Hepatitis C reinfection after sustained virological response in HIV/HCV co-infected patients

Fábio Videira Santos, Joana Fragoso, Ana Cipriano, Miguel Araújo Abreu, Olga Vasconcelos, Ana Aboim Horta, Ana Paula Tavares, Josefina Méndez, Rui Sarmento e Castro

Serviço de Doenças Infecciosas [PT] | Infectious Diseases Service [EN]

Centro Hospitalar do Porto, Portugal

fabio.videira@chporto.min-saude.pt

16 May 2018 - 18 May 2018
Seville, Spain | NH Collection Sevilla Hotel
BACKGROUND

Hepatitis C reinfection after sustained virological response in HIV/HCV co-infected patients

World Hepatitis Day – Viral hepatitis in a nutshell,
BACKGROUND

- Globally, Hepatitis C is still a high burden disease
BACKGROUND

- Concomitant HIV infection is associated with higher rates of morbidity and mortality,

- Patients are less likely to clear viral infection, have more rapid rates of fibrosis, and have a higher risk of hepatic decompensation compared with HCV monoinfection
BACKGROUND

THE ROAD TO A CURE
by cure-hepc.com

HEP C DISCOVERY
The virus can't be identified yet but is described as non-A, non-B hepatitis

01 1970s

PEG-IFN & RIBAVIRIN
The use of pegylated interferon and ribavirin combo increased the cure rate to almost 60%

03 2000s

SOVALDI® & OLYSIO®
Taking out the sting of hepatitis C treatment; for certain genotypes interferon is no longer needed. The very first efficient oral combinations appeared

2013

TECHNIVIE® & DAKLINZA®
Harder-to-treat genotypes 3 and 4 can now be cured with up to 100% success rates, too

2015

ZEPATIER® & EPCLUSA®
The first oral pangenotypic regimen was approved. Patients in the most rural areas can now be treated

08 2016

HARVONI® & VIEKIRA PAK®
The first single-pill treatment regimens were invented. Hepatitis C can now be cured with up to 98% efficiency, and without ribavirin

06 2014

BOCEPREVIR & TELAPREVIR
The first antivirals were combined with interferon-ribavirin combo. The success rates improved to 70%, but the side effects were horrible

04 2011

HEP C DETECTION
The virus can be discovered in the blood. First ineffective treatments with interferon are attempted

02 1980s

In the oral DAA era

Potential for Hepatitis C elimination?

http://www.cure-hepc.com/what-drugs-are-used-for-hepatitis-c-treatment/
BACKGROUND

Hepatitis C reinfection after sustained virological response in HIV/HCV co-infected patients
Because the clearance of the virus, spontaneously or after treatment, does not confer protective immunity

On-going risk behaviour is a major risk that can lead to HCV reinfection following a successful treatment, therefore a major obstacle to achieve the HCV elimination goals
**BACKGROUND**

**Relapse vs. Reinfection**

- **Probable reinfection**: the detection of HCV viremia in persons who achieved SVR12 following completion of treatment with an effective oral DAA combination regimen with proven efficacy of 95% or greater who also have probable or definite risk factors for reinfection.
BACKGROUND

Main HCV reservoirs

- Core of the epidemic
- Sustain ongoing transmission
- To treat enough infected pool of individuals to reduce overall population prevalence

+++ Portugal

Intravenous Drug Users (IVDU)

- Relapse into IDU
- Sharing of paraphernalia
- High frequency of injections
- Use of cocaine and methamphetamines
- Younger age (Age < 30 years)
- Low levels of education
- Poor social functioning

HIV infected men who have sex with men (MSM)

- Receptive anal intercourse without a condom
- Rectal trauma with bleeding
- Sex while using illicit drugs (chemsex)

BACKGROUND

Rates of reinfection?

