



ARTICLE

“VAGINAL DOUCHING IS NOT ALL THAT BAD”

**THE IMPORTANCE OF RE-ESTABLISHING THE BALANCE
IN VAGINAL FLORA BY VAGINAL HYGIENE**

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Vaginal douching use was once used as a form of contraception. With the arrival of “the pill” the genital douching equipment disappeared from the bathroom. In The Netherlands, this changed again when the purpose of vaginal douching altered: re-establishing a disturbed vaginal bacterial balance by rinsing away the abundant flora and remove sperm post coital. Data from our Leiden cytology laboratory indicate that post coital hygiene can have a beneficial effect not only for Dutch women but also for ladies following the hygienic measures of the Koran. Recent data concerning the effects of a disturbed vaginal flora on HPV and HIV infections suggest that it even may be ill-advised to warn the sexually active population against vaginal douching.

During screening of cervical smears the microscopist not only observes the epithelial cells but also the flora and fauna of the vagina. As of the seventies pathologists and staff of our laboratory in Leiden, The Netherlands, have thus not only concerned ourselves with cancer detection but also with the study of disturbances of the balance in vaginal flora. The past 25 years (and more than 1 million samples later) have allowed us to accumulate extensive knowledge and insights as we work closely with a few interested general practitioners (GPs) who send their smears to our laboratory. In this paper we report the experiences concerning the effects of vaginal douching of the cytopathologist Mathilde E. Boon and two GPs, Ruben van Coevorden and Marieke van Schie.

Lightmicroscopically we recognize in the microscope two main, approximately equally represented, populations: round coccoid bacteria and elongated lactobacilli. If these are present in equal numbers, we describe this as “mixed flora”. The two extremes of the spectrum are: on the one hand coccoid overgrowth and on the other hand abundance of lactobacilli. The existence of these two types of flora represent an imbalance of the vaginal flora.

The most well known of the two is coccoid overgrowth, seen in the clinical entity called Bacterial Vaginosis (BV). In this type of smears there is an abundance of coccoid bacteriae, often glued to the epithelial cells, and a absence of lactobacilli. Women may notice themselves to spread a “fish” odour, in fact sensing the amines the coccoid organisms produce (1). In the early seventies we established a relationship between BV as (a temporary) imbalance and recent coitus. For after coitus the pH of the vagina increases significantly and changes from mildly acidic to alkaline (4). Coccoid organisms which fare well at a higher pH may thus increase rapidly to a peak quantity at 36 hours after the “alkaline shock” (semen is alkaline in pH). This coccoidal overgrowth is prevented by post-coital vaginal douching (5).

Recently we have become aware of the fact that an excess of lactobacilli, lactobacillosis, may equally lead to problems and may become associated with fungal proliferation, whereas fungi are not seen in combination with a coccoid flora. Rodrigues et al. (23) show that the amines produced by the coccoid bacteria inhibit the growth and proliferation of *Candida* species. On the other hand, lactobacilli are found to be associated with an absence of BV (31), probably because the production of H₂O₂ by lactobacilli species have an antimicrobial effect on an overgrowth of bacteria found in BV (7).

In our cytology practice we recommend vaginal douching in cases of BV as established in the smear. As we are aware of the role of sperm in the development of BV, we specifically advice this to be carried out post coital. For the rinsing solution to be used we recommend either (possibly slightly acidified) tap water or as an alternative a commercially obtainable solution such as Lactacyd. We discourage the addition of any form of iodine: this would increase the risk of selective enhancement of potentially pathogenic microorganisms (6). In this context it is important to mention that the cocci and lactobacilli keep each other in check

(6) and accordingly we observe that a mixed flora is never an abundant flora. Particularly the hydrogen-peroxide-producing subtypes of the family of lactobacilli protect against vaginal infections and therefore it is unwise to use iodine wiping out all lactobacilli.

1. 25.000 women advised to practice “vaginal douching”

In our laboratory we have, as of 1988, specifically coded all slides with BV and we advise the GP to council the patient to practice post-coital vaginal douching. Over these years we have issued such advice more than 25.000 times. Whenever we received subsequent cervical/vaginal follow up smear of such a patient, we observed dramatic and convincing effects on the flora. This was often even noticeable at gross inspection of the stained slide. The first sample often would appear darkly purple. This is because cocci stain with Hematoxylin while the red Eosin staining epithelia results in an overall purple color. In contrast the second smear, prepared after initiation of post-coital vaginal douching would be soft pink. We would invariably record a change from an abundant coccoid flora into a to a balanced mixed flora in this second smear. In some cases a slight dominance of lactobacilli had developed.

