

NEUTROPHIL TO LYMPHOCYTE RATIO (NLR) - RELATIONSHIP WITH ANTHROPOMETRIC AND METABOLIC PARAMETERS IN MORBIDLY OBESE PATIENTS

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Introduction

Obesity is generally associated with a chronic state of subclinical inflammation. The assessment of the inflammatory status is routinely made by measuring circulating levels of nonspecific proinflammatory markers. Neutrophil to lymphocyte ratio (NLR) is a new simple inflammatory marker which can be reliable in evaluating the inflammatory status occurring in morbidly obese patients.

Patients and methods

Our study included 415 patients (130 men) with severe obesity (mean BMI = 45.46 ± 8.68 kg/m², mean age = 41.31 ± 11.33 years), who were evaluated clinically (medical history, anthropometrics, blood pressure measurements) and biologically (blood count, complete metabolic tests, leptin level) in a research program for bariatric surgery.

Objectives

The aim of this study was to investigate the relationship between NLR as an index of chronic inflammation and anthropometric and metabolic parameters in a group of morbidly obese patients.

Partial Regression Plot

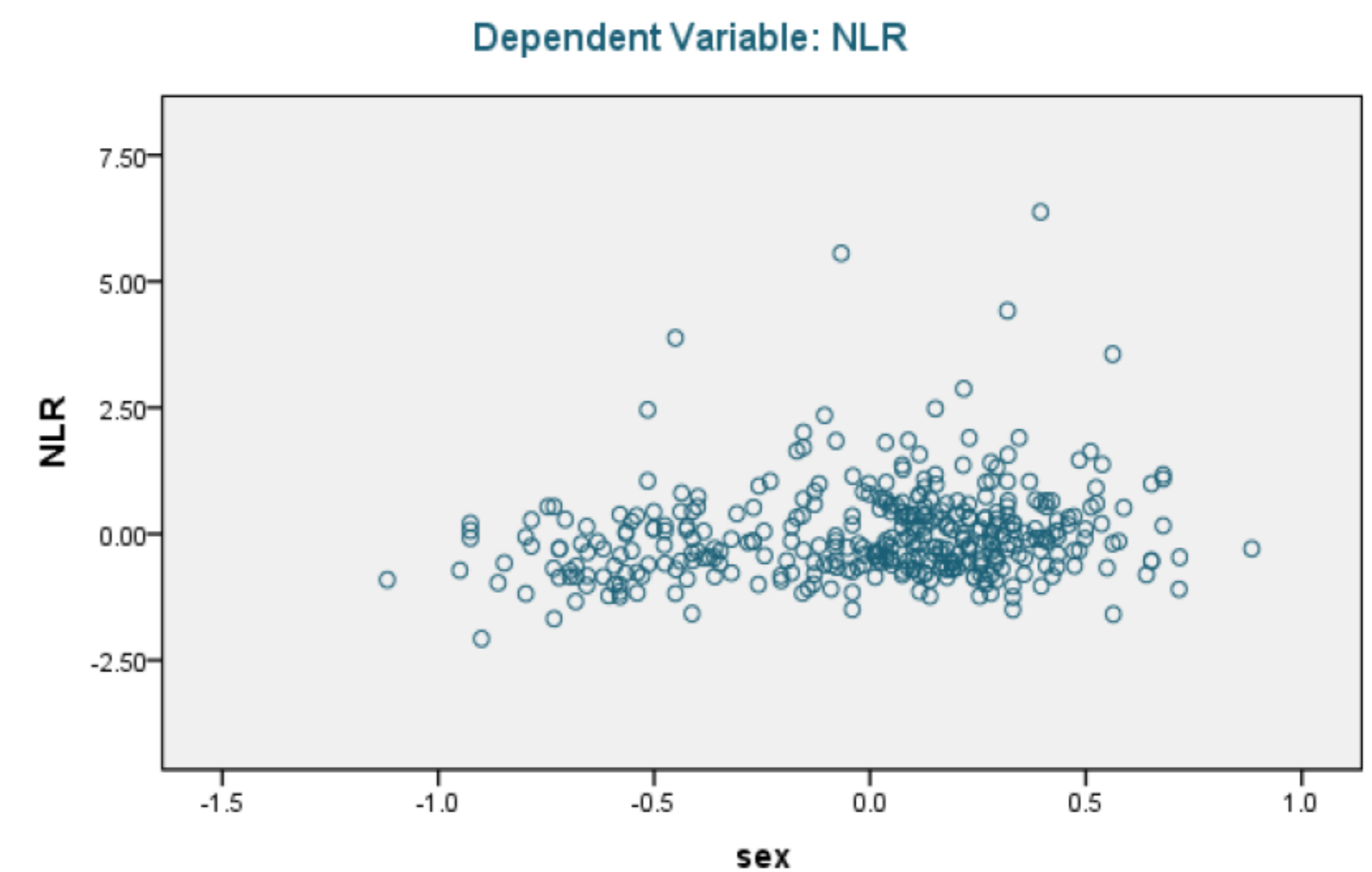


Fig. 1, Relationship between NLR and Gender

Partial Regression Plot

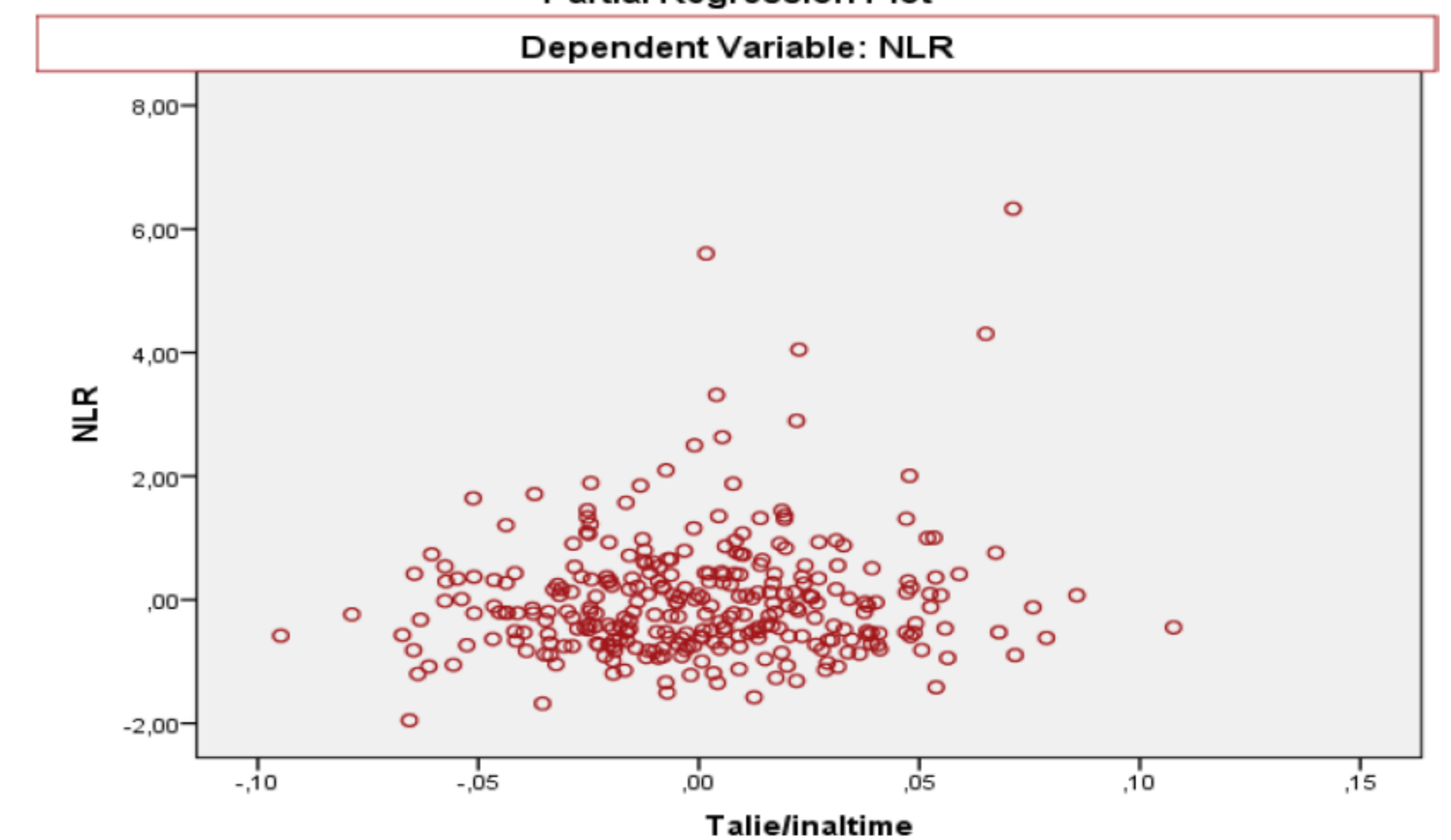


Fig. 2, Relationship between NLR and Waist/Height ratio

Partial Regression Plot

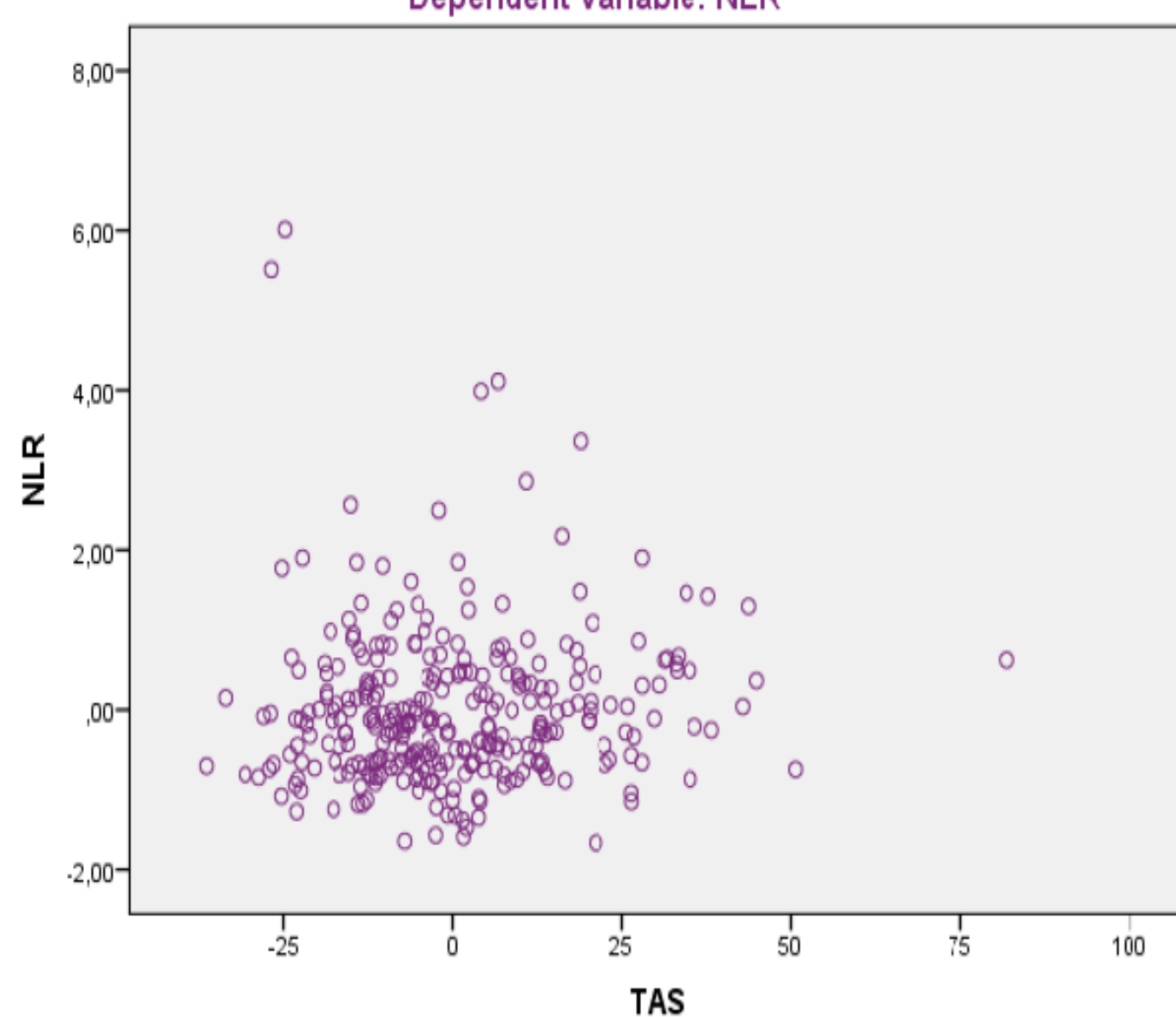


Fig. 3, Relationship between NLR and Systolic blood pressure

