

Circadian variation of basal plasma prolactin, prolactin response to suckling, and length of amenorrhea in nursing women

S. Díaz, M. Serón-Ferré, H. Cardenas, V. Schiappacasse, A.Brandeis, H. B. Croxatto

Abstract

The circadian pattern of plasma PRL levels and the PRL response to suckling were examined at various times during the first postpartum year and related to the length of lactational amenorrhea. Ten healthy women whose infants were breast-fed exclusively and who were amenorrheic 3 months postpartum were studied 3, 6, and 9-11 months postpartum. The women and their babies were admitted to a metabolic unit for 48 h. On the second day, blood samples were drawn at 2-h intervals for 26 h starting at 0800 h and also 10 and 30 min after the initiation of six of the nursing episodes. During the three postpartum periods, there was a circadian rhythm of basal plasma PRL concentrations; the peak concentrations occurred between 2400-0600 h. Suckling induced a significant rise in plasma PRL levels at all hours except 0800 h. There was a positive correlation between the duration of the nursing episode and the suckling-induced PRL increase at 30 min. Both the basal plasma PRL levels and the PRL responses to suckling diminished with time after delivery. This trend was less evident at 0400 h and was not fully explained by changes in the nursing pattern. The five women in whom menstrual cycles resumed before day 180 postpartum had lower basal and suckling-induced plasma PRL levels than the women who had amenorrhea for a longer period. This difference was present in the third month, when all women were amenorrheic and fully nursing and when the frequency and duration of nursing episodes and infant growth rates were similar. The results indicate that comparable nursing patterns may be associated with different plasma PRL levels, which are associated with different lengths of lactational amenorrhea. An early difference in the sensitivity of the breast-hypothalamus-pituitary system to suckling may explain the differences in the duration of lactational amenorrhea, which are not dependant on the breastfeeding pattern. The magnitude of the PRL response to suckling may predict the likelihood of recovering ovarian function during lactation.]