CERVICAL MUCUS RESPONSE—A GUIDE TO TIMING OF POST COITAL TEST

by

MIRA NAIN RAISINGHANEY, M.D., D.G.O., D.F.P.
NITI BANDARIA, B.Sc.
and
RAMA VAIDYA, M.D., D.G.O., D.F.P.

Introduction

Poor post-coital test (PCT) has been implicated as the causative factor in a significant number of infertile couples. Although the exact incidence is unknown, various investigators have reported an incidence of 10%-50% (Devajan and Nakamura; Haji *et al* 1977; Moghissi, 1976). Poor PCT may be due to a cause in cervical mucus or semen. However, poor PCT may remain unexplained in some couples where cervical mucus response is adequate during pre-ovulatory period and semen analysis is also normal. Incompatibility between sperms and mucus due to immunologic factors has been implicated as the cause in these cases. Thus a PCT provides an opportunity to detect a male factor, (Rege *et al* 1978; Tredway *et al* 1975), failure of cervical glands (Devajan *et al* 1970) or an incompatibility in cervical mucus sperm interaction (Meitler *et al*, 1976; Moghissi *et al* 1964). Several *in vivo* and *in vitro* tests (Devajan and Kunitake, 1969; Devajan *et al* 1970; Newton 1976) have recently been devised by various investigators to improve the quality of information obtained by the test. However, whichever of these tests is employed, one has to assure that PCT is performed at an ideal time in a given menstrual cycle i.e. during the pre-ovulatory period when cervical mucus response is expected to be maximum in quantity and ideal in quality for sperm reception, transport and survival.

The timing of PCT that would synchronize with the maximum cervical mucus response remains ill-defined in the literature. The mention of timing it during 'mid-cycle' or 'pre-ovulatory' period can remain vague or we impose frequent visits for the patients in the follicular phase till a good mucus response is identified. It is generally advocated that an appropriate timing for PCT is 1-2 days prior to the rise in BBT. In our country where illiteracy prevails, record of basal body temperature may not always be possible, hence it was essential to determine the time of maximum cervical mucus response in women with regular ovulatory or irregular ovulatory/anovulatory cycles in a group of infertile women.

In the present paper we report the results of our study to determine the ideal time for performing PCT during a given cycle in 49 infertile women.

Material and Methods

Two groups of patients were studied. The first group consisted of 35 women

Institute for Research in Reproduction (I.C.M.R.) Jehangir Meranji Street, Parel, Bombay-400 012.

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with regular menstrual cycles of 28 ± 2 days. They were studied for cervical mucus starting from day 9 ± 1 day of the cycle on alternate days till the maximum cervical mucus response was noticed and then upto its change. Fifty-two cycles in all were studied in this group. The second group consisted of 14 women with irregular and/or long cycles. They were similarly studied throughout the cycle on alternate days or twice a week for 22 cycles.

Cervical mucus was aspirated using a long curved metal cannula attached to a syringe (Fig. 1). It was observed for its quantity, viscosity, transparency, spinnbarkeit and fern patterns. The mucus scoring was done according to the modified WHO method as shown in Table I. Each parameter has a maximum score of 3, four parameters are taken into consideration i.e. the maximum score for a particular mucus sample would be 12. The opening of the os was not considered for scoring because in patients with secondary sterility with torn cervices it was difficult to utilize this parameter. A score of 8 or more was considered adequate.

Results

The maximum cervical mucus score was on day 12 to 14 in 55% of the cycles in patients who had regular cycles of 28 ± 2 days (Fig. 2). Eighty-five per cent of the cycles in this group of patients had maximum mucus response between days 11 and 15, while the remaining 15% had maximum response in cervical mucus prior to day 10 or as late as day 19 of the menstrual cycle.

