Prevalence of minority resistant and X4 variants in HIV-2 naïve patients: ANRS COS Cohort
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The aim of this study was to assess the prevalence of MRV and X4-minority variants in an HIV-2 infected naive population.

Background

- HIV-2 represents a unique model of reduced HIV pathogenesis.
- HIV-1 minority resistant variants (MRV) can increase risk of virological failure if they are detected before antiretroviral treatment (Li et al., JAMA, 2011; Coci-Leprü et al., J Antimicrob Chemother, 2015).
- In HIV-2 infection, no data are available on MRV.
- The aim of this study was to assess the prevalence of MRV and X4-minority variants in antiretroviral-naive HIV-2 infected patients.

Patients and methods

- We assessed 47 HIV-2-infected antiretroviral-naive patients with detectable plasma viral load (>100 c/ml), included in the French HIV-2 ANRS COS Cohort.
- Ultra-deep Sequencing (UDS) (Roche 454® Junior) was performed in protease and reverse transcriptase regions.
- Mutations >1% were considered and interpreted with HIV-2 ANRS list.
- Among the list of mutations we only retained mutation present in less than 10 % of sequence issued from ARV-naïve patients.

Results

**Table 1: Characteristics of patients (n = 47)**

| Median age | 47 years (IQR = 36 – 54) |
| Origin | 72% West Africa |
| CDC stage C | 15% |
| HIV-2 Group A: | 68% / B: 32% |
| Median CD4 cell count | 328/mm² (IQR = 216 – 428) |
| Median viral load (VLS) | 1967 c/ml (IQR = 718 – 4188) |

**Protease and RT UDS results**

- Protease UDS was successful in 41 samples (87%).
- Reverse transcriptase UDS was successful in 38 samples (81%).
- Prevalence of drug resistance mutations (DRM) in protease or reverse transcriptase:
  - 20% detection threshold: 7.9% (95%CI = 0.0 – 16.5).
  - 1% detection threshold: 21.9% (95%CI = 8.8 – 35.1).

**Tropism UDS analyze**

- Tropism was assessed in 19 samples.
- Mean number of reads = 7503 (IQR = 5536 – 10540).
- 2 patients (11%) exhibited X4-tropic virus in more than 50% of the reads.
- Among the 17 patients exhibiting R5-tropic viruses in majority, 11 (65%) displayed minority X4 variants.
- Minority X4 variants were present in a median proportion of 0.41% (IQR = 0.33 – 0.47).

Conclusion

- In this first study assessing the prevalence of MRV in HIV-2 infection, we observed a two to three-fold higher prevalence of DRM in antiretroviral-naive patients when 1% detection threshold of mutations was used compared to 20% threshold.
- Similar results between the two technologies have been described in HIV-1 antiretroviral-naive patients (Vodeca et al., JIDMRW 2015; Simon et al., J Infect Dis, 2009).
- In addition, X4 minority variants were detected in the majority of patients.
- This survey showed moderate transmitted drug resistance prevalence. Even if there is no need to test for baseline genotypic resistance in clinical practice with this prevalence rate, these data do show the need to establish a longitudinal survey on TDR in HIV-2 patients in France.