

Symptom patterns in women with premenstrual syndrome complaints: a prospective assessment using a marker for ovulation and screening criteria for adequate ovarian function

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Symptom patterns in women with Premenstrual Syndrome complaints: a prospective assessment using a marker for ovulation and screening criteria for adequate ovarian function

This study examined the symptom patterns of women seeking help for Premenstrual Syndrome (PMS) complaints. Seven women who were less than 35 yrs, within 10% of ideal body weight and who had experienced a full-term pregnancy, completed a daily health diary during an ovulatory menstrual cycle. In the luteal phase, symptom summary scores of the PMS group increased ($P < 0.05$) and were markedly higher ($P < 0.05$) from baseline acyclic scores of four ovulatory women who denied menstrual-related distress. To examine severity changes in individual symptoms, a total of 399 cases representing 57 symptoms from the seven 45-day diaries were evaluated for menstrual cycle entrainment. Of the 246 symptoms that met the criteria for a cycle phase change (62%), the classic PMS pattern of low/high severity was the most common (40%). Seven different subtypes of the PMS pattern were identified, four of these subtypes demonstrated a severity score elevation at ovulation as well as during the premenstruum. For individual women, the majority of symptoms (65%) displayed only two pattern types, suggesting a common rhythmic entrainment of symptom intensity.

INTRODUCTION

Women in today's society are in limbo as to what action to take with respect to their menstrual discomforts. Feminists (Laws 1983, Rome 1986) have criticized the medicalization

of Premenstrual Syndrome (PMS) at the same time that experts within the medical profession advocate medical treatment (Dalton 1987). Physically able women are accustomed to caring for their menstrual needs, seeking professional assistance only when they perceive that something about their cycle is different. Often it is a nurse who

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verifies the nature of their situation and assists them to plan further action. A self-care approach is a logical strategy for managing menstrual health problems. To serve as a self-care advocate for women with premenstrual discomforts, the nurse must be knowledgeable about the influence of the menstrual cycle on health and well-being.

Clinicians since the time of Hippocrates have recognized that there are physical and psychological changes that occur in women prior to their menses. In the nineteenth century, physicians expressed concern regarding the possible deleterious effects of woman's 'periodical ordeal' on her general functioning. In the extensive medical literature of the time concerning the relationship between femininity and health, the impact of the menstrual cycle is repeatedly considered, however, no attempts were made to define particular effects of different phases.

Outside the medical literature there are references to premenstrual disturbances affecting health and behaviour. The socially deviant behaviour of August Strindberg's heroine, Miss Julie, is explained by one of her servants: 'It's just her time coming on. She's always queer then.' Since Strindberg, a number of writers and dramatists — including Anais Nin, Doris Lessing, William Faulkner, John Fowles and Fay Weldon — have made similar references to menstrually related alterations in mood and behaviour (Clare 1983).

It was not until 1931 that these alterations were first described in the health care literature. Frank (1931), a gynaecologist, attributed the premenstrual changes to faulty ovarian function, whereas Horney (1931), a psychiatrist, explained them as the manifestation of repressed sexual desire and power. Among contemporary researchers there is still disagreement on the aetiology of PMS. Numerous theories have been proposed, ranging from the purely psychological to the biochemical, but consistent data in support of any single aetiology are lacking.

The most striking features of studies during the last decade relate to their variable and disparate findings. Over 150 symptoms have been identified when data are collected by use of retrospective questionnaires. Only recently has prospective information been obtained about the symptom patterns in women with PMS (Magos *et al* 1986), in keeping with the recommendations of a US government panel to define proper diagnostic criteria (Blume 1983).

Estimates of the prevalence of PMS vary greatly from sample to sample (Shader & Ohly 1970, Hargrove & Abraham 1982), ranging as high as 90% (Sutherland & Stewart 1965). Recent studies, however, report that even though 30% to 50% of women experience mild or moderate symptoms perimenstrually, only 10% to 20% experi-

ence severe and disabling symptoms, with 5% to 7% of women exhibiting the classical PMS pattern (Woods 1986, Johnson *et al* 1988, Andersch *et al* 1986). Woods (1986), when studying perimenstrual symptoms using prospective data collection methods, concluded that 'women who report moderately and extremely severe symptoms clearly constitute a minority of women'.