It was observed that cervical mucus

Figure 2

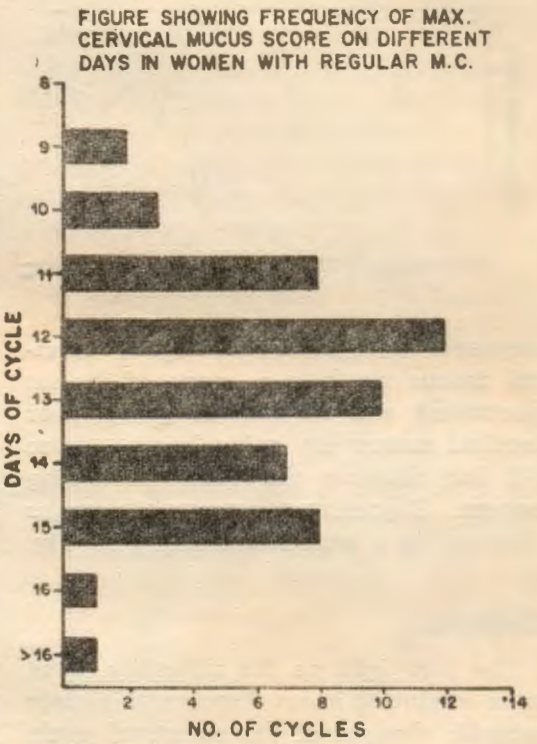
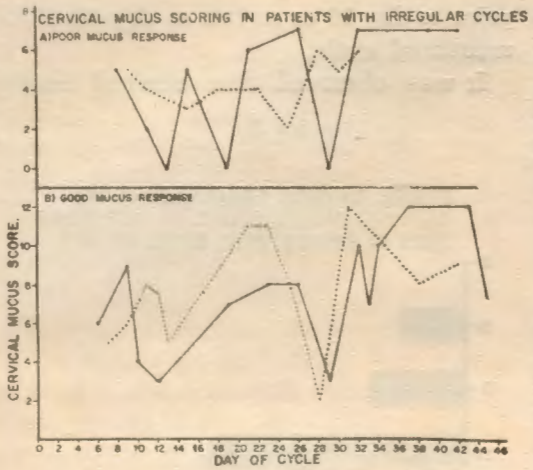


TABLE I
Cervical Mucus Scoring

	0	1	2	3
Amount	Nil	Scanty	Moderate	Profuse
Transparency	Nil	Semi transparent	Clear	Watery
Spinnbarkeit	Nil	1-6 cms	7-12 cms	12 cms
Fern	Nil	Immature fern	Typical palmate pattern with branching	Unbroken sheets of branching fern

response fluctuated in an unpredictable manner in women with irregular cycles as can be seen in Fig. 3. Two types of

Figure 3



responses were observed—a good cervical mucus reaching a score of 12 but fluctuating and in another group poor cervical mucus not going beyond score 6-7 but showing the same fluctuating pattern. Representative types of patterns observed in 4 women are shown in Fig. 3.

Discussion

The investigations for infertility have to be conducted in synchrony with certain periodic changes of the menstrual cycle and hence are time-consuming. For example, hysterosalpingography must be done within the first 10 days of the menstrual cycle and atleast about 48 hours after the bleeding has stopped. Endometrial biopsy must be done pre-menstrually in order to obtain the indirect evidence of ovulation and also to assess the adequacy of luteal function. These must be done in different cycles. Thus multiple investigations to detect the cause or contributing causes of infertility need to be precisely timed to get adequate, optimum and accurate information. This imposes a certain unavoidable delay in the work-up of couples.

There is a great controversy as to the timing of PCT in respect to the days of the menstrual cycle. It is generally agreed that it should be performed just before ovulation when the cervical mucus is best in quality and quantity. But this day is difficult to predict without certain investigations like basal body temperature or hormonal determinations.

In the present series, we made an attempt to time P.C.T. by serial examination of progressively rising cervical muscus response. Only 55% of cases with regular menstrual cycle of 28 ± 2 days had maximum mucus response between days 12 to 14. If we pinpointed day 13 or 14, about 45% of cases would miss the ideal time and the whole cycle would consequently be wasted. Hence in order to avoid missing the ideal time and yet not calling the patients too frequently we recommend that the patient come from day 10 on alternate days till the cervical mucus is found to be progressively rising. It is usually observed that a score of 8-10 will either stabilize or rise to a maximum of 12 in a day. Thus the day on which a mucus score of 8-10 is detected, PCT can be requested the following day. This is the ideal time to call the patient for PCT. However, this is only true for women with regular menstrual cycles where the mucus response is predictable.

In patients with irregular cycles it was observed that the mucus pattern was fluctuating. These patients, irrespective of their ovulatory status, require clomiphene citrate for induction of ovulation. It is helpful to assess the cervical mucus-sperm interaction in these cases prior to undertaking time-consuming and costly

therapy. In some women where fluctuating cervical mucus response is also poor, pharmacologic induction of cervical mucus allows assessment of the capacity of cervical glands to respond to oestrogens. In our clinic, we induce cervical mucus with ethinyl estradiol in a dose of 0.05 mg/day for a few days prior to performing PCT in these oligo-amenorrhoric women.

In the present paper we have investigated the ideal time for performing PCT in a given cycle in regularly menstruating women. It was found that in order to identify good cervical mucus response patients should be examined on alternative days from day 10 of the cycle till adequate response was detected. These repeated examinations would impose only 2 or 3 extra visits in a given cycle rather than wasting the cycle. We recommend pharmacologic induction of cervical mucus for timing of PCT in women with irregular cycles, irrespective of their ovulatory status.

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See Fig. on Art Paper IV