

MATERIALS AND METHODS

This study is a double-blind clinical trial conducted on 140 pregnant term women admitted for termination of pregnancy in the maternity ward of Kosar hospital in Autumn, 2009. All pregnant women with term pregnancy, singleton, cephalic presentation who had no contraindication to vaginal delivery were included in the study. The cases were randomly placed in two groups of test and control. At the beginning of the active phase of labor, a single dose intravenous injection of 20 mg in 1 mL of hyoscine was administered to the test group and 1mL of distilled water to the control group.

All persons had 4-3 cm of dilatation and regular uterine contractions at the time of injection. The injections were administered by similar syringes with predetermined codes by the delivery room executive. Then, mother's name, case number, maternal age, gestational age and maternal parity was recorded in the questionnaire of research project.

Mother's vital signs and vaginal examinations were performed every hour and duration of the 1st, 2nd and 3rd phase of labor, maternal adverse effects in the course of delivery such as dizziness, tachycardia and dry mouth and if induction was performed in the course of labor or not and the number of cesarean deliveries in the course of delivery and the infant's 1st and 5th min APGAR scores

and birth weight were also recorded. The obtained data were coded and then entered into a computer and statically analyzed by SPSS software. Chi-square (χ^2) and t-test was used for data analysis. Significance levels for tests were determined as 95% ($p < 0.05$).

RESULTS AND DISCUSSION

After data collection, the two groups were homogeneous in terms of maternal age, gestational age and maternal parity, the number of induction cases in the course of labor and there was no significant difference (Table 1).

Average duration of 1st phase of labor was minutes in distilled water group and minutes in hyoscine group and the average duration of 1st phase of labor in hyoscine group was significantly shorter than that of distilled water group ($p = 0.045$) (Table 2). There was no statistically significant difference between the average durations of 2nd and 3rd phases of labor in the two groups (Table 2).

About 1st and 5th min APGAR scores of infants in the two groups showed no statistically significant difference. No maternal adverse effects were seen in the course of labor in the hyoscine group. Cesarean rate in the course of delivery in the hyoscine group was 2 cases, one of which was due to a halt in the descending in full condition and the other one due to the lack of progress (halt in the dilatation) but there was no cesarean in the course of labor of distilled water group ($p = 0.49$). Weights of infants in both groups had no statistically significant difference.

According to the results by the study, hyoscine can shorten duration of the 1st phase of labor but has no effect on duration of the 2nd and 3rd phases of labor, the infant's 1st and 5th min APGAR scores and cesarean rate in delivery course.

Table 1: Demographic fending between two groups

Parameters	Groups		p-value
	Hyoscine	Placebo	
Age	24.7±5.7	23.9±6	0.284
Parity			
Multipara	30	23	0.296
Nullipara	40	47	0.296
Induction count	16	15	0.839
Infant weight	3287±293.1	3267±305.5	0.711

Table 2: Labor stages duration between two groups

Stages	Groups		p-value
	Hyoscine	Placebo	
I	100.64±48.3	113.5±47.2	0.045
II	25.20±15.0	26.5±16.1	0.701
III	6.90±3.20	7.1±2.70	0.644

The results by the study were similar to the study conducted at the Department of Obstetrics and Gynecology in India in 2007. In this study, the effects of hyoscine were studied in the 1st phase of labor in term pregnancies. Duration of the 1st phase of labor in the hyoscine group was significantly shorter than that in the placebo group. But duration of the 2nd phase of labor and infant's 1st and 5th min APGAR scores had no difference in the two groups (Samuels *et al.*, 2007). Also, the results by this study were similar to a study conducted in Yazd in 2005. In this study, the duration of the 1st phase of labor in the hyoscine group was significantly shorter than that in the placebo group. But duration of the 2nd phase of labor and infant's 1st and 5th min APGAR scores showed no significant difference (Iravani and Nasab, 2006).

The study is consistent with the study conducted at the Department of Obstetrics and Gynecology of India in 2005. It was concluded in this study that hyoscine butyl bromide suppositories are effective in shortening the duration of the 1st phase of labor (Sirohiwal *et al.*, 2005). The results by this study were not consistent with the study conducted in Gorgan city in the Winter of 2004.

In this study, the effect of atropine and promethazine with no drug injection on duration of labor phases was examined in some multi-par women. In this case, the average duration of 1st phase labor in women receiving the drug was longer than that in the group who received no drugs. Average duration of 2nd and 3rd phases of labor in the four groups was not significantly different (Mortazavi and Rakhshani, 2003). The results of the study were also inconsistent with the study conducted in Shahed University in September, 2002. In this study, the effect of hyoscine on dilatation and effacement progress in multi-par grades 2 and 3 was surveyed where hyoscine, to distilled water had no effect on the progress of dilatation and effacement (Zafarghandi, 2002). Meanwhile, the results by the study were not consistent with the study conducted in the Department of Obstetrics and Gynecology in India in June, 2007.

In this study, drotaverine hydrochloride, hyoscine butyl and no drug injection during delivery of the term pregnancies was investigated. It was concluded that drotaverine hydrochloride and hyoscine butyl bromide do not reduce the duration of the active phase of labor (Gupta *et al.*, 2008).

CONCLUSION

According to the results, hyoscine shortens the duration of 1st phase of labor without adverse maternal or

neonatal complications. However, more clinical studies are needed to prove the effect and safety of this drug on the mother and fetus.

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