

Focus

Reversal of persistent cytolysis in cervical smears by alkaline douching

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INTRODUCTION

When a cervical smear is reported as less than satisfactory due to cytolysis or autolysis, what should the smear-taker advise? The latest information from the National Cervical Screening Programme¹ states:

"Cytolytic smears result from a proliferation of lactobacilli (normal vaginal flora). The action of these bacteria can cause a breakdown in squamous cell cytoplasm, making detection of abnormalities difficult. Cytolysis is most common in the latter part of the menstrual cycle. A smear taken around mid-cycle usually resolves the problem, although a small number of women do have cytolytic smears repeatedly. The presence of cytolysis is not related to the technique of the smear-taker in obtaining the smear."

Firstly, there are no specific guidelines for the small group of women with persistent cytolytic smears. Secondly, although these recommendations are helpful for women with natural cycles, there are no studies to guide us in the case of women with amenorrhoea or those using hormonal contraception or hormone replacement therapy (HRT).

If this is a benign, self-limiting condition devoid of symptoms, as many believe, is there any need to worry about it? Yes, because in some women it may be present over a period of years. If there have been previous cervical smear abnormalities, the uncertainty created when the cytopathologist can give only a limited evaluation,

Key points

- Cytolysis or autolysis in cervical smears is more common in the premenstrual week
- In menstruating women, the National Cervical Screening Programme recommends taking a repeat smear around mid-cycle
- If the repeat smear is cytolytic and it is important to obtain an optimal smear, check the vaginal pH using test tape. If the

causes considerable anxiety. It was this group of women who provided the impetus for finding a solution.

METHODS

Over the last few years I have taken a special interest in women with persistent cytolysis. I have examined them more closely, taken microbiological tests to exclude infections, measured the pH of the vaginal secretions and looked at the vaginal secretions using a Gram stain (Figure 1). No changes were made to the clinical management of the women with regard to the time intervals for cervical smears and at this investigative stage no formal research protocol was adopted.

Initially the pH measurements of vaginal secretions were carried out using Whatman's Narrow Range pH tape (pH range 3.0 - 7.0) or Merck's Spezialindikator strips (pH range 4.0-7.0). More recently measurements were carried out more accurately, with a Shindengen pH BOY-P2 meter (pH range 2.0-12.0) calibrated against two buffer solutions.

The rationale for using alkaline douching to reverse the cytolytic process, was to neutralise the high acidity. Also some practitioners² recommend alkaline douching to treat symptomatic cytolytic vaginosis. [Many gynaecologists do not recognise this as a pathological entity but that is another matter.] Others caution against the practice of unnecessary douching because it may predispose towards pelvic inflammatory disease.^{3,4} However, douching for a short time before taking a smear, in the absence of infection, can be considered a safe procedure.

Initially douching was recommended for 14 days, using a solution of sodium bicarbonate (baking soda), one rounded teaspoon in 600ml (one pint) of water (Figure 2). Later, through trial and error and using microscopy for guidance, it was found this time period could be reduced. Although cytolysis was reversed in one woman after five days of douching, in another two women six days was insufficient and they were advised to continue douching for a further week, when a satisfactory smear was obtained. In four women, douching for seven

pH is strongly acidic it is most likely due to an excess of normal lactobacilli

- An investigation of women with persistent cytolysis has shown that the process can be reversed by alkaline douching seven to 14 days before the next smear
- For an alkaline douche use one rounded teaspoon of sodium bicarbonate (baking soda) in 600ml (one pint) of water

days was sufficient. Two women were unable to get an appointment at the correct time and carried on douching for 20 and 21 days. Both smears were satisfactory, despite being taken in the premenstrual week.

Several women found it difficult or inconvenient to comply with the douching instructions. In a country where douching for personal hygiene is not usually practised, women needed a clear explanation of what was required. A minimum of two rinses or washouts over a bath or shower were advised, continuing as needed until the flowback was clear. Douching was not recommended more than once a day and women were advised to continue douching right up until the day their smear was taken.

