INTRODUCTION

Chronic HCV infection may affect host glucose and lipid metabolism. The virus induces hypercholesterolemia, insulin resistance (IR), diabetes, atherosclerosis and steatosis (1-4). Low density cholesterol (LDL-C) is an atherogenic lipoprotein and its oxidized form (oxLDL) is involved in the formation of atherosclerotic plaques. OxLDL is a biomarker of cardiovascular disease and it is associated with all stages of atherosclerosis, coronary and peripheral arterial disease, acute coronary syndromes and ischemic cerebral infarction (5). Recently several novel highly effective direct acting antiviral agents (DAA) have completely changed HCV treatment (6), but their impact on HCV related metabolic disorders and atherosclerosis has never been studied.

MATERIALS & METHODS

We enrolled 77 consecutive HCV patients treated with DAA. Diabetic patients were excluded. Homeostatic model assessment-insulin resistance (HOMA-IR), total, low and high density cholesterol, triglycerides (TG) and oxLDL levels have been evaluated at baseline (T0), end-of-treatment (EOT) and after 12-weeks of follow-up (FU).

Measurements for serum lipids (TC, LDL-C, HDL-C and TG) were performed in our hospital laboratory. HOMA-IR score was calculated as (glucose x insulin)/22.5 using fresh serum glucose and insulin. Serum oxLDL was measured by enzyme-linked immunosorbent assay (ELISA) (Mercodia, Uppsala, Sweden).

Changes in TC, LDL-C, HDL-C, TG, HOMA-IR and OxLDL were assessed by Wilcoxon Test, differences in proportions were assessed by chi-square test.

AIM

The aim of this study was to investigate changes of serum lipids (total cholesterol, low and high density cholesterol, triglycerides), oxLDL and IR during and after DAA treatment of HCV.

RESULTS

The decline of HOMA-IR during antiviral treatment was gender-related, since men experienced a marked reduction of IR during therapy while women had no changes (Figure 2).

Table 2: Interferon free regimens

<table>
<thead>
<tr>
<th>DAA Therapy ± Ribavirin Patients (%)</th>
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<tbody>
<tr>
<td>Sofosbuvir + Simeprevir</td>
<td>31.1%</td>
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<tr>
<td>Sofosbuvir + Ledipasvir</td>
<td>27.3%</td>
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<tr>
<td>Sofosbuvir + Daclatasvir</td>
<td>13%</td>
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<tr>
<td>Ombitasvir/ritonavir, Obivir, Daclavir</td>
<td>21.1%</td>
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</table>

A significant decrease of HOMA-IR occurred during therapy and remained stable during FU (Figure 1). The baseline proportion of patients with HOMA-IR>24, diagnostic for a pre-diabetic state, was 45.5% and significantly decreased after treatment to 32.5% (p=0.03).

The baseline proportion of patients with optimal TC (TC<200 mg/dL) and LDL-C (LDL-C<129 mg/dL) levels significantly decreased during the study period from 88.3% to 70% (p=0.0075) and from 89% to 76.2% (p=0.04), respectively.

Notably also oxLDL levels increased during the study period (Figure 4), while HDL-C did not change and TG levels declined only during treatment.

CONCLUSIONS

The improvement of insulin resistance and the significant reduction of the proportion of patients with a pre-diabetic state suggest that DAA treatment might revert HCV related glucose metabolic alterations. The modulation of these changes observed during treatment according to gender is an interesting aspect of the interplay between virus and host and an area of future research.

The rapid and significant increase in total, LDL and oxLDL cholesterol levels observed in patients with advanced liver disease treated with DAA might increase their cardiovascular risk, suggesting the potential benefit of statin co-administration during or immediately after DAA therapy.

REFERENCES


No disclosure to declare in relation to this research

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