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## **Sex Hormones and Asthma - Don't Forget Progesterone**

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To the Editor:

We read with interest the observational findings of Han et al who reported that raised serum estradiol was associated with a lower likelihood of asthma in obese women and in non-obese men (1). Pointedly their study did not evaluate the potential impact of progesterone which is known to aggravate airway interleukin-5 mediated eosinophilia and associated airway hyper-responsiveness (AHR) to methacholine in the murine model of allergic asthma (2). Moreover, increased endogenous luteal phase progesterone levels in asthmatic women are accompanied by a marked increase on AHR to adenosine monophosphate which can be abolished by the combined oral contraceptive pill (3). Interestingly in female asthmatics exogenous progesterone but not estradiol results in down regulation of lymphocyte beta-2 receptors and attenuated cyclic-AMP response to isoproterenol (4), while in non-asthmatic women the opposite occurs (5) and in non-asthmatic men there is no change (6). Hence we believe that further observational type studies should also focus on cyclical changes in sex hormones including progesterone in women as this is more likely to explain sex specific differences in asthma.

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