

# POSTCOITAL TEST AFTER VAGINAL WASHING WITH $\text{NaHCO}_3$

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**Summary:** The Authors treated with vaginal washing of  $\text{NaHCO}_3$  (Sodium Bicarbonate) 55 patients whose postcoital tests were persistently poor or negative. The cervical pH increase made the test positive in about 30% of cases and three pregnancies occurred. This treatment with  $\text{NaHCO}_3$  proved to be useful, handy and welcome to patients.

Of the various causes of sterility the cervical factor plays a leading role in a percentage ranging from 5 to 15% of cases (<sup>1, 2</sup>). Such pathology may alter the conceptional ability both through anatomical and functional alterations. Those alterations are different; however, both have the feature of yielding a repeatedly negative postcoital test (PCT) (<sup>3</sup>).

Several factors, such as hormonal, infections, immunological ones and cervical pH may more or less markedly affect mucus-sperm interaction.

Recent reports (<sup>4</sup>) emphasized that pH changes can modify mucus-sperm interaction; in fact a significant difference was found in the spermatozoa mobility and progression in the patients group with low values of pH (<6) compared with that showing elevated values of pH (>6); other Authors (<sup>5</sup>) noticed besides that PCT is negative if cervical pH values are <7.

Both in animals (<sup>6</sup>) and in men (<sup>7</sup>) the influence of cervical pH on nemaspermic motility was been widely demonstrated. It has been known for a long time that cervical pH levels are subject to cyclic monthly changes (<sup>8</sup>), getting to alkaline peak in periovulatory phase; furthermore infertile couples conceive more easily if cervical pH is alkaline (<sup>9</sup>).

For this reason we think it is right to assay how PCT changes after vaginal

washing with  $\text{NaHCO}_3$  in patients with persistently poor or negative PCT and low values of cervical pH.

## MATERIAL AND METHODS

During 3 years we have examined 75 couples among those addressing our Conjugal Sterility Centre, who showed a persistently poor or negative PCT and cervical pH <7.

The cervical score of our patients was  $\geq 8$  and semen analysis of their partners presented at least a count of  $10 \times 10^6/\text{ml}$  spermatozoa and motility >50%.

Patients whose tests were negative because of cervical anatomical pathologies, or too dense, and poor mucus or important oligoasthenospermia have been excluded.

The couples were divided into two groups: the first, including 52 patients, was treated with vaginal washing of Sodium Bicarbonate (300 g in 700 cc of water, 30 to 60 min prior sexual intercourse), the second, made of 23 pts, considered as a control group did not take any treatment.

Each group was then divided into two subgroups: the first included patients with a poor PCT, the second those with a negative test.

PCT was performed two hours after sexual intercourse; if the test resulted negative, it was repeated after 6 to 8 hours. The test was performed three times in a month, during two or more cycles, every other day in periovulatory phase, on the basis of basal temperature diagram and cervical score, calculated by Isler criteria (<sup>11</sup>).

The test was considered as: *negative* when there were no spermatozoa or they were agglutinated or immobile; *poor* when there were 1 to 3 spermatozoa HPF with good motility; *doubtful* when there were 4 to 10 spermatozoa HPF with good motility; *positive*: 10 to 20 spermatozoa HPF with good motility.

All patients before treatment showed a cervical pH <7; this value was checked always

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Table 1. — *PCT changes after vaginal washing with sodium bicarbonate.*

PCT	No. of patients	Doubtful	Positive	Negative response	Pregnancy
Poor	20	5 (25 %)	10 (50%)	5 (25 %)	3 (15%)
Negative	32	11 (34 %)	5 (15%)	16 (50 %)	— —
<i>Control group:</i>					
Poor	10	1 (10 %)	1 (10%)	8 (80 %)	— —
Negative	13	1 ( 7.6%)	— —	12 (92.4%)	— —

Negative: no spermatozoon or immotile spermatozoa/HPF; poor: 1-3 motile spermatozoa/HPF; doubtful: 3-10 motile spermatozoa/HPF; positive: 10-20 motile spermatozoa/HPF.

before beginning the test, by a pHmeter with a glass electrode. The patients were precisely advised on the method for recording basal temperature and how and when to make the vaginal washing.

## RESULTS

Our results are reported in table 1. In the first group which treated poor PCT (20 cases) we noticed an improvement in 5 of them (the poor test became doubtful), a clear positivization in 10 of them, while in the remaining 5 cases no results were obtained. For what concerns the pregnancies, in this group 3 patients with positive PCT became pregnant, 2 of them ended it, the remaining had an abortion at 10° week.

In the 32 couples with negative PCT we reached an improvement in 11 cases (34%), a positivization in 5 (15%), while in 16 (50%) we have not had any modification. In this group no pregnancy has been achieved.

In the group of patients not treated and considered as control, 1 case on 10 with poor PCT is improved becoming doubtful, while in the remaining 8 cases any change was not occurred. In this group no pregnancy have been observed.

In table 2 we reported the cervical pH average values in the treated group (before and after vaginal washing with  $\text{NaHCO}_3$ ) and in the control group not treated.

The pH values resulted lower in groups with negative PCT. Vaginal washing with

Sodium Bicarbonate was able to increase cervical pH of about 7%. All pregnancies occurred in the group with  $\text{pH} > 7.3$ . In the control group pH is nearly unchanged and pregnancies do not occur.

## DISCUSSION

On the basis of our findings, washing with Sodium Bicarbonate was able to modify positively a poor or negative PCT. In fact we obtained a clear test positivization in 50% couples with poor PCT, and in 15% of those with negative PCT.

In our experience, test became totally positive in 30% of cases in the treated group, and pregnancy rate was 20%. We have not reached the extremely positive results reported by other Authors<sup>(10)</sup>, which refer a total positivity of test in 82% of cases and 16 pregnancies (55%) in the group with normal semen, and positivity of 75% in 15 pregnancies (34%) in the group with altered semen analysis.

Table 2. — *Cervical pH changes after vaginal washing with sodium bicarbonate ( $\text{NaHCO}_3$ ).*

PCT	No. of patients	pH (mean $\pm$ SD) before	pH (mean $\pm$ SD) after	Pregnancy
Poor	20	6.86 $\pm$ 0.10	7.35 $\pm$ 0.24	3
Negative	32	6.66 $\pm$ 0.17	7.17 $\pm$ 0.18	—
<i>Control group:</i>				
Poor	10	6.73 $\pm$ 0.17	6.71 $\pm$ 0.18	—
Negative	13	6.65 $\pm$ 0.18	6.67 $\pm$ 0.18	—

This considerable difference might derive from a different selection of patients.

The mode of action of this treatment may be various and at different levels. At vaginal level it can decrease acidity, remove discharges and anomalous secretions, decrease the bacterial load if present, getting in this way a more favorable milieu to spermatozoa. At cervical level the electrolytic composition is modified (Cl, Na, K) <sup>(10)</sup>, it is the mucus alkalinity increased, all factors improving nemaspermic motility. Furthermore cervical pH variation may play an important role on immunological mechanisms and factors; it is known, indeed, that pH changes affect the antibody bound affinity in several immunological reactions.

At last, on the basis of our experience and of other Authors', we believe that this method, handy and welcome to patients, is useful in cases of infertile couples with persistently poor or negative PCT.

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