

## Evaluation of Serum Amylase and Serum Lipase in Type- 2 Diabetes Mellitus

M. Indira<sup>1</sup>, Ch. Sudhakar Babu<sup>2</sup>, I Vasundhara Devi<sup>3</sup>

<sup>1</sup>Associate Professor, Department of Biochemistry, Rangaraya Medical College, Kakinada.

<sup>2</sup>Professor & HOD, Department of Anatomy, Government Medical College, Ongole.

<sup>3</sup>Associate Professor, Department of Biochemistry, Andhra Medical College, Visakhapatnam, Andhra Pradesh, Dr. YSR UHS Vijayawada, India

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Corresponding author: Dr. Indira Mandala

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### Abstract

**Background:** Subclinical chronic pancreatitis may be increased in subjects with type 2 diabetes mellitus. The present study was undertaken to evaluate the levels of serum amylase and serum lipase in cases of type 2 Diabetes Mellitus.

**Materials and Methods:** This study was conducted in the institute of RMC Kakinada at GGH. A total of 75 peoples were included in the study. It was divided into two groups. Group I (n=30) was considered as control group. Group II (n=45) had diabetes mellitus type II.

All the patients demographic data was collected. Blood was collected from all the patients and used for estimation of blood glucose, serum amylase and serum lipase. The data was expressed in mean standard deviation. Students 't' test was applied to find the statistical significant between the groups.

**Results:** There was no significant difference observed in the age and gender between the groups. Significant difference was observed in serum amylase and serum lipase compared to group I with group II.

**Conclusion:** It was observed that significant changes in Serum amylase and lipase in patients with type II Diabetes Mellitus compared to control group. Knowledge about these changes is useful in prevention and treatment of type 2 diabetes mellitus patients suffering from sub clinical pancreatic diseases.

**Keywords:** Diabetes Mellitus, Serum Amylase, Serum Lipase.

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### Introduction

Diabetes mellitus is one of the major causes, for the death in present era. Amylase is a heterogeneous calcium dependent metallo enzyme and exist as 2 iso Enzymes, one is pancreatic (P - type) and non panceatic (s-type) [1]. It has White tissue distribution with the highest activation of P- type being found in exocrine pancreas.[2] Serum lipase

concentration in the in the pancreas is about 500 folds greater than in other tissues.[3,4]

Long term hyperglycemia is found in poorly controlled diabetes and ketoacidosis has previously been reported to affect the enzyme activity. It is one of the most parameters of the serum amylase and serum lipase responsible and which may affect the type II

diabetes patients related to the study.[5] Uncontrolled type II diabetes mellitus patients can develop this condition and increase the risk of mortality due to the subclinical pancreatitis.[7-9] With this background the present study was conducted to evaluate the serum amylase and lipase in patients with type II Diabetes mellitus.

### Materials and Methods

This study was conducted in the institute of RMC, Kakinada at GGH. A total of 30 healthy subjects were selected for group 1. They were considered as control group. Group II had (n=45) type II DM patients without any other complications.

### Study groups:

Group 1 (controls) = Healthy subjects (n=30).

Group 2 (cases) = Type II DM patients (n=45).

### Procedure

Study protocol was explained to all the study population and informed consent was taken from individuals. Demographic data was collected. The required amount of blood was collected from each subject and used for

estimation of serum amylase by CNP-G3 method and serum lipase by methyl resorufin method.

### Statistical Analysis

Student 't' test was applied to find statistically significant between the groups. P value less than 0.0001 considered statistically significant. The data was expressed in mean and standard deviation.

### Results

18 males and 12 female are in group I and 20 males and 15 females were observed in group II. Significant decrease in serum amylase and lipase levels are observed in subclinical pancreatitis cases in type II Diabetes mellitus compared with control group. Significant change was observed in serum amylase levels between controls ( $42.03 \pm 15.60$ ) and cases groups ( $27.06 \pm 8.42$ ) and it was statistically significant. Significant decrease in serum lipase and levels between controls ( $41.66 \pm 13.15$ ) and in case of groups ( $25.83 \pm 10.53$ ) and it was statistically significant ( $P < 0.001$ ) changes were ( $P < 0.001$ ) were observed in these parameters compared group I with group II.

**Table 1: Comparison of serum amylase and serum lipase between the groups**

Parameters	Controls mean $\pm$ SD	Cases mean $\pm$ SD	P value
Serum amylase	$42.03 \pm 15.60$	$27.06 \pm 8.42$	< 0.001
Serum lipase	$41.66 \pm 13.15$	$25.83 \pm 10.53$	<0.001

P value extremely statistically significant.

### Discussion

Type II diabetes is commonly associated with increased risk of various complications and subclinical pancreatitis is one of important complication can be seen in these patients.[3] Prior studies suggest that subclinical chronic pancreatitis maybe increased in subjects with type II diabetes.[7] In an asymptomatic diabetic population HARDT and colleagues showed that 35% of subjects with diabetic mellitus had a low fecal Elastase

concentration which is thought to be a marker of pancreatitis insufficiency or chronic pancreatitis. In these present study also similar results for observed.[8-10] Decrease serum amylase and serum lipase levels were observed in type 2 Diabetes mellitus patients compare to control group in the present study.[11] Certain Anti Diabetic drugs act on insulin receptor agonists may increase pancreatic enzymes above baseline.

Therefore, it is important for clinician to pay extra attention to clinical symptoms and imaging the diabetic population when considering the diagnosis of acute pancreatitis.

### Conclusion

From this study observation, it can be concluded that patients with chronic type II Diabetes mellitus is required more medical attention while using drugs which may influence serum amylase and serum lipase levels, because there is a significant change seen in group II when compared to group I.

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