Variability in symptom incidence

The striking variability in symptom incidence has led one of the leading researchers in this field to advise that

cyclic physical and emotional changes occur with such frequencies in relation to the menstrual cycle that they must be considered a normal event in the lives of most women of reproductive age, and that for the majority of women, physical and emotional changes associated with the menstrual cycle are minor and well tolerated

(Reid 1986)

PMS researchers and clinicians are acknowledging that a part of the 'variability' of PMS can be attributed to its conceptualization and to inadequate research methodologies. Feminists (Laws 1983, Rome 1986) have criticized traditional conceptualizations of PMS, suggesting that the labelling of PMS as an illness is a way to ignore and invalidate female rebelliousness. They emphasize the importance of women being accountable for their actions. Zita (1988), when criticizing the medicalization of premenstrual changes, pointed out that

the step from observable cyclicity to the presumption of pathology, which requires disease model thinking, is an epistemic leap that requires careful scrutiny of the evidence

Critics have also pointed to investigator bias in the design of symptom measurement tools (Woods 1986, Zita 1988). Most of the symptom checklists used in PMS studies emphasize negative symptoms and fail to include positive changes in health, mood or behaviours. Rome (1986) refers to Emily Cullpepper, who has run menstrual workshops for years and reported that women will send her drawings, poems and other creative work that they have felt particularly inspired to do premenstrually. Miota (1987), who has been treating women with PMS since 1981, has also reported that artists mention the premenstruum as a creative period.

A number of review articles in the 1980s have defined important methodological weaknesses of early studies (Reid 1986, Rubinow & Roy-Byrne 1984, Abplanalp 1983).

A major methodological problem of the past has been the use of retrospective questionnaires for data collection which has been shown to favour the recall of perimenstrual symptoms but not those at other times of the month (Zita 1988, Miota 1987). Guidelines have now been developed for the diagnosis of PMS relying heavily on the prospective assessment of multiple cycles to confirm retrospective self-reports (Blume 1983).

Given the general acceptance among researchers of an association between endocrine factors and premenstrual changes, it is somewhat surprising that few studies of symptom distribution and classification have adequately defined the hormonal status of the study populations. Endocrinologically diverse samples have included infertility clinic patients, women after gynaecology surgery, college populations, pregnant women and oral contraceptive users (Rubinow & Roy-Byrne 1984). Even in studies of non-pregnant, menstruating subjects, screening criteria have failed to account for the influence of ageing, body weight and fertility status as important predictors of adequate ovarian function. Oestrogen production is dramatically influenced when body weight falls below or exceeds 20% of ideal body weight (Warren & Vande Wiele 1973, Warren *et al* 1974, Frisch 1985) and may begin to diminish as early as age 35 as a result of the normal premenopausal changes in the reproductive axis (Speroff *et al* 1989). In women with a history of multiple pregnancy losses, a luteal phase defect in ovarian progesterone secretion has been recognized as an aetiological factor (Sitten & McDonald 1973). Menstrual cycle disruptions or irregularities typically occur as later sequelae of these hormonal aberrations and not as an early sign of dysfunction.

Ovulation

Much attention has been paid in the literature to the need for the confirmation of ovulatory status of participating subjects through concurrent hormonal measures (Backström & Hammerback 1986, Halbreich *et al* 1988, Schechter *et al* 1989). Studies of menstrual symptoms have frequently relied on cycle length and regularity as evidence of ovulation, using days before or after menses onset as reference points for estimating the follicular and luteal phases of the ovarian cycle (Casper & Powell 1986, Rosen *et al* 1988, Morse & Dennerstein 1988, York *et al* 1989). Basal body temperature changes across the cycle have a less than acceptable false-positive rate (20%) as a clinical marker of ovulation (Speroff *et al* 1989). Thus, in many cases, conclusions have been drawn about a relationship between reproductive biology and symptom changes based on data

from heterogeneous samples lacking hormonally defined cycle phases.

Few studies look beyond a summary symptom score which fails to give a picture of the nature of the types of symptoms and how they change in the cycle. In most studies the symptoms have been clustered together in order to find similarities (Dalton 1987, Halbreich *et al* 1982). The patterns of symptom clusters have also been recorded (Magos *et al* 1986) but the pattern of individual symptoms, and whether individual symptoms pertaining to the same cluster display the same pattern over the menstrual cycle, has not been assessed.

It would appear that there is a need for further refinement of PMS research methodologies, particularly with respect to sample selection and design considerations. In keeping with the recommendations of a number of critics to improve sample homogeneity, collect prospective data and better define the hormonal milieu, the following study was conducted.

METHODOLOGY

The purpose of this prospective exploratory study was to examine the symptom characteristics and patterns of healthy women with adequate ovarian function who identify themselves with PMS. For the purpose of the study PMS was defined as

the cyclic occurrence of symptoms that are of sufficient severity to interfere with some aspects of life and appear with a consistent and predictable relationship to menses

(Rubinow & Roy-Byrne 1984)

This definition takes into account the following aspects: the type of symptoms experienced, the intensity of the symptoms, the relationship between symptom appearance and menstruation, and the symptomatic baseline on which symptoms fluctuate.

