Biochemical analysis of serum pancreatic amylase and lipase enzymes in patients with type 1 and type 2 diabetes mellitus.
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Abstract
OBJECTIVE:
To examine the pancreatic exocrine insufficiency in patient with diabetes mellitus by estimating serum pancreatic amylase and lipase enzymes in healthy subjects and in type 1 and type 2 diabetic patients.

METHODS:
The study was conducted on 20 normal healthy volunteers and 39 diabetic patients referred to Al-Isra Medical Laboratory, Amman, Jordan during the period from April - November 2003 after recording their age and gender. The age of onset of diabetes and the type of treatment were determined and the patients were categorized into type 1 and type 2 diabetics. Blood samples were collected and analyzed for fasting blood sugar (FBS), glycosylated hemoglobin (HbA1C), serum insulin, and serum pancreatic amylase and lipase enzymes. All biochemical tests were carried out in the medical laboratories of Islamic Hospital, Amman, Jordan. All estimates were presented as means +/- SD, and statistical treatment of data were performed using student t-test.

RESULTS:
The FBS and HbA1C estimates were consistently higher in type 1 and type 2 diabetic patients, while no significant changes were observed in the estimates of serum insulin between the normal and diabetic patients. The reduction in serum pancreatic amylase was recorded in both types of diabetes, which amounted to 71% for type 1 diabetics and 49% for type 2 diabetics. On the other hand, reduction in serum lipase was only detected in type 1 diabetics amounting to 31%. Correlation of the reduction in serum amylase and lipase levels with the duration of disease revealed a remarkable decrease in both enzymes in patients with long-standing disease (76% and 39%) in type 1 diabetic patients. Whereas, patients with very low serum insulin estimates the reduction in serum amylase was 77% while serum lipase level was reduced by 42%. Similarly, the reduction in serum amylase in type 2 diabetes was higher in patients with longer duration of illness (59%) and in patients with low serum insulin value (79%), while reduction in serum lipase was only detected in patients with very low serum insulin (34%). No differences in all measured parameters between males and females were recorded in type 1 and type 2 diabetics.

CONCLUSION:
Although most of diabetic research has been focused on dyslipidemia as a major risk factor for cardiac, cerebral and renal complications, the present study clearly illustrates an impairment of pancreatic exocrine function in type 1 and type 2 diabetes. We suggest that analysis of serum pancreatic enzymes could be an additional informative parameter for the assessment of chronicity and progress of the illness as well as the response to therapy.