Does vaginal douching affect the risk of vaginal infections in pregnant women?

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ABSTRACT

Objective: To evaluate the relationship between vaginal douching and vaginal infections among women in early pregnancy.

Methods: We conducted this study in the Department of Gynecology and Obstetrics, Family Planning Center, Dr. E. Hayri Ustundag Hospital, Izmir, Turkey, between March 2003 and December 2004. We examined the vaginal swabs of 129 women, asking for termination of pregnancy in a family-planning center as both wet-preparations and cultures for vaginal microorganisms, and recorded the informations on women's vaginal douching habit.

Results: Among 129 women examined, 80 had at least one type of vaginal microorganisms. Of 67 vaginal douche users, 48 (71.6%) had at least one type of vaginal organisms, whereas of 62 nonusers, only 32 (51.6%) had microorganism, although age, educational status, coital frequency, age at the first intercourse were not statistically different between the vaginal douche-users and non-users. Especially, Group B *Streptococcus* (GBS), *Enterococcus spp*. and *Candida spp*. were found more frequent in vaginal douche-user women.

Conclusion: We found that vaginal douching tends pregnant women to genital tract the incidence of vaginal infections, especially those caused by *Enterococcus spp*. and GBS. As such infections may render such women to high risk in terms of perinatal mortality and morbidity, it would be appropriate to discourage vaginal douching in pregnant women.

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Vaginal douching has been using since ancient times for varies reasons such as contraception, vaginal cleansing, treatment of vaginal infections, and personal beliefs.[1] However, increased risk of pelvic inflammatory disease (PID), ectopic pregnancy, cervical chlamydial infections, bacterial vaginosis, and reduced fertility has been linked to vaginal douching.[2-7] Even more, vaginal douching more than once a week has been proposed as a risk factor in cervical carcinoma.[8] Pregnant women may continue to do vaginal douching, although the risk of preterm birth and low birth weight infant has been linked to vaginal douching.[9-10] Infections were the implicated mechanism leading to preterm birth. [9] Thus, we aimed to investigate the vaginal microflora in pregnant women that were used to do vaginal douching in comparison to women that were not.

Methods. We conducted this study in the Department of Gynecology and Obstetrics, Family

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Planning Center, Dr. E. Hayri Ustundag Hospital, Izmir, Turkey, between March 2003 and December 2004. All women attending the clinic, with gestational age of 5-10 weeks were included in our study. Women were excluded from the study if they were on antimicrobial therapy in the preceding 2 weeks. Vaginal swabs of 129 women, who asked for termination of pregnancy, were taken by Q-tip-like cotton swabs. Of 4 vaginal swabs taken from each woman, one was used for wet-preparation and examined directly under the light microscope. The other 3 samples were used for cultivation in blood agar; eosin methylene blue (EMB) agar and trypticase yeast extract maltose (TYM) to determine the microorganism. The laboratory staff was unaware of whether the woman uses vaginal douching, and demographic features of the woman. Each woman was requested to complete a questionnaire about their age, educational status, age at menarche, age at first intercourse, frequency of intercourse (per week), total pregnancies, live births, number of termination of pregnancies, whether they use vaginal douche, the reason for vaginal douching and when they started to use vaginal douching.

Statistical analysis was performed using SPSS data base. Probability values of 0.05 or less were taken to be statistically significant.

Results. Demographic features of 129 women are presented in **Table 1**. The mean age (±SD) of the women was 31± 6.7 (range 18-48). Women's characteristics in relation to vaginal douching of 129 women were presented in **Table 2**. Of 67 women using vaginal douche, 46 (69.7%) have started to use vaginal douching after their first intercourse, however the others have started some time after their first intercourse: 12.1% after 1-5 years, and 18.2% after 5 years. In terms of the reasons for vaginal douching among 129 women, we found that almost one quarter of women (24.6%) used douching for contraception.

Table 1 - Demographic features of 129 women studied.

Demographics	Minimum	Maximum	Mean	SD
Age	18	48	31	6.7
Total number of pregnancies	1	11	4.5	2.1
Live births	0	7	2.3	1.2
No. of termination of pregnancy	1	5	1.9	1
Age at menarche	10	18	13.4	1.5
Age at first intercourse	14	29	18.8	3

Table 2 - Women's characteristics in relation to vaginal douching.

Characteristics	No. of vaginal douching (%)		Total (n=129)	*P*-value
	Yes (n=67)	No (n=62)		
Age				NS
≤25	13 (19.4)	20 (32.3)	**33 (25.6)**	
26-35	30 (44.8)	27 (43.5)	**57 (44.2)**	
36≥	24 (35.8)	15 (24.2)	**39 (30.2)**	
Total pregnancies				NS
≤2	10 (14.9)	11 (17.7)	**21 (16.3)**	
3-4	31 (46.3)	37 (59.7)	**68 (52.7)**	
5≥	26 (38.8)	14 (22.6)	**40 (31.0)**	
Education				NS
≤Elementary	50 (74.5)	41 (66.1)	**91 (70.5)**	
≥High school	17 (25.4)	21 (33.9)	**38 (29.5)**	
Age at the first intercourse				NS
≤20	48 (71.6)	48 (78.7)	**96 (75.0)**	
≥21	19 (28.4)	14 (21.3)	**33 (25.0)**	
No. of intercourse (per week)				NS
≤1	20 (29.9)	22 (35.5)	**42 (32.6)**	
2-5	41 (61.2)	38 (61.3)	**79 (61.2)**	
5≥	6 (9.0)	2 (3.2)	**8 (6.2)**	

NS - not significant, $p>0.05$

Table 3 - The presence of vaginal microorganisms in relation to vaginal douching.