Sample selection criteria

Subjects were recruited from applicants to a larger study (NIH-NU-01373) who were drawn from patient populations seeking medical treatment for PMS complaints. Eligibility for participation was based on the following criteria designed to ensure a biologically similar population and meet the screening recommendations suggested by others (Rubinow & Roy-Byrne 1984, Abplanalp 1983)

- 1 negative history for chronic or current medical, gynaecological and endocrine illness

- 2 $\pm 10\%$ of ideal body weight
- 3 21–35 years of age
- 4 regular menses every 25 to 32 days
- 5 at least 6 months postpartum, nonbreastfeeding
- 6 negative history for oral contraceptives or other chronic medications for at least 6 months
- 7 negative history for psychiatric disorder
- 8 history of at least one full-term pregnancy
- 9 history of premenstrual complaints for at least 6 months and self-perception of having severe PMS
- 10 willing to delay medical or behavioural treatment for one cycle

Study protocol and measures

The study was approved by the Institutional Review Board of the University of Michigan School of Nursing and was performed after written informed consent had been obtained. The women completed a daily health diary during one ovulatory cycle. An ovulatory cycle was defined as one in which the presence of a midcycle urinary luteinizing hormone surge was detected using the First Response Ovulation Predictor Test (Tambrands Inc.) during a menstrual cycle which was preceded by two cycles of similar regularity. This enzyme-linked, immunosorbent assay for use in the home measures luteinizing hormone (LH), which normally increases in female urine at midcycle as a stimulus for ovulation (the LH surge). Subjects began testing first-morning urines approximately 16 days before the next expected menses and continued for 6 to 9 days until the detection of the LH surge, measured by a significant colour change in the test medium.

Symptom assessment

Menstrual symptoms were self-assessed by use of the Woods Daily Health Diary (DHD). This instrument includes a symptom checklist based on item pools generated from three well-studied menstrual questionnaires (Moos 1968, Steiner *et al* 1980, Halbreich *et al* 1982). General symptoms frequently experienced by women of this age group are also included in the checklist so that the domain of symptoms is not restricted to menstrual symptoms. Women are also given the option of adding other symptoms not listed. Participants are asked to indicate which symptoms they experience each day and to rate the severity of their symptoms on a five-point scale where 0 = no experience, 1 = barely noticeable, 2 = mild, 3 = moderate and 4 = severe. It takes approximately 10 minutes to complete the DHD.

In order to identify a summary symptom pattern for each subject across the menstrual cycle, the method developed by Woods (1986) was used. Data from the daily diaries were synchronized with menstrual cycle days, converting calendar days into cycle days (day 1 = first day of menses). Summary symptom scores for the 40 menstrual symptoms were determined from data collected between days 4 through to 10 in the follicular phase and days -7 through to -1 before menses in the luteal phase. The mean of the three most severe days was calculated for both the follicular and the luteal phase and a mean difference score was determined.

Definition of symptom scores in ovulatory women without menstrual-cycle-related complaints

In a random community sample of 345 menstruating women of diverse age and body weight, the Woods method detected a significant premenstrual rise in symptomatology in only 8% of the subjects, postmenstrual scores were 10 or less and premenstrual scores were greater than 18 with a difference score of 11 or more (Woods 1986). As one-third of this random sample were oral contraceptive users and no hormonal measures were used to assess reproductive function, the incidence and characteristic scores associated with the follicular and luteal phases of ovulatory cycles in the absence or presence of premenstrual syndrome could not be determined.

In order to estimate the expected baseline level of symptomatology in ovulatory women, four normal volunteers who reported no significant symptoms entrained to their menstrual cycles and who fulfilled criteria 1 to 7 agreed to complete the DHD for 1 month. All four women demonstrated ovulatory levels of plasma oestrogen and progesterone in the week prior to menses in the two menstrual cycles preceding their participation. For this group, the mean summary symptom score was 19.1 ± 1 in the follicular phase and 19.6 ± 1 in the luteal phase (Table 1). For all four individuals, the mean difference score failed to meet criteria for a significant change between the two phases, although the level of symptomatology among the women was diverse.

Summary pattern of severity change

A summary pattern of the severity change in the 40 menstrual symptoms across the cycle phases were determined by the method developed by Mitchell *et al* (1984). For each subject, a pattern was defined in relation to the follicular phase (FP) and luteal phase (LP) of the menstrual cycle according to low (L) or high (H) severity as described below. In order to say that an adequate cycle-phase

Table 1 Symptom severity pattern,* length of cycle and day of LH surge for subjects

	Mean follicular score	Mean luteal score	Difference of the means	Pattern	Length of cycle (days)	Day of LH surge
PMS subjects (<i>n</i> = 7)						
001	42.3	69.5	27.2	H/Her	30	18
002	8.7	22.3	13.7	L/H	31	17
003	58.7	35.3	23.3	Her/H	25	13
004	9.0	21.0	17.0	L/H	26	13
005	6.0	31.7	25.7	L/H	30	14
006	27.7	83.7	56.0	H/Her	30	17
007	6.3	99.3	93.0	L/H	30	16
Mean	22.7 ± 2.1	51.8 ± 3.2	36.6 ± 2.8		28.9 ± 2.3	15.4 ± 2.1
Control subjects (<i>n</i> = 4)						
101	26.8	17.3	9.5			
102	32.2	34.0	1.8			
103	13.7	21.0	7.3			
104	3.7	6.0	2.4			
Mean	19.1 ± 1.3	19.6 ± 1.2	5.3 ± 3.7			