Partial Regression Plot

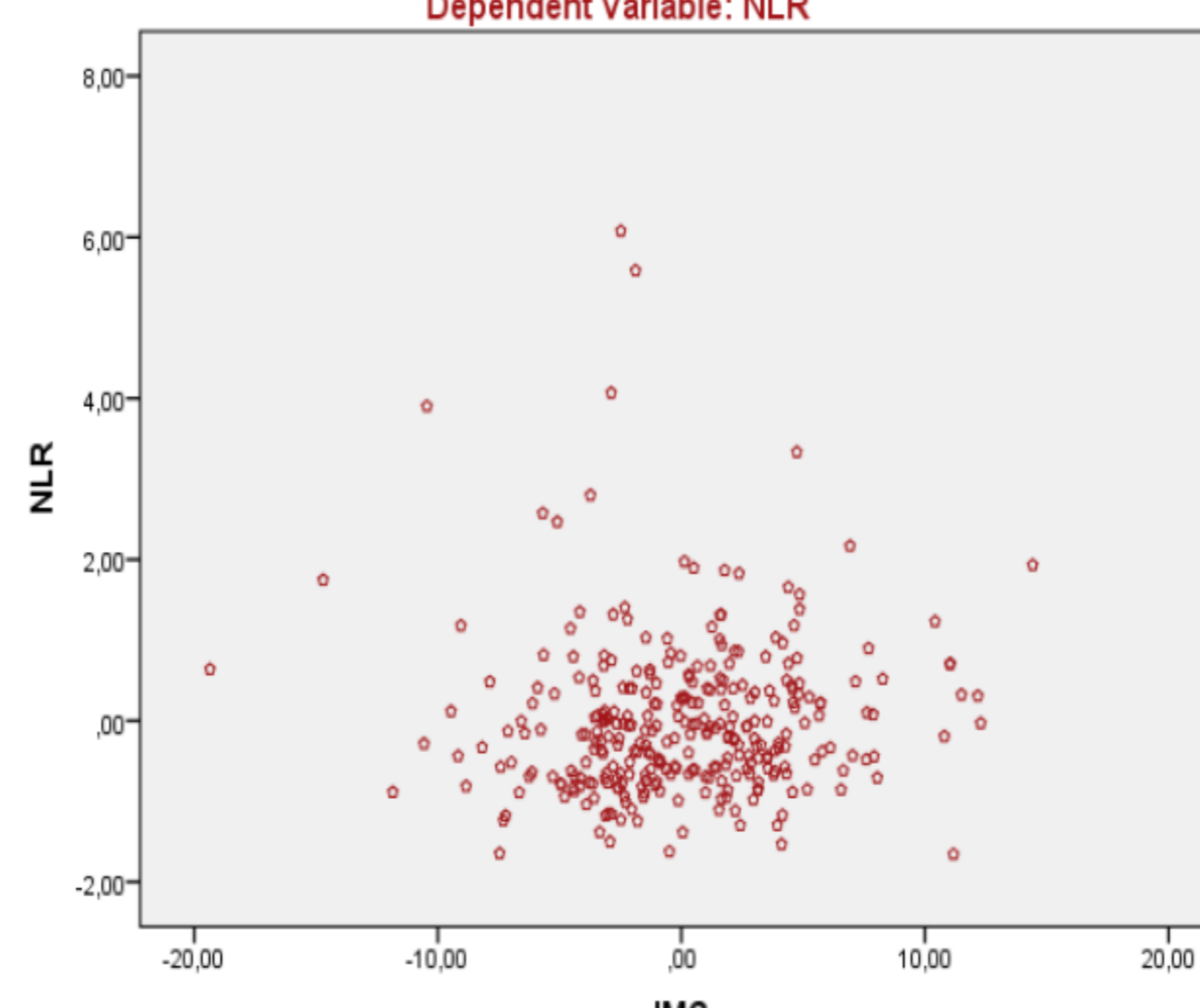


Fig. 4, Relationship between NLR and BMI

Results

NLR was significantly higher in women (2.33 ± 0.95 versus 2.09 ± 0.87 , $p < 0.05$) and in non-smokers (2.35 ± 1.01 versus 2.14 ± 0.81 , $p < 0.05$). After adjusting for gender and smoking status, NLR positively correlated with BMI ($r = 0.132$, $p < 0.01$) waist circumference ($r = 0.225$, $p < 0.001$) and waist/height ratio ($r = 0.203$, $p < 0.001$), as well as with systolic blood pressure ($r = 0.136$, $p < 0.05$), serum C reactive protein ($r = 0.170$, $p < 0.001$), HOMA-IR ($r = 0.121$, $p < 0.05$) and serum leptin level ($r = 0.172$, $p < 0.01$). In a linear regression analysis, with NLR as dependent variable and factors previously shown to significantly correlate to its level as independent variables, gender, BMI and systolic blood pressure remained independently associated with NLR.

Conclusions

Gender, systolic blood pressure and adiposity level are independent determinants of NLR in severely obese patients. Further studies are needed to determine the association of this parameter with obesity complications and prognosis.

Control variables	NLR	Variables	r	p
Gender & Smoking status	NLR	BMI	0,132	<0,001
		Waist circumference	0,225	<0,001
		Waist/height ratio	0,203	<0,001
		Systolic blood pressure	0,136	<0,05
		CRP	0,170	<0,001
		HOMA IR	0,121	<0,05
		Leptin	0,172	<0,01

Table 1, Positive correlations between NLR and BMI, Waist, Waist/Height ratio, Systolic BP, CRP, HOMA IR, Leptin