Expensive douching equipment was not recommended. Items a woman may already have or can easily obtain are: a large syringe or pipette, a disposable douche from a pharmacy or other retailer supplying personal products, a plastic bottle with a long nozzle, a turkey baster. Although she found it a bit time-consuming one woman used the applicator from her vaginal spermicide.

RESULTS

The most consistent findings are an excess of lactobacilli in the vaginal flora and an acidic pH <4.5. The normal pH of the vagina is 3.86 to 4.45 (average pH of 4.0) and most women were at the lower end of this acidic range.

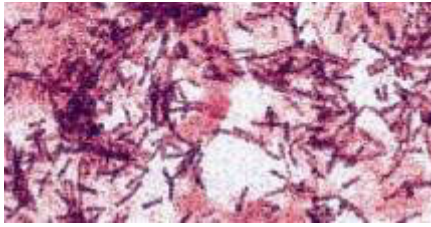
The vaginal squamous cells show the same widespread cytolysis as do the cervical cells. There is usually no excess of polymorphonuclear leucocytes, indicating inflammation or infection, although often there is a history of past thrush infections. Thrush grows very well in an acidic environment.

I have now followed up 20 women with a minimum of two and a maximum of six previous cytolytic smears. In all of these women microscopy before douching showed widespread cytolysis with excess lactobacilli. After alkaline douching, even though the pH was sometimes still within the acid range, there was a significant increase in intact cells and satisfactory smears were obtained.

The age range was from 27 to 58 years, the oldest, the only postmenopausal woman, on continuous HRT. Most women were nulliparous, three were parous. Most women enjoyed good health but one was an insulin dependent diabetic.



Figure 1. Gram stain of vaginal



secretions showing excess lactobacilli, few polymorphs and widespread cytolysis with

bare nuclei and shreds of cytoplasm. No intact cells can be seen in this field

Cytolysis occurred in a variety of hormonal

states. Because the majority were referred from the Family Planning Clinic there was a high proportion of young women using the combined oral contraceptive pill (14 cases). One young woman taking a combined pill correctly had not had a withdrawal bleed for over a year. Two women used the progestogen-only pill. Three women had natural cycles. It is not known whether women using oral contraception have more or less physiological cytolysis or whether there is a cyclical variation, but clearly taking the pill does not prevent cytolysis.



**Figure 2.
Recipe for
alkaline
douche: one
rounded
teaspoon of
sodium**

**bicarbonate (baking soda) in 600ml
(one pint) of water**

It is not known for how long the vaginal flora supports the excess lactobacilli and under what conditions, but the flora can change significantly with time. In one woman there was documented evidence of the reverse situation, one year earlier, when she had presented with an alkaline pH, a lack of lactobacilli and typical features of bacterial vaginosis.

RECOMMENDATIONS

Further studies are needed to confirm these preliminary results and this will be done by means of more formal research. Other alkaline preparations, eg, gels, pessaries or tablets were considered more likely to interfere with the quality of the smear, especially using the Papanicolaou technique, but these limitations may not apply to the newly introduced ThinPrep® technique. This may be another avenue for research.

In the meantime, the following guidelines are suggested:

- With the first cytolytic smear, reassure the woman that cell breakdown is a normal process which is more apparent in the premenstrual week. If she is menstruating, ask her to return for her next smear earlier in the cycle. No other instructions are needed. [It is not known whether this advice is applicable for women taking hormonal contraception or cyclical HRT.]
- When she returns for her smear, note where she is in the menstrual cycle. Check the vaginal pH with test tape, taking the sample from the lateral vaginal wall, not the cervix. If this is strongly acid, take the smear but mention you will give her further advice if the repeat smear is cytolytic. If ThinPrep® smears are available and affordable, recommend this technique be used, as the filtering process may result in a better quality smear. However, if the cytolysis is extensive, smears will still be reported as cytolytic.
- If the repeat smear is cytolytic, advise her to wait for her next period, if she is menstruating, then on Day Five commence daily alkaline douching. Continue this for seven to 14 days before the next smear, right up until the day the smear is taken, even if this takes longer than 14 days.
- For subsequent smears the douching should be repeated only if the vaginal pH is strongly acidic.

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