Vaginal microorganisms	Number of vaginal douching (%)		
	Yes (n=67)	No (n=62)	Total (n=129)
Escherichia coli	15 (22.4)	17 (27.4)	**32 (24.8)**
GBS	5 (7.5)	0 (0.0)	**5 (3.9)**
Staphylococcus aureus	1 (1.5)	1 (1.6)	**2 (1.6)**
Enterococcus spp.	9 (13.4)	2 (3.2)	**11 (8.5)**
Trichomonas vaginalis	5 (7.5)	4 (6.5)	**9 (7.0)**
Candida spp.	23 (34.3)	16 (25.8)	**39 (30.2)**
Positive for organism(s)*	48 (71.6)†	32 (51.6)	**80 (62.0)**

*presence of genital tract infection due to at least one of these microorganisms: *Trichomonas vaginalis, Candida spp, Enterococcus spp, Staphylococcus aureus*, Group B streptococci (GBS), *Escherichia coli*, †indicating that vaginal microorganisms were significantly more common in the vaginal douche-users compared to non-users (Odds ratio 2.36, 95% confidence interval = 1.14 - 4.90, p=0.006)

Among others, 21.5% did for vaginal discharge or itching, 18.5% for religious beliefs. Among 129 women studied, 80 had microorganisms. Of those having microorganisms, 63 women had just one type, whereas 15 had 2 different types, 2 had 3 different types. Detected microorganisms, in relation to vaginal douching are shown in **Table 3**. Especially, Group B *Streptococcus* (GBS) (χ^2= 4,81, p=0.035) *Enterococcus spp*. (χ^2= 4,30, p: 0,037) were found more frequent in vaginal douche-user women. Following logistic regression, lower genital tract microorganisms were significantly more common in vaginal douche-users, compare to non-users. Odds ratio was 2.36, 95% confidence interval 1.14 - 4.90, p=0.006) We did not found any correlation between the frequency of vaginal douching and the presence of genital tract microorganism(s).

Discussion. The tendency towards vaginal douching in Turkey is high. In our survey, 67 of 129 women (52%) reported continued-vaginal douching, though they were aware of their current pregnancy. However, women usually use soap instead of marketed products for vaginal douching. In this study, all women, those reported vaginal douching revealed that they used soap for vaginal douching. Conflicting results on vaginal and pelvic infections in the literature may be due to different products were being used in different study populations in different studies. In one study among 599 pregnant women regarding to vaginal douching, douching with water alone after sex was not associated with sexually transmitted disease whereas, douching with water and soap or with a betel leaf or commercial agent was associated with sexually transmitted disease.[11] In a recent randomized study comparing 2 groups of women, who used "newly marketed vaginal douche product" and "soft cloth toilette", regarding to PID and pregnancy, there was no grater risk of PID among women use vaginal douche product.[12] In a study of 10 healthy volunteers, douching caused microflora changes even in 10 minutes, whereas douching with normal saline or vinegar douche, microflora returned to normal pre douching characteristics in 72 hours.[13] According to demographic characteristics, we did not find any statistical difference between women douching and non-douching. However, it can be seen that women reported vaginal douching tended to be older, less educated and had ≥5 sexual intercourse than non douching women. There are many beliefs of women to do vaginal douching. To "avoid pregnancy", "feel good and fresh", "remove vaginal discharge and odor", "remove menstrual blood", "avoid vaginal itching", even "to avoid going to a doctor" are the reasons reported by women who use vaginal douche in the literature.[14-16] In our study, almost one quarter of women did douching because of the belief that it is a method of contraception. It is interesting to note this, because our study population was consisted of women desiring termination of pregnancy. This must be stress when education on contraceptive awareness is aimed. In addition, more than one fifth of women said that they did vaginal douching since they had vaginal discharge and itching. This is in accordance with previously reported numbers.[15,16] The microorganisms we have looked for were *Trichomonas vaginalis, Candida spp, Enterobacteriaceae spp, Staphylococcus aureus*, GBS, *Escherichia coli*. It is interesting to note that the significant difference between the 2 groups for positivity originated from "*Enterococcus spp*.", ", "GBS" and *Candida spp*. This study supports the suggestions of "premature delivery" in women who use vaginal douche.[9] It will be interesting to investigate perinatal mortality and morbidity in such women, since GBS was higher among vaginal douche users in this study.

In conclusion, in pregnant women, vaginal douching increases the incidence of vaginal infections, especially those caused by *Enterococcus spp* and GBS. As such infections may render such women to high risk in terms of perinatal mortality and morbidity, it would be appropriate to discourage vaginal douching in pregnant women.

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