*The method used to identify symptom severity pattern was developed by Mitchell *et al* (1985)

difference existed, the subject had to demonstrate a difference in symptom severity between the follicular and luteal phase of equal or more than 11

- 1 Summary patterns of increasing severity across the cycle *L/H* low SS at the FP, high SS at the LP (the typical PMS pattern) — the follicular score < 10 and the luteal score is ≥ 18, *H/Her* high SS at the FP, higher SS at the LP — the follicular score > 10 and the luteal score is ≥ 18
- 2 Summary patterns of decreasing severity across the cycle *Her/H* higher SS at the FP, high SS at the LP — the follicular score ≥ 18 and the luteal score is > 10, *H/L* high SS at the FP, low SS at the LP — the follicular score ≥ 18 and the luteal score is < 10
- 3 Summary patterns showing no severity change across the cycle *L/L* low SS at the FP and LP — the cycle phase difference is < 5, the follicular score is < 10 and the luteal score is < 18 or the follicular score is < 18 and the luteal score is < 10, *H/H* high SS at the FP and LP — the cycle phase difference is < 5, the follicular score is ≥ 10 and the luteal score is ≥ 18 or the follicular score is ≥ 18 and the luteal score is ≥ 10

This method was then adapted in order to identify severity patterns for each of the DHD symptoms including those not considered menstrual-related. For each symptom, a pattern was defined in relation to the follicular phase (FP) and luteal phase (LP) of the menstrual cycle according to low (L), medium (M) or high (H) severity

RESULTS

The mean age of the PMS subjects was 31.8 ± 2 years. During study, the mean length of the menstrual cycle was 28.9 ± 2 days with the day of the LH surge occurring between cycle day 13 and 18 (mean = 15.4 ± 2)

Table 1 presents the mean summary symptom scores and patterns of the PMS subjects compared with those of the normal volunteers. Although the mean summary symptom score for the follicular phase was similar for both groups, the mean score of the luteal phase of the PMS group was higher than for the control group ($P = < 0.05$, Mann-Whitney U, $U = 3.5$). The mean of the difference between the means also reached significance ($U = 0.5$)

With the exception of subject 3, the PMS group displayed summary pattern types of increasing severity across the menstrual cycle. Figure 1 shows summary patterns of all subjects demonstrating the low/high, high/higher and higher/high patterns that were observed when the 40 menstrual symptoms were analysed together. Figure 2 compares a graph of the mean total symptom severity score for the study group and the control group over one menstrual cycle for the 40 symptoms used for calculations of the symptom severity score

Severity changes

To examine severity changes in individual symptoms, a total of 399 cases representing all 57 symptoms from the

