Perimenstrual increase in bronchial hyperreactivity in premenopausal women : results from the population-based SAPALDIA 2 cohort

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BACKGROUND: Studies on perimenstrual asthma are inconsistent, and different methodologies limit comparisons. OBJECTIVE: To investigate cyclic variations in bronchial hyperreactivity (BHR) to methacholine in premenopausal women in a population-based cohort and assess effect modification by oral contraceptives (OCs). METHODS: Day of menstruation cycle at the time of methacholine challenge was calculated in 571 menstruating women without hormonal treatment, age 28 to 58 years, on the basis of questionnaire data from the Swiss cohort study on Air Pollution And Lung Disease In Adults (SAPALDIA) cohort 2001/2002. A window of risk was defined 3 days before and after the first day of menstruation. Logistic and linear regression analyses were performed adjusting for main predictors of BHR and stratifying for asthma status. The impact of OCs was studied in the same sample enlarged by 130 women taking OCs. RESULTS: The prevalence of BHR was 13% (fall of < or =20% in FEV(1) up to a maximal cumulative dose of 2 mg), and 6% had asthma. A total of 143 women had undergone methacholine challenge within the risk window. We observed a significant increase in BHR within the window of risk (odds ratio [OR], 2.3; 95% CI, 1.27-4.29). A cyclic association pattern was confirmed by trigonometric functions. Effect modification by asthma status and oral contraceptive use was found, with lower OR in subjects without asthma and OR >1 in women using OCs. CONCLUSION: The data provide evidence of a systematic variation in BHR during the menstruation cycle, supporting the hypothesis of a hormonal influence. OCs appear to have a protective effect. Cyclicity of BHR could be of clinical importance in view of future medication recommendations and timing of respiratory function tests in women

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