PREVALENCE OF TYPE 2 DIABETES MELLITUS IN PATIENTS WITH HEPATITIS C VIRUS INFECTION IN SANA'A, YEMEN.

Prepared by: Dr/ Saeed Mana Almaidamah
Under supervision of Ass. Prof. Dr/ Mohammed Ba Mashmos
IS THERE RELATIONSHIP BETWEEN HCV & DM TYPE 2?

INTRODUCTION

- Currently, approximately 200 million people around the world are chronically infected with the hepatitis C virus (HCV).

- Chronic HCV infection often leads to hepatic cirrhosis and hepatocellular carcinoma.

- Recent epidemiological studies have suggested that HCV infection is associated with an increased risk of development of type 2 diabetes mellitus (DM).
Diabetes mellitus is a clinical syndrome characterized by hyperglycemia due to absolute or relative deficiency of insulin.

This can arise in many different ways but is most commonly due to autoimmune type 1 diabetes or to adult-onset type 2 diabetes.

Factors contributing to hyperglycemia include:

- Reduced insulin secretion.
- Decreased glucose utilization.
- And increased glucose production.
Insulin Biosynthesis, Secretion, And Action

- Insulin is produced in the beta cells of the pancreatic islets.
- It is initially synthesized as preproinsulin and by proteolytic processing giving rise to proinsulin, from proinsulin generates the C peptide and insulin.
- Glucose is the key regulator of insulin secretion by the pancreatic beta cells.
- Once insulin is secreted into the portal venous system, ~50% is degraded by the liver.
- Glucose homeostasis reflects a balance between hepatic glucose production and peripheral glucose uptake and utilization.
HEPATITIS C

- This is caused by an RNA flavivirus.
- Acute symptomatic infection with hepatitis C is rare.
- Most individuals will be unaware of when they became infected and are only identified when they develop chronic liver disease.
- Eighty per cent of individuals exposed to the virus will become chronically infected and late spontaneous viral clearance is rare.
Extrahepatic Manifestations of HCV:

1) CRYOGLOBULINEMIA
2) LYMPHOPROLIFERATIVE DISORDERS
3) DERMATOLOGICAL MANIFESTATIONS
4) KIDNEY MANIFESTATIONS
5) ENDOCRINOLOGICAL MANIFESTATIONS
6) RHEUMATOLOGIC and AUTOIMMUNE MANIFESTATIONS
7) EYE MANIFESTATIONS
8) OTHER SYNDROMES

Hypertrophic and dilative cardiomyopathy
POSSIBLE PATHOGENESIS OF HCV INFECTION IN THE DEVELOPMENT OF TYPE 2 DM:

- The pathogenic mechanisms causing DM in patients with HCV infection are still not well understood.

- The role of TNF-α in the pathogenesis of DM in chronic hepatitis C patients has gained extensive interest.
- TNF-α has been shown to inhibit insulin receptor and leading to insulin resistance in muscle and liver.

- In addition, TNF-α may reduce beta-cell function by direct toxic effects.
- HCV also could inhibit the insulin receptor and decrease insulin sensitivity.

- Other possible mechanisms include direct cytotoxic effects of HCV on pancreatic islet cells.

- Hepatic steatosis which is observed in more than half of HCV-infected patients may further cause insulin resistance.
Insulin resistance is associated with chronic hepatitis C and virus infection fibrosis progression.

Conclusions: Hepatitis C virus may induce insulin resistance irrespective of the severity of liver disease, and this effect seems to be genotype specific.

Hepatitis C virus infection and incident type 2 diabetes.

In conclusion, pre-existing HCV infection may increase the risk for type 2 diabetes in persons with recognized diabetes risk factors.
Association of Diabetes Mellitus and Chronic Hepatitis C Virus Infection.

In conclusion, They have established an association between diabetes mellitus and HCV infection.

Hepatitis C Virus Directly Associates With Insulin Resistance Independent of the Visceral Fat Area in Nonobese and Nondiabetic Patients.

The HCV infection by itself may promote IR independent of the visceral adipose tissue area.
Hepatitis C Virus Down-Regulates Insulin Receptor Substrates 1 and 2 through Up-Regulation of Suppressor of Cytokine Signaling 3.

Disruption of IRS1 results in insulin resistance, but not DM, because of compensatory hyperinsulinemia.

Disruption of IRS2 results in severe DM because of insulin resistance and disturbance of insulin secretion.

Prevalence of Type-2 Diabetes in Patients with Hepatitis C and B Virus Infection in Jeddah, Saudi Arabia.

Conclusion: The findings indicate that type-2 diabetes is more common in patients with an HCV than with an HBV infection.
OBJECTIVES:

- To determine the prevalence of diabetes mellitus (DM) in patients with hepatitis C virus (HCV) infection and comparison that to prevalence of DM in patients with C.L.D. due to other causes.
Material and Methods:

- A cross sectional study of HCV positive & other CLD patients admitted to Al-kuwait university hospital Sana'a Yemen during the period of January 2007 to December 2008.

- The data collection: Age, sex, nationality, history of DM, fasting blood glucose (>120 mg/dl), random blood glucose (>200 mg/dl), serology test of HCV ab, liver enzymes and abdominal U/S.

- Statistical analysis: All statistical analysis were performed using spss and p. value <0.05 was considered positive.
RESULTS:

- From January 2007 to December 2008 about two hundred eighty cases of CLD were admitted to Al-kuwait university hospital, 210 (75%) males and 70 (25%) females.

- 90 cases CLD with HCV infection, 61 (68%) males and 29 (32%) females.
30 (33%) cases DM type 2 with CLD due to HCV, 20 males, 10 females, while 8 (4%) cases DM type 2 with CLD due to other causes (from 190 cases), P< 0.05.

11(22%) cases DM type 2 with CLD due to HCV were recently diagnosed in hospital 9 (82%) males and 2 (18%) females.
CONCLUSION:

- Our findings indicate that DM is more common in patients with CLD due to HCV than in those with CLD due to other causes.

- There is strong relationship between DM appearance and CLD due to HCV and no relationship between DM appearance and CLD due to other causes.

- Liver cirrhosis (CLD) alone has not rule in development of DM.

- Further studies are needed on this field which will be reflected by possible treatment or prevention of DM by antiviral agents.
THANK YOU