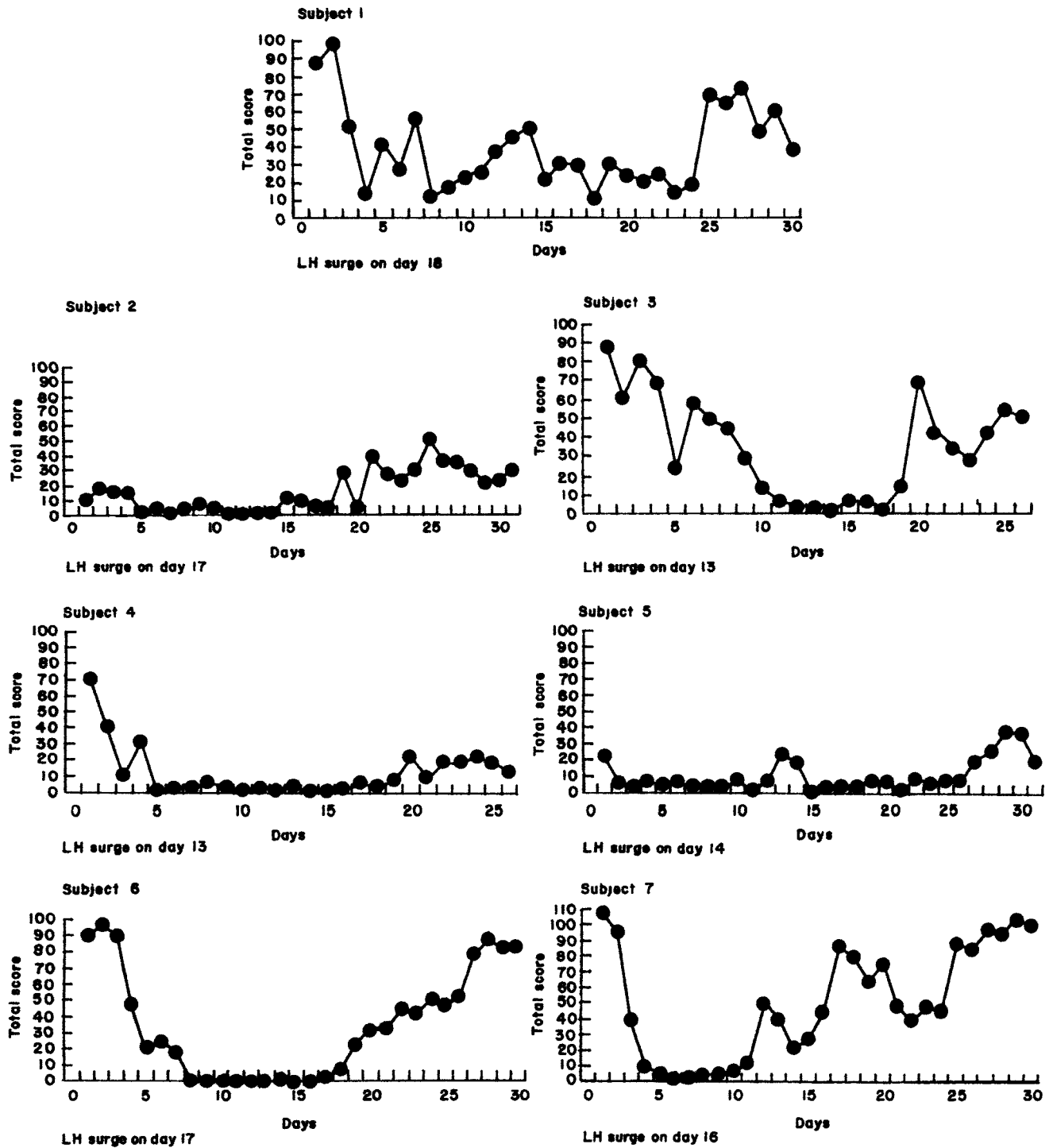


Figure 1 Graph of symptom pattern for 40 symptoms all subjects

seven 45-day diaries were evaluated for menstrual-cycle entrainment (Table 2). Of the 246 cases (62%) that met the criteria for a cycle-phase change, 197 (80%) exhibited an increase in the severity score from the follicular to the luteal phase while 49 (20%) showed a decreasing symptom score. For those cases that increased in severity, 98 (40%) met the criteria for the low/high pattern type commonly associated

with premenstrual syndrome. In addition, 22 (45%) of the 49 cases where symptom severity decreased in the luteal phase were for positive symptoms.

With the exception of 'intentional self-injury', all other symptoms were shown to demonstrate at least one of the increasing or decreasing severity patterns entrained to the cycle in one or more diaries. Thirty of the 57 symptoms

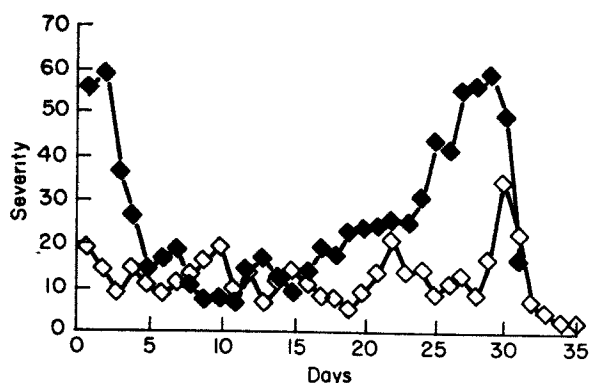


Figure 2 Symptom severity scores for 40 symptoms over one menstrual cycle PMS group vs control group \blacklozenge = PMS group ($n = 7$), \diamond = control group ($n = 4$)

exhibited a pattern of increasing severity exclusively, while six symptoms (backache, bursts of energy, feelings of well-being, in control, increased activity, increased sexual desire) demonstrated patterns predominantly of decreasing severity over the cycle

The symptom patterns with the highest incidence experienced by the group were the low/high and high/higher patterns (Table 2). Although no symptom demonstrated a severity pattern that was common to all subjects, six of the seven diaries (86%) displayed a low/high pattern for 'sensation of weight gain', five (71%) showed a high/higher pattern for anxiety, fatigue and impatience, as well as a higher/high pattern for in control. In four diaries (57%), a low/high pattern was demonstrated for the following: craving for specific foods, increased appetite, increased food intake, tender breasts, rapid mood changes, restlessness and swelling of hands or feet. Despite the overall pattern of decreasing severity in the luteal phase observed for subject 3, a low/high pattern was demonstrated for the symptoms 'forgetfulness' and 'rapid mood changes'.