2. Passing on of the advice to council to the GPs

For GPs which refer their smears to our laboratory, “vaginal douching” is a well established entity and they readily pass this advice on to their patients. Not only do we confront our GP-clients with this concept at the time of reporting on the submitted individual smear, but in our annual reports we include summaries of our findings and the analyzed results of our combined efforts at improving the sexual hygiene (of men and women), inclusive of a proposed effect on the risk for cervical carcinoma (13).

Whatever advice we give our GPs, the overall effect of our strategy depends on the degree to which our GP-client passes this on to his/her patients. We were thus interested in the results of a specific enquiry into this subject we conducted amongst our client group. Of the 103 filled in return forms we received we recorded the following:

- 35% of GPs always follows the advice of our laboratory to council patients towards vaginal douching, 17% never passes this on. The remainder council only in the presence of additional clinical symptoms of BV (i.e. fluor, odor).
- 3% of GPs are of the opinion that to advice the women to practice post coital douching based on cytologic findings increases “medicalization”

At this point we would like to discuss a specific, very negative comment written on the return form. This GP writes us the following: “Is sperm the enemy of the *natural* environment of the female? What nonsense! Do pygmee women use daily douches?” However explicit this opinion is, we do not feel that in the light of our long standing positive experience with the patient category in which this advice was applied, that we should take this too serious and change our ways. We have no reason to be concerned that we have caused pathology with our advices to practice post coital douching, such as sexually transmitted diseases (STDs), pelvic inflammatory disease or ectopic pregnancy, because none of these effects were reported by the GPs who pass our advices to their patients. The GPs interviewed by us concerning this point must have given the douching advice for over 10,000 women over the past 15 years.

3. Vaginal hygiene in the Dutch GP practice

In the GP practice the subjects of vaginal douching and vaginal hygiene usually arise as a result of a patient complaint of change of vaginal secretions. Every young female notices such changes especially in the first years of becoming sexually active. It is of note that notwithstanding the propagation of the condom as a form of additional contraception and as prevention against the transfer of STDs, virtually no young couple heads this advice. After approximately three months they almost invariably consider the sexual relation as established, permanent, and thus safe and the use of condoms is discontinued. The young women appreciates an increase in secretions with the onset of regular intercourse, sometimes with an additional effect of the use of oral contraception. She is often aware of a change of smell of secretions with intercourse and in the case of malodor she usually immediately consults her GP. Even in the Dutch community there is as yet limited openness with respect to sexual hygiene between mothers and daughters: thus there is an important role here for the GP.

The wearing of tight fitting heavy textile garments (jeans) especially with thick stitched seams stimulates glands which produce vaginal secretions. Washing of the genitalia with soap changes the vaginal environment resulting in a disturbance of the normal balance of the vaginal flora. Nevertheless there is an understandable need for every young women to maintain cleanliness, especially of her more intimate parts.

4. Vaginal hygiene in different ethnic groups as observed in Dutch GP-practice

The two GPs involved in our studies of vaginal flora have both a practice with many women born outside The Netherlands. The first GP, Doctor van Schie, sees many Moroccan patients. She observed that she rarely sees young Moroccan females with complaints of fluor and malodor in her practice, while many of her Dutch patient turn to her with such complaints. Dr van Schie remarks that for Moroccan ladies is quite common to shave the genitalia which facilitates good hygiene. In addition, these Moroccan women follow the rules of the Koran and refrain from sexual intercourse during menstruation, the period in which the vaginal pH is alkaline. Finally, it should be remarked that these Moslim women keep in their bathrooms water containers which are used several times per day to rinse the vagina. For this rinsing they use their hands and no special equipment, such as a vaginal douche. However, the effect is quite similar to vaginal douching. We come back to the influence of this frequent rinsing on the bacterial flora practiced by Moslim women.

Our second GP, Ruben van Coevorden, sees many Japanese women in his practice. He remarks that Japanese couples exclusively use condoms for contraception. We observed in these women no post-coital coccoid overgrowth since there was no influence of the sperm on the vaginal pH. There is a strong focus on hygiene in Japanese culture with vaginal douching as a common practice. In the group of over 1000 Japanese females, doctor van Coevorden has not seen a case of STD, PID or ectopic pregnancy associated with the douching practice.

