

Letters to the Editor

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Chronobiological studies on pain threshold

I have read with interest the paper of Doctors S. Lautenbacher and G.B. Rollman, 'Sex differences in responsiveness to painful and non-painful stimuli are dependent upon the stimulation method' (Pain, 53 (1993) 255–264). In the early 1970s, at the beginning of chronobiological studies, we studied rhythmic changes of the cutaneous pain threshold in man, using a particular thermal algometer (Procacci et al. 1972, 1974). We recorded pain threshold but not pain tolerance that in our opinion varies too much among different subjects. Our data were analyzed by Halberg's cosinor procedure (Halberg et al. 1965). We observed that a circadian rhythm was present both in men and women. A circatrigintan rhythm was present in fertile women in whom it coincided with the menstrual cycle, in pregnant women, in menopausal women, in young men, and in men over 55 years of age. During the administration of oral contraceptives, the circatrigintan rhythm was no more evident in fertile women but persisted, instead, in women in menopause. As a matter of fact, in clinics a spontaneous pain or a lower threshold to pain are often evident in the intermenstrual and premenstrual phase. I think that our data can add some information to the excellent work of Doctors Lautenbacher and Rollman.

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Sex differences and biological rhythms affecting pain responsiveness

We thank Professor Procacci for his kind words. His studies of individual differences in responsiveness to experimental pain have clearly influenced our own research efforts (Rollman 1983) and those of many other investigators.

The issue of chronobiological variations is an intricate one and

unquestionably needs further attention. We observed, in one study, that some men exhibited diurnal variations in heat pain thresholds and others did not (Strian et al. 1989). Hence, rhythmic changes in pain sensitivity may differ between individuals due to the effects of various chronologically changing influences and due to missing or dysfunctional biological pacemakers.

Recent studies (e.g., Goolkasian 1980, 1985; Hapidou and De Catanzaro 1988) have confirmed the existence of menstrual cycle effects on pain responsiveness in women. The mechanisms underlying this effect are not, however, sufficient to explain why women appear to have lower pain thresholds, since we could demonstrate that the phenomenon is dependent on the stimulation method used. As well, thresholds for men are often 50% or more greater than those of women, whereas menstrual cycle variability is about 5–10% (Rollman and Harris 1987).

Still, anecdotal reports indicate that clinical pain often varies with menstrual cycle status. Recent studies in the animal literature point to gender effects and cyclical effects on pain response. The International Association for the Study of Pain has taken admirable steps to increase our understanding of the implications of such findings by establishing a Task Force on Special Pain Problems in Women, by publishing provocative reviews on sex and chronobiology (Berkley 1993), by presenting a topical seminar on Gender Differences in Pain and Analgesia at the 7th World Congress on Pain, and by highlighting research on pain and gender in several recent issues of *PAIN* (Ruda 1993).

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