As the low/high symptom pattern was most commonly observed in this sample and is considered a hallmark of the premenstrual syndrome, severity scores of those symptoms ($n = 98$) meeting the low/high criteria were plotted according to cycle phase to assess variability. Seven different subtypes of the low/high severity pattern were observed over the cycle (Figure 3). In type A, the symptom occurs only in the premenstruum, in B, the symptom is seen during menstruation and in the premenstruum, types C and D are seen in relation to menstruation, ovulation and in the premenstruum; types E and F are seen in relation to ovulation and in the premenstruum, but not during menstruation. Symptoms showing random fluctuations across the luteal phase were assigned to the irregular type G. For all subjects, at least 65% of the symptoms displayed only two of the seven low/high variations.

DISCUSSION

Six of the seven subjects who reported suffering from chronic premenstrual syndrome exhibited significant premenstrually related symptomatology by demonstrating an adequate difference in summary scores between the follicular and luteal phase. The selection criteria used to rule out confounding psychological conditions and ensure adequate ovarian function would seem to be useful to confirm self-perceptions, as approximately 50% of women who seek medical treatment for PMS complaints will fail to demonstrate menstrual-related changes when prospective measures are used (Rubinow *et al* 1985, Endicott & Halbreich 1982). Others have previously reported that when women present with PMS and fulfill diagnostic criteria, they will demonstrate significant exacerbation of at least some symptoms premenstrually when prospective measures are used (Magos *et al* 1986).

The large number of symptoms observed to show increasing intensity after ovulation point to the great diversity of symptomatology associated with ovulatory cycles in healthy women with PMS complaints and suggest that factors other than abnormal body weight, perimenopausal changes or subfertility can account for the disparate psychobiologic symptoms.

Enormous variability

Figure 1 also demonstrates the enormous variability among women with PMS complaints. The need to look beyond summary symptom scores, and analyse patterns, is evidenced by the difference in pattern between subject 1 and subject 6, even though both have the same H/Her pattern. The same applies for subjects 4 and 5. Subject 4 has menstrual and premenstrual complaints, whereas subject 5 has ovulatory and premenstrual complaints, but both are classified as having L/H pattern.

The findings in subject 3 of an overall improvement in summary scores during the luteal phase highlight the need for individual symptom monitoring when conducting a prospective clinical assessment. This subject had been prospectively diagnosed for premenstrual migraine headache during the 6 months prior to study. Despite an improvement in the overall summary score in the luteal phase due to the occurrence of several positive life events, the premenstrual entrainment of a subset of symptoms (forgetfulness and rapid mood changes) persisted. Cycle-to-cycle variability in PMS severity has been previously documented (Johnson 1987).

Of the 98 cases that displayed the L/H symptom severity pattern, 22 of these (22.45%) displayed a pattern where symptom remission occurred with the onset of

Table 2 Symptom severity pattern* for individual symptoms for the PMS group ($n = 7$)

	Change in severity**							
	Increasing			Decreasing				
	L/M*	L/H	H/Her	Total	M/L	H/L	Her/H	Total
Abdominal pain, discomfort		2		2		1		1
Anger	1		2	3				
Anxiety			5	5				
Awakening during the night		2		2				
Backache	1	1		2	2	1		3
Bloating or swelling of abdomen		3	3	6				
Blurred or fuzzy vision		1		1				
Bursts of energy or activity +		1	1	2		1	2	3
Confusion		3		3			1	1
Cramps-uterine or pelvic		2	1	3		1		1
Craving for specific foods or tastes		4	1	5	1	1		2
Craving for alcohol		1		1				
Decreased appetite		2		2		2		2
Decreased food intake		1	2	3		2		2
Decreased sexual desire	1	2	2	5				
Depression		2	3	5				
Desire to be alone	1	2	2	5				
Diarrhoea	1	1	1	3			1	1
Difficulty concentrating	1	1	2	4				
Difficulty in getting to sleep		2	1	3			1	1
Difficulty making decisions	1	1	2	4				
Dizziness or lightheadedness			2	2				
Early morning awakening		1	4	5				
Fatigue or tiredness			5	5			1	1
Feelings of guilt		2	2	4		1		
Feelings of well being +			1	1		1	3	3
Forgetfulness		3	1	4				
General aches and pains		1	2	3			1	1
Headache	1	2	1	4		1	1	2
Hostility	1	1	2	4				
Hot flashes or sweats		1	1	2				

menses (patterns C, E and F) Woods *et al* (1982) reported that in healthy normal women, premenstrual and menstrual reports of the same symptoms were highly correlated. They concluded that it was reasonable to study perimenstrual distress as a single construct. In this study, the symptom patterns for 40 symptoms (Figure 1) validates that. However, our findings regarding the L/H symptom severity pattern indicate that, for some women with chronic premenstrual complaints, menstrual and premenstrual distress may be more distinct.