5. The negative opinion in the USA concerning vaginal douching

Dutch gynecologists have repeatedly pointed out to us that the medical literature would support the view that vaginal douching is harmful to women. Thus such practice should never be advised, and certainly not by a pathologist based on findings in the smear (14).

In order to address these concerns we reviewed the gynecological literature concerning vaginal douching. Most published opinions were from the U.S.A., and were indeed predominantly extremely negative! Thus, the Dutch gynecologist, following the American publications closely, were fully in their right to try to teach us a lesson. However, we asked ourselves: how relevant are the American papers for the Dutch medical scene? To answer this question, we read the American publications with great care.

First, we read that vaginal douching is a common event in the USA: 67 million women do this regularly (15). Zangh et al. estimate that one third of Caucasian and two thirds of African Americans use vaginal douching (32). This would suggest that to a certain degree the use of vaginal douching is culturally defined: with douching more common in the black population. A meta analysis (17) of published papers concerning the relationship between vaginal douching and ill effects on health concluded in 1997 that (American) women who used vaginal douching were more likely to have PID, ectopic pregnancies and perhaps even cervical carcinoma. But we can ask ourselves, who are the women who revert to vaginal douching? We read that douching women are predominantly the poorly educated women, those of the lower social strata of the population (22). It is a well-known fact that these women (and their partners) often have a high risk sex life, and generally a life style in which sexually transmitted disease and PID are more common (18, 19, 21). And, sadly enough, black women are over represented in these lower socioeconomic strata of the American society. In an American paper we read that in the USA race is related to vaginal flora, black women having more often BV than whites (26). These authors found that adjustment for sexual hygiene did not explain this difference.

It is certainly not justified to see the statistical association between STD, PID and ectopic pregnancy with douching as the proof that there is a simple, direct causal effect of the douching practice on these diseases. American authors conclude, perhaps prematurely, that: "vaginal douching is a modifiable behavior that greatly increases a woman's risk of ectopic pregnancy" (24). Questioning of the scientific basis of this conclusion (does the association between longevity and the keeping of cats predict that non-cat lovers will live longer if forced to accept the constant presence of what to them will easily become a life-shortening additional stress factor?) is further supported by the fact that authors did not correct by stratification of their study populations for the independent risk of the number of sexual partners and risk-conferring sexual preferences.

We are not the only ones to raise questions with respect to such conclusions. The American authors Rosenberg et al. (25) in their paper titled: "Does douching promote ascending infection? (note the important question mark!)", remark the following: American women who use the vaginal douche are often black, have sexarche early, have multiple partners, smoke, are poorly educated and poor. These are all characteristics which they find in American women with the negative triad of STD, PID and ectopic pregnancy. The ability to extract sexuality related patient information with any degree of confidence is very limited. This especially requires care and caution in interpreting of results of such studies as these details are of especially potential significance in discussion of causality (22, 27). The results of American studies show many inconsistencies of outcome, especially with respect to the degree of statistical association with previous periods of STD.

What comes first, STD or vaginal douching? There are indications that women have only commenced vaginal douching after having extra-marital or extra-relational (unprotected) casual sex as a result of a fear for STD (22). It is perhaps of importance to note here that tap water, with its in-extreme pH has little effect on the organisms causing STD (24).

In order to induce PID through douching it is necessary that contaminated or caustic fluids are introduced into the cervical canal. To actually cause fluid stream from the vagina into the cervical canal requires very high pressures, in excess of 200 mm mercury. Thus to have vaginal douching cause ascending infection, very high pressures have to be achieved, which is impossible with the commercially available douching equipment. Rosenberg et al. (24, 25) note only two cases of a direct causal relationship between vaginal douching and an ascending infection, both with an artificially raised very high vaginal pressure. One case resulted in bacterial (30) one in chemical (32) peritonitis, both reported in 1956. These types of instruments have not been sold in the USA since 1960 and no further similar cases have been reported.

