Research Article

Lipid response in Hcv patients treated by direct acting antivirals

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Abstract

Background: sustained virological response (SVR) can be achived in high percentage of HCV patients with the availability of direct acting antiviral agents DAAs. We hypothesize that treatment of HCV with novel direct-acting antiviral may affect lipid profil in diabetic pateints who achieve sustained virological response after DAAs. In our study 50 Chronic HCV patients candidate to Internal Medicine Department and Hepatology unite of **One Day Surgery Hospital** for treatment with DAAs. Measurement of total cholesterol, HDL, LDL and triglyceride level befor and after DAAs therapy is done. Statistical analysis was done for these data. **Results:** After SVR; There is highly statistical significant difference as regard each of cholesterol, triglycerides, HDL and LDL, with lower level observed after treatment ($p < 0.001$). **Conclusions:** This study shows that eradication of HCV by DAAs will result in a parallel decrease in lipid parameters and that may improve clinical outcomes in patients with stablished T2DM.

Keywords: DAAs. Direct acting antiviral , Hepatitis C Virus, lipid profil.

Introduction

World wide more than one million people die each year from hepatitis c viruse (HCV) related diseases, and over 300 million people are chronically infected with hepatitis B or C. Egypt used to be on the top of the countries with heavy HCV burden (Omran et al., 2018).

Aim of work

The aim of our study is to evaluate changes in lipid profil TC, HDL, LDL and TG level in a case of series of HCV-positive diabetic patient receiving DAAs.

Patient and Method

The current study, prospective analytic case study was conducted on 50 persons, 21 (42%) males and 29 (58%) females of the same age group (35-65 yrs) were selected from outpatient clinic of diabetes and Internal Medicine Department and Hepatology unite of One Day Surgery Hospital from october 2018 to October 2019.

Patients: 50 recently diagnosed diabetic patients, with positive Hepatitis c viruse by PCR,21 (42%) males and 29 (58%) females their ages range between (35-65yrs).

Inclusion criteria: Hb A1C ≥ 6.5%,FPG ≥ 126 mg/dl, Random plasma glucose at any time of day without regard to time since last meal ≥

200mg/dl plus symptoms suggestive of DM as (polyuria, polydepsia, and unexplained wt loss.), Chronic hepatitis C was diagnosed by PCR for anti-HCV (third-generation enzyme immuneassay), HCV-RNA levels>1000 IU/mL.

Exclusion criteria:

Decompensated liver disease, Renal impairment, Hepatitis B virus infection, HIV infection, Autoimmune disorders, Clinically significant cardiac or cardiovascular abnormalities, Significant reduction of their neutrophil or platelet blood counts < 50000 mm3.

Methods:

Examinations and investigations were done with complete respect of humanity and dignity. All study group subjected to history, physical examination and investigations. calculation of body mass index.

Blood Samples collection: Blood was collected by venipuncture, and drown into; EDTA tube;

Citrate tube for CBC; and into plain tube for other investigations; where serum was separated and can be frozen at -20C for 3 months prior to assay.

Laboratory investigations including CBC (by), ALT, AST, serum albumin, total bilirubin, S. creatinine and Fasting blood glucose before and 3 months after HCV treatment, HCV antibody, HBs antigen by Elisa technique and Quantitative PCR for HCV RNA before treatment and 3 months later for SVR by Realtime PCR .lipid profile was done Triglycerides (TG), Total cholesterol (TC), High density lipoprotein cholesterol (HDLc), and Low density lipoprotein cholesterol (LDLc)= (Total cholesterol –HDLc) /5.

Statical analysis; The analysis of the data was carried out using the IBM SPSS 20.0 statistical package software. Data were expressed as mean± standard deviation (SD), minimum and maximum of range for quantitative parametric measures or median in quantitative non-parametric measures in addition to both number and percentage for categorized data.

Results

SVR was achieved by 100% in diabetic patients treated by DAAs. The lipid profile among patients shows that there is highly statistical significant difference as regard each of cholesterol, triglycerides, HDL and LDL, with lower level observed after treatment table (1) figure (1).

Table (1): Lipid Profile of the study group:

	Before	After	T	p value
Cholesterol	256.82±54.92 (154-381)	216.96±56.52 (102-329)	17.072	**<0.001***
TG	177.33±43.45 (97.7-296)	130.64±40.73 (61-246)	19.656	**<0.001***
HDL	44.24±7.71 (32-59)	45.8±4.07 (39-53)	-1.326	0.191
LDL	177.11±55.61 (88-305.2)	145.03±56.78 (33.2-262.6)	12.134	**<0.001***

Numerical data displayed as mean, standard deviation and range, analyzed by paired t-test
***: Significant level at P value < 0.05**