Fifty-one (52%) of the 98 cases showing the L/H pattern were also present during the week of ovulation (patterns

C, D, E and F), while only 17 (17.35%) were present exclusively in the premenstruum (pattern A). Although it is not known to what extent the monitoring of urine at midcycle may have heightened symptom awareness, these findings support other reports (Koeske & Koeske 1975, Sheldrake & Cormack 1976) that women who identify themselves with severe PMS are likely to demonstrate symptomatology that precedes or persists beyond the late luteal week.

In this study, a large number of symptoms demonstrated a H/Her entrainment to the luteal phase, thus contributing to the H/Her summary score achieved by three of the seven subjects when overall symptom patterns were

Table 2 (Continued)

	Change in severity**							
	Increasing				Decreasing			
	L/M*	L/H	H/Her	Total	M/L	H/L	Her/H	Total
Impatient, intolerant		1	5	6				
Impulsiveness +	1	1	1	3				
In control +			1	1			5	5
Increased activity +			3	3	1	1	2	4
Increased appetite		4	1	5	1			1
Increased food intake		4	1	5	1			1
Increased sensitivity to cold		3	1	4	1	1		2
Increased sexual desire +			1	1		3	1	4
Increased sleeping		2		2		1	1	2
Intentional self injury								
Irritable	1	1	3	5				
Lonely		2	1	3				
Lowered co-ordination or clumsiness		2	1	3				
Lowered desire to talk or move		1	1	2			1	1
Nausea		1		1		1		1
Nervousness		2	3	5				
Out of control	2	1	3	6				
Painful or tender breasts		4		4				
Rapid mood changes	2	4		6				
Restlessness or jitteriness		4	1	5				
Sensation of weight gain		6	1	7				
Skin disorders	1	3	2	6				
Suicidal ideas or thoughts		1		1				
Swelling of hands or feet		4		4				
Tearfulness, crying easily		1	1	2			1	1
Tension		1	3	4			1	1
Total	16	98	83	197	7	19	23	49

*The method used to identify symptom severity pattern was adapted from Mitchell *et al* (1985)

**From follicular to luteal L/M = low/medium L/H = low/high (the typical PMS pattern), H/Her = high/higher, H/L = high/low, M/L = medium/low Her/H = higher/high.

+ Symptoms indicate positive feelings

assessed. Some experts have argued that subjects exhibiting a premenstrual exacerbation of symptoms (rather than a premenstrual onset) have other underlying conditions and should not be considered eligible for the PMS diagnosis (Dalton 1987). It is interesting to note that summary scores for three of the four normal volunteers in this study were clearly elevated above the low range in both phases of the cycle, suggesting that there may be a baseline level of everyday stress upon which menstrual-cycle biology is superimposed in women afflicted with PMS, thus accounting for a H/Her pattern. Further, the data from the normal volunteers also suggest that chronic daily stress across the menstrual cycle is not necessarily a trigger for premenstrual symptomatology. These observations suggest that other predisposing factors may play a role in susceptibility to ovarian hormonal influences.

Although multiple L/H patterns (Figure 3) were observed among the sample, the patterns demonstrated by individual women were few in number and similar for a majority of their symptoms. This finding would support a role for a biorhythmic entrainer in PMS aetiology that is responsible for eliciting a unique set of symptoms in each woman. Further analyses of the other patterns that showed increasing severity scores (H/Her and M/H), as well as further analyses of the patterns over multiple ovulatory cycles, is needed before conclusions can be drawn.

The individual symptoms that most often displayed an increasing symptom severity pattern were similar to those that have been reported to be the most bothersome or disabling in the premenstruum (Woods 1986, Halbreich *et al* 1982, Woods *et al* 1982, Shaver & Woods 1985). It should

