

SUMMARY, CONCLUSION AND RECOMMENDATIONS

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HCV affects not only the liver but also non-hepatic tissues. A number of extrahepatic clinical disorders have been recognized, some of these disorders have an established association with HCV while others have probable or weak association. The association of HCV with both DM and hyperamylasemia is controversial.

The aim of this work was to study serum insulin, C-peptide and amylase concentrations in patients with CHCV infection in a trial to search for any pathogenic impact of HCV on some of the endocrine and exocrine functions of the pancreatic gland.

Our study included one hundred male subjects divided equally into 4 groups:

Group 1: Control group.

Group 2: Type-2 diabetes mellitus (DM) group.

Group 3: Chronic hepatitis C virus (CHCV) group.

Group 4: Chronic hepatitis C virus with type-2 diabetes mellitus (CHCV with DM) group.

Diagnosis of CHCV was based on the presence of positive HCV antibody by RIBA 11 and confirmed by positive HCV antigen by PCR and liver biopsy. Diagnosis of DM was dependent on past history of DM or oral hypoglycemic drugs, fasting blood glucose > 126 mg/dL and/or 2-hours postprandial glucose > 200 in more than one occasion. -

All patients and controls were subjected to the following :

- 1- Full history taking and thorough clinical examination.
- 2- Routine investigations including:
 - a- Hepatitis markers: HCV antibody and HBsAg.
 - b- Liver function tests: ALT, AST, albumin and bilirubin.
 - c- Fasting blood glucose, 2-hours postprandial blood glucose and serum creatinine.
- 3- Specific investigations including HCV-RNA, serum insulin, C-peptide and amylase concentrations.
- 4- Abdominal ultrasonography.
- 5- Liver biopsy for all patients positive for HCV antibody and antigen.

From our study the following results were obtained:

- 1- Only 8% of patients with CHCV and DM had positive family history of DM while 88% of patients in diabetic group had positive family history of DM.
- 2- The mean duration of HCV contamination was statistically longer in patients with CHCV and DM compared to patients with CHCV only.
- 3- 60% of patients with CHCV and DM had their liver disease diagnosed before DM. On the other hand 32% of these patients had DM prior to liver disease.
- 4- The mean value of serum ALT and AST were significantly higher in patients with CHCV infection (group 3) and in patients with CHCV and DM (group 4) when compared to the control group.
- 5- The mean value of ALT was statistically higher in patients with CHCV and DM (group 4) compared to patients with CHCV (group 3).
- 6- The mean value of both FG and 2-HPG were statistically higher in patients with CHCV and DM (group 4) compared to diabetic patients (group 2).

7- Serum insulin and C-peptide concentrations were:

- a- Statistically elevated in DM group (group 2) when compared to the control group.
- b- Non-significantly changed in CHCV group (group 3) when compared to the control group.
- c- Statistically decreased in CHCV with DM group (group 4) when compared to the control, the diabetic and HCV groups.

8- No significant correlation was found between serum insulin or C-peptide values and age of the patient, duration of HCV contamination, serum ALT, AST and FG in both CHCV with DM and CHCV groups. In addition no correlation was found between serum insulin and C-peptide and duration of DM in CHCV with DM (group 4) and DM (group 2) groups.

9- Serum amylase concentrations were:

- a- Non-significantly changed in DM group (group 2) when compared to the control group.
- b- Statistically elevated in patients with CHCV (group 3) and CHCV with DM (group 4) when compared to the control group and the diabetic groups.
- c- Non-significantly changed in CHCV group with DM (group 4) when compared to CHCV group (group 3).

10- No significant correlation was found between serum amylase values and age of the patient, duration of HCV contamination, serum ALT, AST and FG in both CHCV and CHCV with DM, groups.

From our work we could conclude that:

- 1- Hyperglycemia associated with CHCV infection can not contribute neither to type-1 nor to type-2 DM and this may suggest a significant role of HCV in the development of DM in these patients.

- 2- The occurrence of hyperamylasemia in both CHCV and CHCV with DM groups and hypoinsulinemia in the latter group only may point to the importance of some viral factors as length of contamination period, genotype and/or infection titre in the development of DM in that group. Moreover, the absence of frank pancreatic disease despite of this hyperamylasemia may suggest a state of subclinical pancreatic infection in patients with CHCV infection.
- 3- Pancreatic gland; both the endocrine and exocrine parts, might be included as one of the extrahepatic target of HCV.

In continuation to our work, we recommend further studies on:

- 1- Investigation of HCV antigen by PCR in pancreatic β -cells in HCV-infected experimental animals to clarify the exact pathogenic role of HCV infection in the development of DM.
- 2- Detection of HCV antigen in the pancreatic juice may throw lights on the effect of HCV on the exocrine pancreatic gland.
- 3- The role of HCV factors namely; HCV genotype and viremia titre in development of DM and hyperamylasemia in CHCV patients.
- 4- The HLA haplotypes and some autoantibodies specifically liver-pancreas antibodies and their relation to the pancreatic affection in CHCV patients.
- 5- The convenience of survey of hyperglycemia in patients with CHCV infection for early detection and management of DM and its complications.