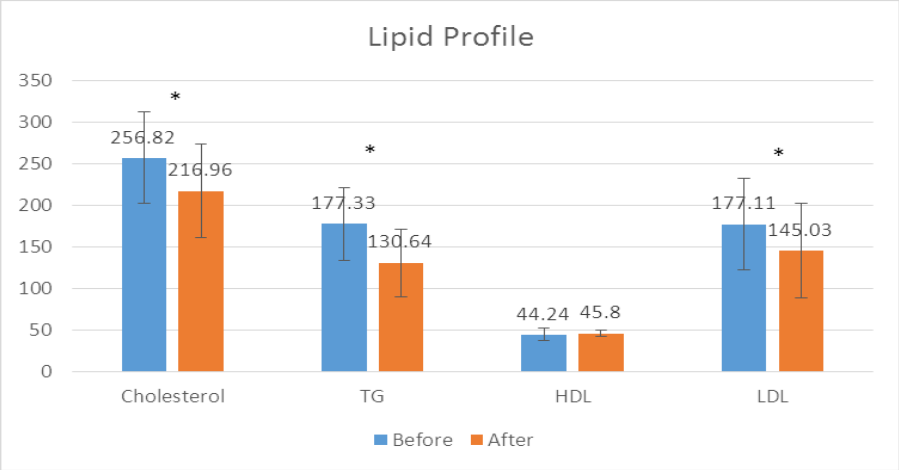

Figure (1)

Discussion

It is widely recognized that HCV infection is associated with several metabolic derangements including hypolipidemia, hepatic steatosis and metabolic syndrome (Zeuzem et al., 2014).

As regard the PCR , the present study revealed that PCR(before treatment by DAAs) was ranges from (11.500-10.900.000), PCR (After treatment by DAAs) became negative (below detection level) in 50 patients (100%).

In agreement with our findings, the study of Abada et al., 2017 which reported that the viral load of patients before DAA treatment was 1,283, 288±2, 165,432IU/mL. After treatment, regardless of the regimen prescribed, all patients had a negative viral load and sustained virological response SVR at 24 weeks, PCR was (below detection level).

Regarding the effect of antiviral treatment on lipid profile among patients, the present study reveal difference as regard each of cholesterol, triglycerides, HDL and LDL, with lower level observed after treatment.

In contrary to our results, the study of Batsaikhan et al., 2018 demonstrated that all serum lipid levels have been significantly increased in all patients and SVR groups but not in non SVR group

Liver plays fundamental role in lipid metabolism and hepatitis C virus (HCV) is linked to the lower lipid profiles and the progression of the chronic liver disease (Batsaikhan et al., 2018).

Several studies reported that HCV associated with lower lipid profiles and predisposes to dyslipidemia, liver steatosis or advanced fibrosis. Lipids also play an important role in HCV life cycle or its structure. However hypobetalipoproteinemia caused by HCV binding to lipoprotein was already reported and it is may be one of the main pathways to lowering lipid profiles during HCV infection. Several studies have reported dysregulated serum lipid levels in HCV infection, especially low levels of low-density lipoprotein cholesterol (LDLC) and little is known about the serum triglyceride (TG) (Petruzziello et al., 2016).

In conclusion, a significant improvement of lipid profile was observed in diabetic patients with chronic hepatitis C who obtained sustained virologic response with a clinically meaningful, these findings raise the question as to whether the HCV eradication may also impacts the future morbidity and mortality due to T2DM. For this reason, close T2DM follow up post-HCV treatment is warranted and large prospective studies are needed to validate these results.

Recommendations

Further studies on large geographical scale and on larger sample size to emphasize our conclusion.

Rapid reduction in hepatitis C viral load during direct-acting antiviral therapy for hepatitis C may lead to improvements in lipid profile in patients with diabetes

Physicians who initiate direct-acting antiviral therapy in patients with diabetes should inform the healthcare professional in charge of the diabetic care of the patient

Report any suspected adverse drug reactions associated with direct-acting antiviral therapies to the Yellow Card Scheme without delay.

References

1. Abada S, Almudena Vegaa, Diego Rincónb, Eduardo Hernándezc, Evangelina Méridac, Nicolás Macíasa, Raquel Muñozd, Mónica Millac, Jose Luñoa, Juan Manuel López-Gómez, 2017: Effectiveness of direct-acting antivirals in Hepatitis C virus infection in haemodialysis patients; DOI: 10.1016/j.nefroe. 2017.04.0.
2. Batsaikhan, B., Huang, C. I., Yeh, M. L., Huang, C. F., Hou, N. J., Lin, Z. Y., … Dai, C. Y. (2018). The effect of antiviral therapy on serum lipid profiles in chronic hepatitis C. *Oncotarget*, *9*(30), 21313–21321. doi:10.18632/oncotarget.25092.
3. Omar H, El Akel W, Elbaz T, et al. Generic daclatasvir plus sofosbuvir, with or without ribavirin, in treatment of chronic hepatitis C: real-world results from

18 378 patients in Egypt. Aliment Pharmacol Ther. 2018 Feb. 47 (3):421-31.
4. Petruzziello A, Marigliano S, Loquercio G, Cozzolino A, Cacciapuoti C. Global epidemiology of hepatitis C virus infection: an up-date of the distribution and circulation of hepatitis C virus genotypes. World J Gastroenterol. 2016;22:7824–40. https://doi.org/ 10.3748/wjg.v22.i34.7824.
5. Zeuzem S, Berg T, Gane E, Ferenci P, Foster GR, Fried MW, Hezode C, et al.Simeprevir increases rate of sustained virologic response among treatment-experienced patients with HCV genotype-1 infection: a phase lib trial. Gastroenterology 2014; 146: 430–41. e436 [DOI: 10.1053/j.gastro.2013.10.058].