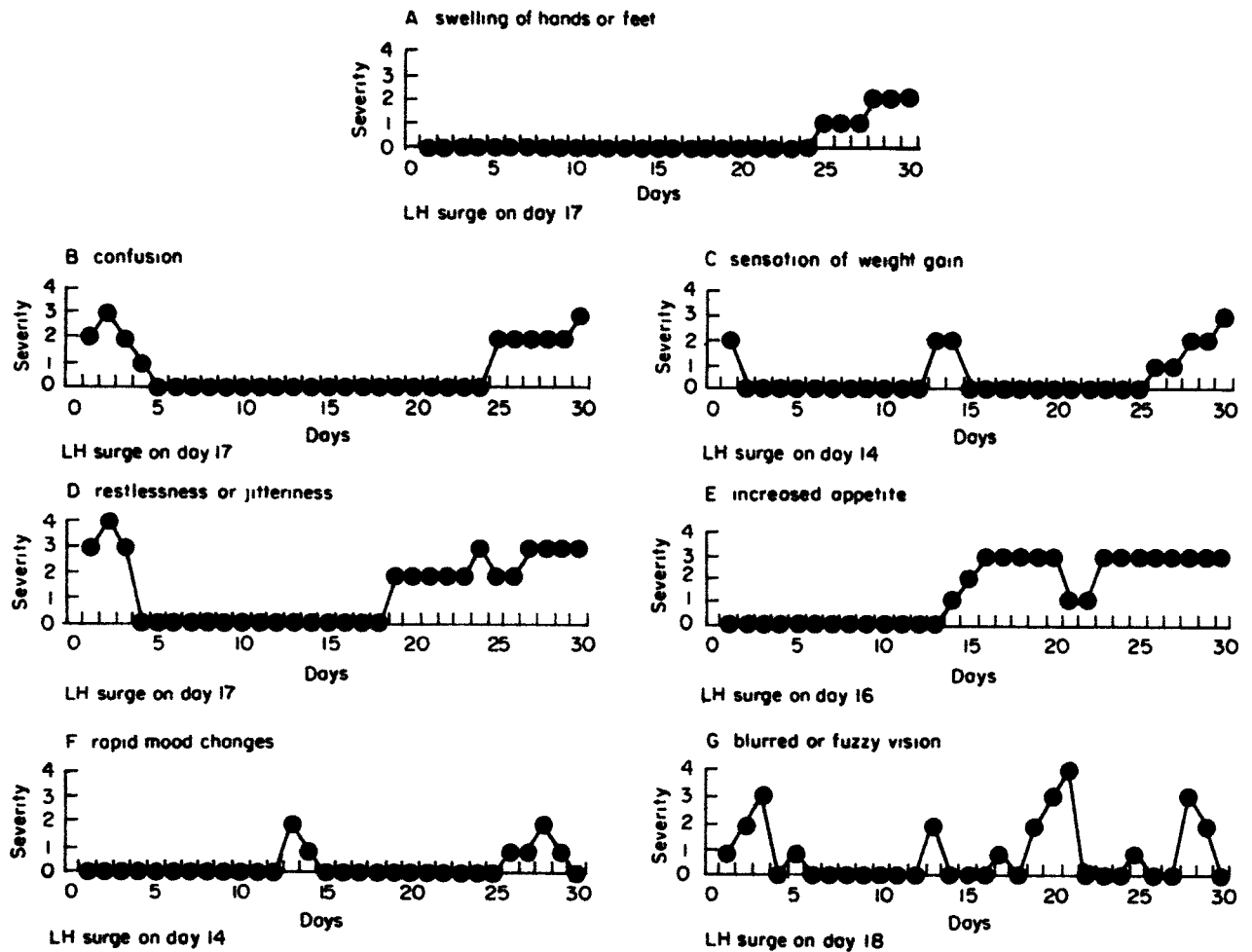


Figure 3 Different types of L/H symptom severity patterns A = symptom not present until the premenstrum, B = high symptom severity score during menses, that dropped down following menses and increased again in the premenstrum, C = high symptom severity score during menses, that dropped following menses, increased again during the week of ovulation, dropped down again and increased in the premenstrum, D = high symptom severity score during menses, that dropped down following menses, increased again during the week of ovulation and stayed high, E = symptom not present until during the week of ovulation, then the severity score increased and stayed high, F = symptom not present until during the week of ovulation, when the severity score increased for a few days, then it dropped down and was not present until the premenstrum, G = irregular pattern

be noted, however, that four subjects exhibited at least one positive symptom which demonstrated a luteal phase entrainment. For example, three subjects reported increased activity and, in two subjects, bursts of energy were more pronounced before menses. This finding of some positive experiences associated with the premenstrum are consistent with reports by contemporary feminists (Rome 1986, Miota 1987).

Weakness of menstrual symptom studies

A recognized weakness of menstrual symptom studies is the difficulty in blinding subjects to the purpose of the investigation. In this study, subjects knew they were participating in an assessment of premenstrual syndrome characteristics. The use of the DHD and the LH kit served to remind them of

menstrual-cycle phases and thus menstrual symptom incidence and severity may have been increased in the late luteal phase during the expected time of peak distress. It can also be argued that an experimental, halo effect may have been offset by the therapeutic effect of symptom reporting, i.e. where symptoms improve due to a sense of enhanced mastery achieved through active participation in monitoring body changes. Therapeutic benefits have been attributed solely to the use of daily health diaries in establishing a PMS diagnosis (Reid 1986).

Implications for nursing

From a nursing-care perspective, these findings may have important implications for the promotion of self-care strategies in women with premenstrual syndrome. The positive

aspects of the premenstruum should be pointed out to women presenting themselves with PMS as a way to enhance their abilities to cope with the negative aspects of the premenstruum

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