IMPACT OF HEPATITIS C REMISSION ON GLYCEMIC CONTROL IN PATIENTS WITH TYPE 2 DIABETES MELLITUS

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BACKGROUND

- Chronic hepatitis C: one of the major causes of chronic liver disease and cirrhosis worldwide, affecting 71 million people.

- A significant number of these patients will develop cirrhosis or liver cancer → nearly 400,000 deaths per year.

- Antiviral medicines can cure more than 95% of persons with hepatitis C infection, thereby reducing the risk of death from liver cancer and cirrhosis, but access to diagnosis and treatment is low.
Whoa! What happened there?
The baby boomers' livers cleaned us out.
BACKGROUND

- Occurrence of HCV is variably reported to worsen the glycemic control in patients with preexisting type 2 diabetes mellitus (T2DM).

- HCV proteins may increase insulin resistance by phosphorylation of serine and threonine residues of the insulin receptors. Triad of insulin resistance, steatosis and inflammatory processes.

- We aimed to investigate if achieving sustained virological response (SVR) after successful treatment of chronic HCV infection with direct acting antivirals (DAAs) improves glycemic control.
METHODS

• Retrospective chart review of patients with chronic hepatitis C and T2DM who achieved SVR using DAAs.

  ▪ Baseline demographics and disease characteristics were recorded:
    - Age, gender, time of diagnosis of HCV infection
    - Vibration Controlled Transient Elastography (Fibroscan®) staging before and after treatment
    - Type, duration and complications of diabetes mellitus (DM)
    - HbA1c- before and after achieving SVR
    - Glycemic control and change in anti-diabetic medications

• Change in body weight, smoking status, physical activity and other medications were also recorded.
RESULTS

- Eight out of 12 patients achieved SVR.
- All patients were men, mean age 58.4 years.
- Fibroscan® performed prior to initiation of treatment:
  - Stage F4 75%; F3 12.5%; F0 12.5%.
- All 12 patients had DM > 10 years with ≥ 1 micro- or macrovascular complication.
- Mean HbA1c decreased from 9.4 to 6.1 percent after achieving SVR.
- Glycemic improvement in all patients without any documented hypoglycemic events.
- No significant change in body weight.
<table>
<thead>
<tr>
<th>Patient</th>
<th>DAAs</th>
<th>Treatment Duration</th>
<th>HbA1c (Pre-treatment)</th>
<th>HbA1c (Post-treatment)</th>
<th>FibroScan® score</th>
<th>Medications for DM at diagnosis of Hepatitis C</th>
<th>Medications for DM at SVR</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Telaprevir</td>
<td>12</td>
<td>6.7 (49.7)</td>
<td>6.5 (47.5)</td>
<td>F4</td>
<td>Glargine 29 IU* daily, Aspart 5 IU* thrice daily</td>
<td>Glargine 29 IU* daily, Aspart 5 IU* thrice daily</td>
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<tr>
<td>2</td>
<td>Ledipasvir/Sofosbuvir</td>
<td>12</td>
<td>12.5 (113.1)</td>
<td>6.3 (45.4)</td>
<td>F4</td>
<td>Glargine 60 IU* daily, Lispro 5 IU* thrice daily</td>
<td>Glargine 20 IU* daily, Lispro 16 IU* thrice daily, Metformin XR 500 mg daily</td>
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<td>3</td>
<td>Ledipasvir/Sofosbuvir</td>
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<td>7.5 (58.5)</td>
<td>5.0 (31.1)</td>
<td>F4</td>
<td>Metformin 1000 mg twice daily, Glipizide 2.5 mg daily</td>
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<tr>
<td>4</td>
<td>Simeprevir/Sofosbuvir</td>
<td>12</td>
<td>12 (107.7)</td>
<td>5.8 (39.9)</td>
<td>F4</td>
<td>Metformin 1000 mg twice daily, Detemir 15 IU* daily</td>
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<td>Daclatasvir/Sofosbuvir</td>
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<td>11.9 (106.6)</td>
<td>7.2 (55.5)</td>
<td>F0</td>
<td>Metformin 1000 mg twice daily, Glargine 35 IU* daily</td>
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<td>8.6 (70.5)</td>
<td>5.8 (39.9)</td>
<td>F3</td>
<td>Metformin XR 750 mg daily</td>
<td>Metformin XR 750 mg daily</td>
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<td>7</td>
<td>Ledipasvir/Sofosbuvir/Ribavir</td>
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<td>7.2 (55.5)</td>
<td>6.2 (42.1)</td>
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<td>Metformin 500 mg twice daily</td>
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<td>8</td>
<td>Ledipasvir/Sofosbuvir</td>
<td>12</td>
<td>9 (74.9)</td>
<td>6 (42.1)</td>
<td>F4</td>
<td>Metformin 1000 mg twice daily</td>
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</table>
Change in HbA1c Before and After Treatment of Hepatitis C

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<th>Patient number</th>
<th>Pre treatment HbA1c</th>
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CONCLUSION

• We observed a significant decrease in HbA1c in patients with SVR.
• This effect was unlikely due to direct effect of DAAs, as the response was sustained after the therapy was completed.
• Although large RCTs are required to firmly establish this effect, findings of our single center study support prompt DAAs treatment for HCV especially in patients with T2DM.
• Better glycemic control is likely to delay or prevent short and long-term complications of diabetes.
LIMITATIONS

• Small sample size
• Single center
• Retrospective study and lack of controls
• All subject were males
QUESTIONS?

THANK YOU!

No Liver, No Life.
Hepatitis C (HCV) could be attacking your liver and you may not even know it. Without a liver, you can’t live. To find out more information about this deadly disease, visit www.cdc.gov/hepatitis