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Original Research Article

Examining the length of short cervix and alkaline vaginal pH in women with preterm and term delivery

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Abstract

Introduction:
The incidence of labor after that the fetus becomes alive (20-28 weeks) and before 37 weeks of full pregnancy (259 days) is called preterm labor .The prevalence of preterm delivery, with valid statistics, is 5-18% in 184 countries, and this rate is increasing greatly.

Method:
This descriptive-analytical study was performed on all pregnant women, with gestational age of 22 to 24 weeks, who were referred to prenatal care centers. Required data was collected through SPSS18; after clearing and correcting missing data, the findings were compared with the central and peripheral indicators.

Findings:
This study was conducted on 168 pregnant women with gestational age of 22 to 24 weeks. The mean age of the subjects was 28.86 years with a standard deviation of 6. The youngest and oldest were 16 and 40 years old. Among the subjects, 44 (19.26%) had preterm delivery and the rest of their delivery was at week 37 or afterwards. As shown in Table 1,the incidence of cervix with a length of less than 30 mm in preterm and term women was 61.1% and 50%, respectively.This difference was statistically significant in two groups (p <0.001).

Conclusion:
Based on the results of the current study, short cervical lengths in conjunction with high vaginal pH are better predictors of preterm delivery.

Keywords: cervix, alkaline, vaginal pH, preterm

Introduction

The incidence of labor after that the fetus becomes alive (20-28 weeks) and before 37 weeks of full pregnancy (259 days) is called preterm labor (1). The prevalence of preterm delivery, with valid statistics, is 5-18% in 184 countries, and this rate is increasing greatly (2). According to the WHO report, premature birth defects, as the leading cause of death for children under the age of 5, were responsible for around 1,000,000 deaths in 2013, and those children who remained alive have had to struggle with learning disabilities, eyesight and hearing loss throughout their lives (3). Statistics show that more than 90% of newborn babies die in the 23rd week of pregnancy and 60% of newborn babies born in the 26th week of pregnancy and 30% of babies born in the 31st week of gestation may have physical impairment, which imposes a high cost on the health service. Additionally, this specific group of infants need special care even after delivery from hospital and there is a huge psychological and economic burden on the baby and community (4).Threat to early delivery is reported when uterine contractions exist without evidence of a change in the cervix (5). Given the limited number of studies among domestic research in the field of comparison of prognostic powers of cervical length and vaginal pH in preterm delivery and considering disagreement among foreign research, the present study was conducted in order to compared these two cases in the 24th to 22nd weeks of pregnancy to determine which one is a better predictor of preterm labor so that preterm labor and possible complications are prevented through timely interventions.

Methodology

This descriptive-analytical study was performed on all pregnant women, with gestational age of 22 to 24 weeks, who were referred to prenatal care centers. Required data was collected through SPSS18; after clearing and correcting missing data, the findings were compared with the central and peripheral indicators. Chi-square and logistic regression was used to determine the chances of generating preterm labor on each of the variables and comparing them. Logistic regression model was used to examine the effect of confounding variables (pregnant woman's age and number of pregnancies).

Findings

This study was conducted on 168 pregnant women with gestational age of 22 to 24 weeks. The mean age of the subjects was 28.86 years with a standard deviation of 6. The youngest and oldest were 16 and 40 years old. Among the subjects, 44 (19.26%) had preterm delivery and the rest of their delivery was at week 37 or afterwards. As shown in Table 1,the incidence of cervix with a length of less than 30 mm in preterm and term women was 61.1% and 50%, respectively.This difference was statistically significant in two groups (p <0.001).

Also, the frequency of alkaline PH vagina was 12.1% and 65.91% in preterm and term women, which was statistically significant (p <0.001).

Table 1: Frequency of cervical length and alkaline vaginal pH in women with term and preterm delivery

Delivery status		Cervix length		Vagina PH	
		Less than 30	More than 30	Acidic (less than 5)	Alkaline(5 and higher)
term	number	2	122	109	15
	percent	1.61	98.39	87.9	12.1
preterm	Number	22	22	15	29
	Percent	50	50	34.09	65.91
P value		<0.001		<0.001	

Discussion

Based on the results of the present study, women who had preterm labor had a significant difference in vaginal pH and cervical length in comparison with those who had term delivery; however, the two groups did not differ significantly in regard with age, abortion history and number of previous pregnancies.Based on the results of this study, cervical length in women with preterm labor was significantly lower than cervical length in women who had termed delivery. Logistic regression results showed that the cervix shortens the chance of preterm labor by about 46 times. That is, there is a relationship between the length of the cervix and the preterm delivery. These findings were consistent with the results of Frouzanfardet al in Kashan in 2013 (6). In this study, the cervical length and vaginal pH of 438 pregnant women with gestational age of 18-24 weeks who referred to clinics and personal offices for usual pregnancy care was measured by trans-vaginal ultrasonography and pH meter.The analysis has shown that the cervical length less than 30 mm increases the chance of preterm delivery by approximately 14-fold, and 71% of cases with cervical length less than 30 mm had, ultimately, experienced preterm delivery; it was, also, shown that preterm labor in alkaline pH is 3 times more than acidic PH (6); the results of Frouzanfardet al research were very consistent with the findings of the present .

study. In Mashhadian and Marsoosi et al study (2009), which was conducted in order to compare the ultra-sonographic parameters of cervix in predicting early delivery in high risk women, 300 pregnant women with gestational age of 14-28 weeks were subjected to trans-vaginal ultrasound. 18 mm was considered the minimum cervical length. In their study, short cervical length did not have a significant relationship with preterm delivery within the range of 35-37 weeks, but this parameter had a significant relationship with early delivery before 35 weeks (7,8). The results of Thomas et al(2006) study, which was conducted on 359 pregnant women under gestational age of 35 weeks suspicious of preterm delivery, indicated that sensitivity, specificity and positive predictive value of cervical length of less than and equal to 25 mm in the prediction of early delivery were 75%, 63% and 24%, respectively, which are consistent with the results of the present study (9). As one can observe, several studies are consistent in regard with their approach to short cervical length. On the other hand, it was observed that the vaginal pH in women with preterm delivery was significantly higher than that of women who had termed delivery.The results of logistic regression showed that alkaline pH increased the chance of preterm delivery by about 14 times. There was a relationship between preterm delivery and vaginal PH

Conclusion

Based on the results of the current study, short cervical lengths in conjunction with high vaginal pH are better predictors of preterm delivery.

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