6. The beneficial effects of douching on the vaginal flora

As stated above, we have seen in our practice that vaginal douching (or rinsing) can have a beneficial effect on the vaginal flora of women who had a BV as observed by us in an abundance of coccoid bacteriae in the smear. We were also interested whether we could observe in our practice whether women who rinse their vagina very frequently have a decreased risk to acquire BV. To study this, we used our archival smears and stained these with a special staining method, the Jones-Marres method (3), in which the bacteria are visualized. We identified the smears from ten Moroccan women of our GP and matched them with Dutch women of the same age in her practice (Dutch I of Table I and II). In addition, we identified 100 smears from Arabic women and matched them with 100 Dutch women of the same GP-practices (Dutch II of Table I and II). The Moroccan and the Arabic women had more frequently a completely clean smear in which no bacteria could be visualized (Table I). This indicates that the practice of vaginal rinsing of these Moslim women did remove the bacteria in many cases in such a degree that we could no longer see them in the smears. In addition, the bacterial flora, when present in large enough numbers for us to see, was more frequently in balance ("mixed flora"). Finally, we mention that we observed the signs of BV only in one Moslim lady (less than 1%), twenty times less frequent than in the Dutch ladies of the same GPs. It should be remarked that in this series the frequency of BV in the Dutch ladies was quite high, probably because these GPs worked in the inner cities with many women of the low socioeconomic strata. For Dutch women, there is a negative association between social class and vaginal douching. Thus in our country, the situation is completely opposite to that of the USA.

7. Ill effects of Bacterial Vaginosis

It is of interest to have a look at the recent literature concerning the ill-effects of BV. It is a well known fact that it can result in subjective phenomena such as odor or changed consistency of vaginal secretions, thus it has an ill effect on the Quality of Life, reason enough to remove the bacteria with water. But the ill-effects of the abundant growth of these bacteriae can be become even far more serious. The associated inflammation (16) can become severe enough to extend on collateral fashion to the tubes and endometrium (11). Apart from this, the production of amines such as putrescine and cadaverine by the coccoid bacteria (8, 10) which have their own carcinogenic effects, may explain some of the statistical associations between long standing cervicitis in women with a coccoid flora and epithelial changes (28). We observed in our practice that women with BV (as identified in the smears) are 13x more at risk to have CIN I/II and 19x more to harbour CIN III (5).

Recently, the association between BV and an increased risk for transfer of HIV was reported (29). The basis of this statistical association may be a change in cell bound surface markers or the presence of increased numbers of virus secreting cells (12). In addition, there may also exist a factual factor (2, 20) which enhances cell binding by the virus.

The risk of cervical carcinoma is linked with sexual behavior. Although human papilloma viruses (HPV's) are clearly implicated, these alone are insufficient to induce the carcinoma. Not alone the coccoid bacteria produce harmful amines, but also sperm contains oxidation products of amines. HPV infection may synergize with the effects of polyamine oxidation by suppressing apoptosis in keratinocytes carrying potentially oncogenic mutations, leading to the survival of the transformed cells (8).

8. Conclusions

The time has come to have a critical look at the practical significance of the reported association between the practice of vaginal douching in the USA and various serious diseases because it is highly unlikely that this has a causal basis since there are very important confounding factors in the USA populations. Dutch data show a beneficial effect of vaginal douching through post coital removal of sperm and the inhibition of abundant growth of the coccoid flora. Recent literature reporting that the effects of BV can synergize with those of HPV and HIV indicate that it even can be harmful to put vaginal douching of the sexually active population in an undeserved bad light.

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Appendix A: tables

Table I

Smears devoid of bacteria, data stratified according to ethnic group.

		No bacteria		Bacteria		Total
		n	%	n	%	n
I	Moroccan	5	50%	5	50%	10
II	Arab	52	51%	49	49%	101
III	Dutch 1	0	0%	10	100%	10
IV	Dutch 2	7	7%	93	93%	100

Table II

Bacterial flora as visible by the Jones Marres method, data stratified according to ethnic group.

	I Moroccan		II Arab		III Dutch 1		IV Dutch 2	
	n	%	n	%	n	%	n	%
Bacterial vaginosis	0	0%	1	2%	2	20%	18	19%
Cocci	0	0%	1	2%	1	10%	14	15%
Mixed flora	2	40%	18	36%	3	30%	19	20%
Lactobacilli	3	60%	28	57%	2	20%	23	25%
Lactobacillose	0	0%	1	2%	2	20%	19	20%
Total	5		49		10		93	