MENSTRUATION AND ACCIDENTS

BY

KATHARINA DALTON, M.R.C.S., L.R.C.P.
General Practitioner, Edmonton; Honorary Clinical Assistant, Department of Psychological Medicine, University College Hospital, London

Whitehead (1934) observed that in some air accidents involving women air pilots, in which the cause of the accident could not be found, the pilots were in the menstrual phase of the cycle. Although there have been many studies in other fields of accident proneness, little attention appears to have been given to the part played by menstruation. During work on the diseases of menstruation it was observed that premenstrual lethargy and irritability result in a slow reaction time and loss of judgment. As both judgment and reaction time are important factors in the avoidance of accidents, it was felt that a study of women involved in accidents might reveal a correlation between the accident and menstruation.

The survey was carried out in four London general hospitals where accident wards were visited once or twice a week. Women admitted as a result of an accident and between 15 and 55 years were interviewed by me. Women in my practice who had been in an accident requiring immediate medical attention were also included. Patients in hospital considered by the sister to be too ill for an interview, those who could not speak English, and those who were deaf were excluded. In addition to ascertaining their age, parity, and marital state, the patients were asked how the accident occurred, whether they had previously been involved in an accident, their previous state of health, the duration of menstruation, the length of their menstrual cycle, and, finally, the date of their last menstruation.

Results

Of a total of 124 women involved in accidents, 84 had menstruated during the 28 days prior to the accident. The reasons for amenorrhoea in the remaining 40 women are shown in Table I.

Among the women who were menopausal there appears to be an unduly high proportion (34.6%) who had an artificially induced menopause. All nine women had undergone a hysterectomy, with or without an oophorectomy.

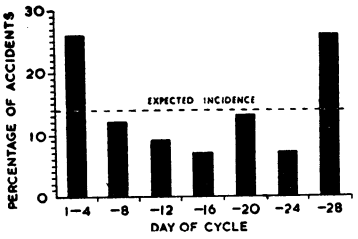

FIG. 1.—Distribution of 84 accidents in the menstrual cycle.

The menstrual cycle of 28 days was divided into seven four-day periods, in which Days 1–4 represented menstruation, Days 13–16 ovulation, and Days 25–28 premenstruum. The time in the menstrual cycle at which the 84 regularly menstruating women were involved in an accident is shown in Fig. 1. More than half of all these accidents occurred during menstruation or the four days preceding menstruation. The probability of such a distribution occurring by chance is less than one in a thousand (χ^2 = 23.3 on 1 d.f.), and therefore indicates that menstruation is a significant factor in accident-proneness.

TABLE I.—*Reasons for Amenorrhoea in 40 Women*

Previous menstruation 29–42 days (possibly early pregnancy)	5
Puberty	2
Pregnancy	2
Puerperium	2
Natural menopause	17
Artificial ,,	9
Unable to recall date of last menses	3

TABLE II.—*Distribution of Accidents During the Premenstruum and Menstruation*

Type of Accident	During Premenstruum and Menstruation. Patients	Total No. of Patients	χ^2 on 1 d.f.	Probability
All accidents	44 (52%)	84	23·3	0·001
Major hospital	18 (49%)	37	7·3	0·01
Minor ,,	18 (60%)	30	14·6	0·001
General practice	8 (47%)	17	2·9	0·1
Active participant	35 (52%)	66	19·4	0·001
Passive ,,	9 (50%)	18	4·0	0·05
Home	14 (64%)	22	13·3	0·001
Road	23 (49%)	47	9·7	0·01
Habitual actions	18 (51%)	35	9·0	0·01

Table II shows a further analysis of these 84 women, giving the number of women involved in different types of accidents during menstruation and the premenstruum, compared with the total for each group. The definitions used were:

Major accidents involving a fracture or loss of consciousness exceeding one hour.

Habitual actions covered accidents occurring during the performance of routine everyday work—for example, walking down stairs, factory work.

Active participation occurred where greater judgment on the part of the injured might possibly have lessened the severity of the accident—for example, driver of a vehicle.

Passive participation occurred where some other person was wholly responsible for the accident, and greater judgment on the part of the injured would have been of no avail in preventing the accident—for example, passenger in a vehicle.

With a purely random distribution of accidents, two-sevenths (28.5%) of the accidents of any one type would be expected to fall within the four-day periods of menstruation and premenstruum. In fact, Table II shows that the percentage of accidents occurring within these eight days is much higher. The significance of this preponderance is shown by the chi-square test, on one degree of freedom; and for all types, except accidents in general practice (the numbers of which were very small), the probabilities are very low. These results are therefore highly significant.

The fact that a significantly high proportion of both active and passive participants were involved in accidents during menstruation and the premenstruum suggests that it is not only judgment which is of importance.

