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**Title:** Leptin, adiponectin and ghrelin levels in female patients with asthma during stable and exacerbation periods

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**Body:** Introduction: Adipose tissue-derived hormones may be involved in the relationship of obesity with asthma. No definite conclusions regarding the role of leptin and adiponectin with asthma are available. No studies have examined the role of ghrelin in asthma. Methods: We assessed the concentrations of leptin, adiponectin and ghrelin in 32 post-menopausal stable asthma patients (mean age±SD:57.5±8.9years), 37 female asthmatics during exacerbations(51.24±14.50years) and 8 weeks later, and 22 controls (57.6±10.8years). We examined the relationship between the three peptides and indexes of airway inflammation and atopy. Results: Stable asthma patients exhibited higher leptin and lower ghrelin concentrations compared to controls (24.8±14.8vs11.2(5.7-21.7),p=0.04 and 470.1(353.0-578.6)vs739.0(614.6-955.5),p<0.001, respectively). Patients with severe asthma had higher leptin and lower adiponectin levels vs patients with mild to moderate asthma(31.1±15.5vs19.2±12.1, p=0.021 and 6.7(4.6-12.9)vs16.6±9.3, p=0.017, respectively). Increased BMI was associated with increased asthma severity, however when adjusted for leptin levels this association did not persist. During asthma exacerbations serum leptin levels and leptin/adiponectin ratio were elevated and adiponectin and ghrelin levels were decreased compared to stable state (19.8(15.2-29.1)vs9.8 (6.1-16.2), p<0.001 and 2.6(1.9-4.6)vs0.6(0.4-1.1), p<0.001, and 7.9±3.2vs15.0±7.0,p<0.001, 662.6±227.5vs884.0(660.4-1018), p<0.001, respectively). Conclusion: Our data suggest that leptin, adiponectin and ghrelin may play a significant role to the pathogenesis of asthma during stable state and asthma exacerbatio independently of obesity.