

The effect of intravenous injection of Atropine with hyoscine on the progress of labor in Primiparous women in Alavi hospital, Ardabil, Iran

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Abstract: Delivery process is accompanied by pain and one of the duties of midwives is to reduce pain during labor. The reduction in the duration of labor has always been considered. Atropine and Hyoscine are among drugs to reduce the duration of labor which used by doctors and some midwives but their effects are not yet fully examined. The aim of this research is studying the effects of these two popular drugs in the delivery room during childbirth and delivery stages. **Materials and methods:** This study which is a double-blind trial was performed on 200 first-term pregnant belly women who have been admitted to Alavi hospital (in Ardabil in 1386-1387 years) due to spontaneous onset of labor pains. Samples were selected randomly and divided into experimental and control groups. 20 mg of Hyoscine combined with .5 mg of Atropine was injected intravenously as single dose to experimental group in the beginning of active phase and also 20.5 cc Dextrose was injected to control group and then the Dilatation and Effacement of cervix, the length of active phase, length of the second and third phases of labor, the rate of incidence of the tachycardia and bradycardia in fetus and first and fifth minute Apgar scores were recorded. To analyze the data descriptive statistics such as Mean and inferential statistics such as Chi-square with the significance level of 95% were used. **Results:** The results show that there is a meaningful relationship between the two groups' mean of Dilatation change and effacement ($p < 0.05$) (5.2cm in an hour against 1.5 in an hour). The length of active phase of labor (105 minutes against 251m) and the difference between second phase length (17 m against 33m) and third phase length (3.4 m in experimental and 6.7 in control groups) is less in experimental group but they are not meaningful statistically. The length of delivery was 121m in experimental and 274m in control groups and this difference is meaningful statistically. **Conclusion:** According to the findings, it appears that hyoscine and atropine can be effective as Medication in patients with dystocia.

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Key Words: Atropine, Hyoscine, delivery stages

Introduction

Delivery process is accompanied by pain in which uterine smooth muscle contractions lead to birth of baby. These contractions are prominently painful compared to other muscles. Average delivery time in Primiparous women is about 4.9 and duration of labor is one of the influential factors in pregnancy outcomes and maternal and fetal complications. Labor and the fear of childbirth can cause patient anxiety and epinephrine secretion which reduce the uterine contractions and lead to prolonged labor [1]. Prolonged first stage of labor cause complications such as uterine muscle fatigue, mother fatigue and also endometritis which all lead to caesarean, fetal distress and fetal death [2]. Pain relief during labor is one of the midwives' tasks and reducing the duration of pain is an effective method if it has not any. The

results of the research about the Relaxing, Estrogen and prostaglandins so far show that all of them have influence in cervical effacement but there is little information about the types of drugs which are effective in the delivery process [3]. Atropine and Hyoscine are among the drugs which are widely used in effacement, dilatation and to improve and accelerate the first stage of labor [4]. Hyoscine is among the oldest drugs in medicine. The drug is extracted from the nightshade family of plants called seed eyelids [5]. Hyoscine is an anticholinergic, antispasmodic, sedative and analgesic drug that is directly imposed its relaxation effect on smooth Genital and digestive system muscles. It has slow and long sedating effect on the brain and cause a forgotten during the operation or delivery [6]. The atropine and hyoscine which are anticholinergic

agents are equal in terms of environmental performance. But when they act on the central nervous system, exhibit different properties. Atropine has minimum stimulatory effects on the central nervous system at doses of treatment [7]. Hyoscine used with morphine to induce partial relief and amnesia, and its usage makes sleep limbo. It is known as the most prescribed class of hallucinogenic drugs and also it is the most popular drug used for labor pain from 1960 onwards. This drug does not kill the pain, but it fades its memory [5]. Atropine and hyoscine can relax lower uterine segment, and reduce its spasms and also reduce the frequency of uterine contractions [7, 13]. Also it is claimed that the spasmolytic drugs can be effective in improving cervical spasm and can facilitate stretching the cervix during the labor [8]. Experience of many birth centers shows that these drugs are used to speed up labor. Yet despite the widespread use of these drugs, few studies exist on the effects and complications of them. The main objective of the present study was to compare the rate of progression during labor and delivery process in women who received atropine and hyoscine, compared with the placebo (dextrose).

