

## Relationship between insulin resistance and some coagulation and fibrinolytic parameters in subjects with metabolic syndrome

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**Background:** Insulin resistance syndrome has been shown to be associated with many coagulation and fibrinolytic proteins and these associations suggest that some coagulation and fibrinolytic proteins have a role in atherothrombotic disorders.

**Aim:** This study was conducted to determine the levels of some of the haemostatic parameters in subjects having metabolic syndrome and to correlate these values with the anthropometric and metabolic variables associated with this syndrome.

**Subjects & Methods:** The study included 46 obese non-diabetic subjects of whom 28 subjects (group 1) fulfilled the ATP III criteria of the metabolic syndrome and 18 subjects (group 2) did not have metabolic syndrome as well as 14 lean subjects (group 3) of matched age and sex as a control group. Clinical and laboratory evaluation of the study groups stressed on anthropometric measurements (weight, height, body mass index, waist circumference, and sagittal abdominal diameter), blood pressure, and laboratory measurements of fasting plasma glucose, fasting insulin, serum lipids, tissue plasminogen activator (t-PA), antithrombin III activity (ATIII), protein C and von Willebrand factor (vWf) antigen.

**Results:** There was significant increase in the concentrations of t-PA and vWf antigens in subjects having metabolic syndrome (group 1) in comparison to the other groups while there were non-significant changes in the levels of protein C antigen and AT III activity. Both t-PA and vWf showed significant correlation with HOMA-IR as a measure of insulin sensitivity. The t-PA showed also the significant correlation with most of the variables of metabolic syndrome including waist circumference, BMI, systolic blood pressure, fasting plasma glucose, fasting insulin and HDL cholesterol. On the other hand, vWf showed significant correlations with fasting plasma glucose, fasting insulin and sagittal abdominal diameter, with non-significant correlations with the other variables.

**Conclusion:** Haemostatic and fibrinolytic parameters should be included in the features and characterization of the insulin resistance syndrome. t-PA and vWf antigens concentrations were increased in subjects with metabolic syndrome and correlated with the HOMA-IR measure of insulin sensitivity. Taking into consideration that both t-PA and vWf are mainly released from vascular endothelium, these findings could be an indicator of endothelial dysfunction in that group of subjects.