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Relationship between Inflammatory Biomarkers and Adiposity in Obese Patients with Heart Failure and Metabolic Syndrome

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Background: Little is known about the associations between inflammation and obesity in patients with heart failure (HF) and metabolic syndrome (MS). The purpose of this report is to describe and evaluate the association between C-reactive protein (CRP), leptin, and adiposity in 36 obese patients with HF and MS. **Method:** Height and weight were used to calculate body mass index (BMI); adiposity was further assessed using waist circumference (WC) and body composition measures (e.g. percent body fat, percent lean mass) obtained from total body dual-energy x-ray absorptiometry (DEXA) scan. High sensitivity-CRP and leptin were measured using bioassays as standardized by our core lab. **Results:** Our data showed significant correlations between CRP, leptin, and percent body fat (Table 1). In a post-hoc analyses, we compared leptin and CRP concentrations of patients with a BMI > 35 (n = 19) and patients with a BMI < 35 (n = 13) and found that patients who were more obese had higher CRP (4,740 μ vs. 2,946 μ , p = 0.019) and leptin (mean 48,953 μ vs. 26,795 μ , p = 0.009) levels than their counterpart. **Conclusion:** Our findings show that CRP and leptin were associated with adiposity in obese patients with HF and MS. Data from the sample also demonstrated that while the relationship between and CRP and leptin is independent of obesity level (i.e., were not significantly related to BMI or WC), there was a significant increase in the concentration of both of these markers in patients with a BMI > 35. Future research that assess the potential impact of inflammation and adiposity and the role of dietary interventions and weight loss on clinical outcomes in this population of chronically ill patients are warranted.

Table 1. Correlation Matrix for Key Variables of Interest

	BMI (kg/m ²)	Waist Circumference	Total % Fat:	CRP	Leptin
BMI (kg/m ²)					
WC	0.620**				
Total % Fat		0.640**	0.437**		
CRP		0.185	0.083	0.476**	
Leptin		0.192	0.121	0.400*	0.530**

**Correlation is significant at the 0.01 level (2-tailed); * Correlation is significant at the 0.05 level (2-tailed).