- **In the interferon era**: most of the data available on HCV reinfection suggest that these rates are low
  
  Aspinal et al, 2013 (4 reinfections, n=131) | Simmons et al, 2016 (36 reinfections, n=771)

- **In the DAA era**: data from small samples support low rates of HCV reinfection
  
  Dore 2016 et al, 2016 (6 reinfections, n=301) | Dore et al, 2017 (10 reinfections n=199)
• We aimed to assess the incidence of HCV reinfection in our tertiary center, and to describe possible associated factors in co-infected patients who had achieved sustained virological response 12 weeks after the end of treatment (SVR12), using DAA.
Prospective analysis of HIV/HCV co-infected patients:
- treated with DAA for Hepatitis C
  regimens of 12 to 24 weeks
- between 2015 and 2017
- with documented SVR12
- maintaining follow-up

MATERIAL AND METHODS

We excluded the cases of: relapse during the treatment | without documented SVR

IBM SPSS Statistics 23
RESULTS

- Of 400 coinfected patients treated for HCV during that period, in our center, we documented:

  Global SVR$_{12}$
  94.3%

between 2015 and 2017

5 reinfections, which translates into a rate of 1.25%
# RESULTS

## EPIDEMIOLOGICAL DATA

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>n =5 patients</td>
<td></td>
</tr>
<tr>
<td>Male = 80% (n=4)</td>
<td></td>
</tr>
<tr>
<td>Mean age= 44 years-old (min 38, max 59)</td>
<td></td>
</tr>
<tr>
<td>Mean CD4(^+) T lymphocytes at first SVR12= 360 cells/mm(^3) (min 164, max 520)</td>
<td></td>
</tr>
<tr>
<td>Undetectable HIV-RNA viral load (&lt;20 copies/mL)</td>
<td>= 100%</td>
</tr>
<tr>
<td>Risk behaviour: 100% had previous history and had resumed IVDU after SVR12</td>
<td>1 with known sharing of injecting paraphernalia</td>
</tr>
<tr>
<td></td>
<td>female patient had also risk for sexual transmission</td>
</tr>
<tr>
<td>Opioid substitution therapy = 80% (n=4), with methadone</td>
<td></td>
</tr>
<tr>
<td>Unemployed: 100% (1 is incarcerated)</td>
<td></td>
</tr>
<tr>
<td>Cirrhosis (F4): 40% (2 in 5 patients)</td>
<td></td>
</tr>
</tbody>
</table>
RESULTS

Regarding the HCV reinfection

- Mean HCV-RNA at first positive assessment
  
  3.155.960 IU/ml (min 1400, máx 7.690.000) | mean log$_{10}$ 6.10

- Mean time to documented reinfection

  10,6 months (min 5; max 17)

  average time between HCV- RNA measurements: 5,5 months (min 2,70, max: 12).

<table>
<thead>
<tr>
<th>Genotype Switch</th>
<th>Previous</th>
<th>Current</th>
</tr>
</thead>
<tbody>
<tr>
<td>1b</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>1a</td>
<td></td>
<td>4a/4c/4d</td>
</tr>
<tr>
<td>1a</td>
<td></td>
<td>3a</td>
</tr>
<tr>
<td>1a</td>
<td></td>
<td>1a</td>
</tr>
<tr>
<td>1a</td>
<td></td>
<td>1a</td>
</tr>
</tbody>
</table>
RESULTS

The five patients are still waiting for second-approved treatment.
CONCLUSIONS | Take home messages

We are now focused on HCV elimination but...

- although rare in our cohort, HCV reinfection is a concern mainly among individuals who had relapsed to IDU.

Reinfection

- should be minimized but not feared
- should be addressed and prevented when providing HCV care, probably with a more thoroughly follow-up after the successful first treatment, targeted for this high risk population.
The treatment of Hepatitis C is still a puzzle, but we have been solving a lot of problems and connecting pieces as they go.

REFERENCES


2. World Health Organization: Draft global health sector strategy on viral hepatitis, 2016-2021- The first of it's kind. 2015.


THANK YOU
Hepatitis C reinfection after sustained virological response in HIV/HCV co-infected patients