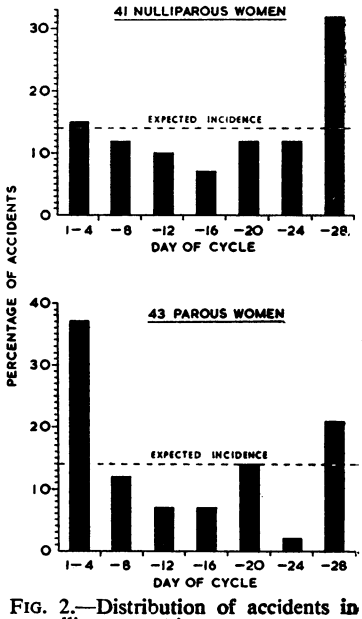

FIG. 2.—Distribution of accidents in nulliparous and parous women.

There is an unexpected difference in the distribution of accidents in the nulliparous and parous women (Fig. 2); for in the nulliparous women the accidents occur predominantly during the premenstruum, while in the parous women a high incidence occurs during both the premenstruum and the menstruation. This difference is not associated with marital state, for married women with no children tended to be more accident-prone during the premenstruum. Nor was there any tendency for the time of accident-proneness to differ among the women with one child from the women with many children. It may be that, whereas the nulliparous woman tends to have a heavy menstrual loss from the first day, the parous woman often has a slight loss for one to three days before the full menstrual flow begins. If lethargy of the premenstruum is due to water retention, which is relieved by the full menstrual flow, then one would not expect all parous women to be relieved of their lethargy until the fourth day of menstruation.

Only 13 women had previously been involved in an accident, and these were evenly scattered among the seven four-day periods. Sixty-two women described their previous health as "good," 15 as "moderate," and 7 as "poor," and these also were evenly distributed throughout the cycle.

Conclusions

In this survey 44 (52%) of a total of 84 regularly menstruating women were involved in an accident during menstruation or the four days before menstruation. The significance of menstruation as a factor affecting accident-proneness persisted among home, road, and factory accidents, while women were performing routine actions, and among the active and passive participants of an accident. It is suggested that the increased lethargy of menstruation and the premenstruum is responsible for both a lowered judgment and slow reaction time. Schoolgirls' work deteriorates during menstruation (Dalton, 1960a), and they are more likely to be punished for unpunctuality and forgetfulness during menstruation (Dalton, 1960b). Wickham (1958) found that the intelligence-test scores in women Army personnel were lowered during menstruation, but, surprisingly, this did not hold for the practical/mechanical performance test.

These findings cause one to consider the wisdom of administering tranquillizers for premenstrual tension, which may well increase accident-proneness at the most dangerous time of the menstrual cycle. One wonders if awareness by women that they are more accident-prone at certain times of the month will enable them to use greater care in avoiding accidents, or will it merely induce a menstrual neurosis? Women who have had an artificial menopause appear more accident-prone than those whose menopause was natural.

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IRON-DEFICIENCY ANAEMIA IN EUROPEAN AND WEST INDIAN INFANTS IN LONDON

BY

L. R. DAVIS, M.D.
Senior Lecturer in Pathology

R. H. MARTEN, M.A., B.M., M.R.C.P.
Consultant Dermatologist

AND

I. SARKANY, M.R.C.P.
Senior Registrar in Dermatology

Belgrave Hospital for Children, King's College Hospital, London

The high incidence of anaemia in West Indian infants which was found during a study of atopic eczema (Marten, Sarkany, and Davis, 1960) led to the present investigation. Anaemia due to dietary deficiency, intestinal worms, or a combination of the two is common in negro children living under tropical conditions (Wolman, 1957). Munday *et al.* (1938) studied the haemoglobin levels of negro and white infants living under similar conditions in a non-tropical area. They showed that from the age of 4 months onwards negro infants in the United States had lower haemoglobin levels.

The present study compares the haemoglobin levels of West Indian and European infants suffering from eczema with healthy control groups. The West Indian infants were all born in this country and had never lived abroad. The healthy infants, drawn from local day nurseries, had no history of eczema and had no known illness at the time of examination.

Methods.—The haemoglobin level and packed cell volume were measured on capillary blood using Haldane's technique (100% = 14.8 g./100 ml.) and micro-haematocrits. From these the mean corpuscular haemoglobin concentration (M.C.H.C.) was calculated. All the West Indian infants were tested for sickling, and "cellophane" swabs and stools were examined for ova. Eczematous infants with haemoglobin levels below 70% (10.3 g./100 ml.) were treated with oral iron (elixir of ferrous gluconate).

Results

Excluding four infants with positive sickling tests, 114 infants, whose ages ranged from 5 to 23 months, were investigated. Of these, 54 had atopic eczema (West Indian 21, European 33) and 60 were healthy (West Indian 26, European 34).

The infants in these four groups had comparable birth weights and age ranges, while the healthy infants had similar weights at the time of examination. With Fisher's "t" test no statistically significant difference between the means of these values could be demonstrated (Table I).

Statistical comparisons of the mean haemoglobin levels and the mean M.C.H.C.s for both West Indian and European groups have been made, and the results are shown in Table II. It will be seen that for each race there was no significant difference between the eczematous and healthy groups. However, when the two races were compared the mean haemoglobin levels