Material and methods:

This study is an experimental clinical trial. The population of this study is all nulliparous women (200 women) hospitalized in Alavi hospital in 1386-1387. Sample selection criteria included: first pregnancy, singleton with the cephalic presentation, gestational age (42-37 weeks), intact membranes and absence of pregnancy complications (diabetes, renal disease, placenta previa, etc.). To eliminate confounding factors, patients with heart disease, hypertension and hyperthyroidism, as well as the others who must be received oxytocin or other narcotics in their labor, crossed out. Sample was randomly divided into two groups on the base of selection and elimination criteria. All subjects in both groups had 4 cm dilation and 30% to 50% effacement at the time of injection. Vaginal examinations were performed by one person and injection was performed in a double blind method, so that the examiner did not know the contents of the syringe when injecting. 20 Mg of hyoscine (1 ml) was mixed with .5 Mg of atropine (1 ml) was injected intravenously and as a single dose into the experimental group at the beginning of the active phase (dilation 4cm and membrane rupture). Also, 2 cc of dextrose %5 was injected into the control group. Then the dilation achievement and cervical effacement, active phase length, length of the second and third stages of labor, rate of incidence of the Tachycardia and bradycardia in fetus and first and fifth minute Apgar scores were recorded. Maternal

vital signs and fetus heart rate monitored every 15 minutes and every hour vaginal examined from the dilation and effacement view. The result of examinations recorded accurately .5-1 hours after injection. Obtained data were then coded into a computer and using SPSS software the statistical analysis was performed. For data analysis, descriptive statistics such as mean tables and inferential statistics, chi-square test with 95% significance level ($p < .05$) were used.

Results:

Results showed that 96% of women were housewives, 60% were citizens of urban areas and 54% were between 20-35 years, all have their first pregnancies with gestational age 37-42 weeks, born infant's weight were between 2500-4000 and 69% were male infants. The results show that there is a meaningful difference between the mean of cervical dilation change and the mean of the length of the active phase of labor ($p < .05$). The difference between the mean of experimental and control groups in the cervical dilation change is 5.2 cm in an hour to 1.5 cm in an hour. The difference of the means of two groups in the second phase of the labor is meaningful ($p < .05$). The length of the third phase of labor in experimental and control groups are 3.4 and 6.7 (minutes) respectively but the difference is not meaningful and also the length of the labor in experimental group is 121 (minute) and in control group is 274 (minute) which is statistically meaningful ($p < .05$). The results show that, the rate of incidence of the Tachycardia and bradycardia in fetus at the first half hour after injection is 25% (15%T and 10%B) and in experimental group 20% (12%T and 8%B) and also there is not a difference between the first and fifth minute Apgar scores. The first minute Apgar score for experimental and control groups are 10 and 9 respectively and the fifth minute Apgar score for both groups are 10.

Discussion:

On the base of the results obtained in this study, it seems that the effect of atropine and hyoscine in labor progression is good. Atropine and hyoscin are of anti-muscarinic and anticholinergic drugs and are the same from the environmental performance [7]. However, it is alleged that the spasmolytic drugs are effective in improving cervical spasm and facilitate dilation of the cervix during labor [8]. In this study, hyoscine and atropine can increase significantly the cervical dilatation and effacement progress compared to control groups. Since the smooth muscle of the uterine cervix is much less than fundus, it seems with the effecting on cervical smooth muscle it is also effective in

improving the effacement [2]. In a study by Qahtani hyoscine could have a positive effect on the progress of the labor [10]. In the other study that Makvandi carried out on 130 primigravid women, results showed that Use of hyoscine rectal suppository in the active management of labor can shorten both the active phase and second stage of labor without significant side-effects. In the study of the effects of three drugs (Atropine, Hyoscine and Promethazine) on the labor duration and progression, the results show that the duration of the first phase of labor in Atropine group is shorter than Hyoscine and Promethazine and also the speed of the cervical dilatation is higher in this group. The results of the study are consistent with the results of this study [12]. Studies have shown that fear of labor, pain and psychological problems related to giving birth especially in nulliparous women can cause to secrete more epinephrine which can reduce the uterine contractions and prolong the delivery [1]. Atropine has the least stimulatory effect on the central nervous system in therapeutic doses but hyoscine has the gradual and prolonged sedative effect on brain. Also, this drug (Atropine) does not kill the pain but take away the memory of the pain [5]. Because of this, it leads to forget about the events during surgery or delivery which is an optimal condition [6]. It seems that hyoscine with atropine can reduce the length of delivery by reducing anxiety. The length of the second stage of labor is significantly shortened which seems that the possibility of uterine fatigue to be justified. In this study, atropine with hyoscine reduce the duration of active phase, second phase, third phase and the whole duration of labor. Qahtani showed that hyoscine is effective in significantly reducing the duration of the first stage of labor, and is not associated with any apparent adverse maternal or neonatal outcomes [10]. It is said that the effect of hyoscin on heart rate, vary depending on the drug dose. Hyoscine with the dose of .25 mg per kg of the body weight used for analgesia, and with 1 mg per kg of the body weight used for induction of anesthesia for cesarean. But none of the alleged rates affect the placenta blood flow, uterine blood flow, uterine muscle strength and fetus. But with more than one mg per kg of body weight, can reduce Apgar score and baby's muscle relaxation [9]. Although in this study the incidence of fetus bradycardia and tachycardia after injection was more in experimental group, this difference was not statistically significant. Meanwhile the changes in fetus heart rate spontaneously resolved following the injection of

Hyoscine into the mother, and it didn't affect the infant's first and fifth minute apgar scores. The limitations of this study include lack of homogeneity of age and being urban and rural.

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