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Title: Gender differences in eosinophilic airway inflammation in allergic and non-allergic asthma

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Body: Introduction: Several studies have shown potential gender specific differences in the pathophysiology and clinical presentation of asthma, whose mechanisms are not fully understood. Aims and objectives: We examined the influence of gender on eosinophilic airway inflammation in steroid-naïve patients with allergic and non-allergic asthma. Methods: The subjects comprised 280 Japanese patients [101 males and 179 females, median (range) age 53 (18-88) years] with asthma who were untreated with glucocorticosteroids and during attack-free periods. We used the levels of fractional exhaled nitric oxide (FeNO) as a marker of eosinophilic airway inflammation. The FeNO concentration was measured using the recommended online method. We compared the levels of FeNO between males and females, separately for allergic and non-allergic asthma. Results: In 171 patients with allergic asthma, 70 males had significantly higher FeNO levels compared with 101 females (59.6 ± 57.3 versus 43.3 ± 46.6 ppb, respectively; $P=0.02$); in 109 patients with non-allergic asthma, there was no significant difference in FeNO levels between 31 males and 78 females (46.4 ± 36.3 versus 39.8 ± 38.0 ppb, respectively; $P=0.2$). Conclusions: Our results indicate that the importance of eosinophils in airway inflammation differs between males and females in allergic asthma, but not in non-allergic asthma. In allergic asthma, female patients may include higher rates of other inflammatory phenotypes than eosinophilic asthma compared with male patients.