To the Treatment Median Patients

Introduction

1. BACKGROUND

- Prolonged low-level viraemia could increase the risk of virological failure or accumulation of resistance and has been linked to increased mortality.1,2
- There is currently little evidence to guide the optimal management of patients with low-level viraemia, particularly regarding when or if changes to ART regimens should be made at low (but detectable) viral loads and without the aid of a resistance test.
- Introduction of more sensitive assays since 2008, with high test variability at low viral loads leading to more frequently recorded viraemia, raises the concern that patients may be unnecessarily switched to salvage regimens following low but detectable viraemia.

Aims

We wanted to describe treatment switching in clinical practice at different viral load thresholds over time.

Our objectives were:
- To describe frequency and duration of periods of low-level viraemia in the range 51-1000 copies/ml
- To estimate rates of treatment switching following viral load measurements in viral load strata <50, 51-100, 101-200, 201-500, 501-1000, and >1000 copies/ml.
- To investigate predictors of treatment switch over at viral load >50 copies/ml, with particular interest in viral load changes over time.

Methods

Patients:

- Data were from the UK Collaborative HIV Cohort (CHIC) study.
- A CD4+ T cell count over 350 cells/µl at the time of the first CD4+ T cell count measurement and a CD4+ T cell count over 100 cells/µl at the time of the last CD4+ T cell count measurement.

Statistical Analysis:

- Treatment switch was defined as an intensification of the regimen or a change to the 3rd drug in the regimen.
- Each viral load was treated as a separate observation and was said to result in a treatment switch if a switch occurred within the following six month interval and prior to the next viral load measurement. Confirmatory viral loads (within 30 days) were excluded.
- The rate of treatment switching following viral loads <50, 51-100, 101-200, 201-500, 501-1000, and >1000 copies/ml were calculated.

- Poisson regression with generalised estimating equations was used to investigate predictors of a treatment switch at viral loads >50 copies/ml from the following covariates:
  - Viral load, calendar year, previous viral failure, previous viraemia, previous viral load, CD4 count, duration of current viraemia episode, cART regimen, time on cART.

- Risk factors for treatment switch included previous viral failure, previous viral load, time suppressed, prior to viraemia, centre, previous AIDS-defining event, sex, age and mode of acquisition.

Results

A total of 14814 individuals were included in the analysis. Patient characteristics at cART initiation are shown in table 1.

Table 1: Patient characteristics at cART initiation

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>N=14814</th>
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<tbody>
<tr>
<td>Age, median (IQR) (years)</td>
<td>37 (32, 44)</td>
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<tr>
<td>Sex, n (%)</td>
<td>Male 11449 (77.3)</td>
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<tr>
<td>Ethnicity, n (%)</td>
<td>White 8227 (55.5)</td>
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<tr>
<td>Mode of HIV acquisition, n (%)</td>
<td>Men having sex with men 8059 (54.4)</td>
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<tr>
<td>Hepatitis B co-infection, n (%)</td>
<td>Yes 3465 (23.7)</td>
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<tr>
<td>Hepatitis C co-infection, n (%)</td>
<td>Yes 362 (2.4)</td>
</tr>
<tr>
<td>CD4 count, median (IQR) (cells/µl)</td>
<td>210 (115, 300)</td>
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<tr>
<td>Viral load, median (IQR) (log10 copies/ml)</td>
<td>4.8 (4.2, 5.3)</td>
</tr>
<tr>
<td>cART regimen class, n (%)</td>
<td>NNRTI 10355 (98.8)</td>
</tr>
<tr>
<td>Retinoids</td>
<td>346 (23.9)</td>
</tr>
<tr>
<td>Other</td>
<td>102 (9.0)</td>
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</table>

- Median (IQR) time to viral suppression was 3.7 (2.4, 5.7) months.
- 4991 (33.7%) individuals experienced at least 1 episode of viraemia.
- Most (78.4%) episodes of viraemia were transient (viral load ‘blips’).
- Median (IQR) duration of viraemia episodes was 3.9 (2.2, 6.5) months.
- The majority (89.4%) of viraemia episodes ended with re-suppression without a treatment switch, whilst only 6.7% involved a switch. The remaining 3.9% episodes had not resolved by follow-up end.

1. REFERENCES