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Prevalence of HIV1 resistance mutations to Rilpivirine and Calbotegravir in treatment-naïve patients

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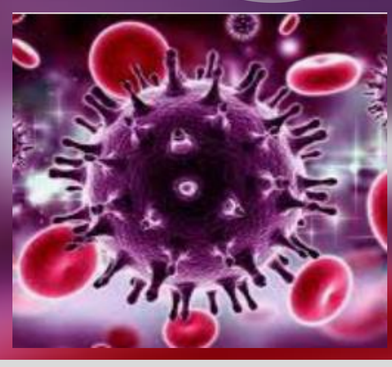

INTRODUCTION

The use of long-acting (LA) injectable Calbotegravir (CAB) + Rilpivirine (RPV) was approved by the FDA in January 2021 as an optimization of oral therapy. This regimen should be used in patients who have been virologically suppressed for 6 months, with no history of treatment failure and no resistance or suspected resistance to CAB and/or RPV. The main factors for treatment failure are: archived resistance mutations to Rilpivirine, A1/A6 subtypes and body mass index > 30 kg/m2. Studies have shown low virological failure at 48 weeks (± 1%). When it does occur CAB and RPV resistances are common, and they are more frequent in the A1/A6 subtypes. Currently in Portugal, the administration of this therapeutic regimen is not being carried out.

BACKGROUND

To study the prevalence of resistance mutations to Rilpivirine and Calbotegravir in treatment-naïve patients followed in the clinical units and outpatient clinics of Infectious Diseases and Internal Medicine of a hospital center.

MATERIAL and METHODS

A population of 712 treatment-naïve patients was studied between January 2020 and December 2023, 79% men, average age of 39 years and average viral load 597 846 copies/ml (5,8log). Due to a change in methodology, two genotypic sequencing tests were used - the Sanger method and Next Generation Sequencing (NGS) (fig.1), allowing simultaneously sequencing of HIV-1 reverse transcriptase, protease, and integrase regions. The results were interpreted according to the Stanford HIV Drug Resistance Database (http://hivdb.stanford.edu). Mutations were defined according to the IAS-USA drug resistance mutations list.

RESULTS

Our study showed 0.4% of patients had mutations conferring resistance to Cabotegravir, with 2 having R263K and 1 having Q148H, E138K, and G140S mutations (fig.2). Patients with mutations conferring resistance to Rilpivirine were 2,2%, of which 1.3% had resistance and intermediate resistance, the most common K101E and E138G; 3.4% of patients had the E138A polymorphism, associated to a low level of resistance to Rilpivirine (fig.3). Subtype A1, associated with a poorer response to CAB+RPV regimen was found in 2% of patients. The predominant subtypes were B (44%), CRF02_AG (15%), G (9.8%) and C (9.3%) (fig.5)

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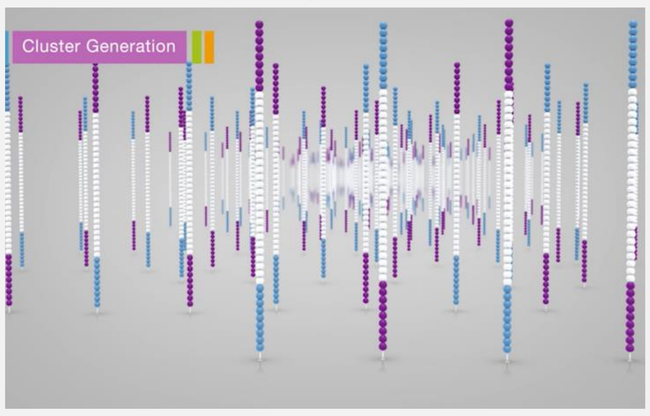
Next Generation sequencing



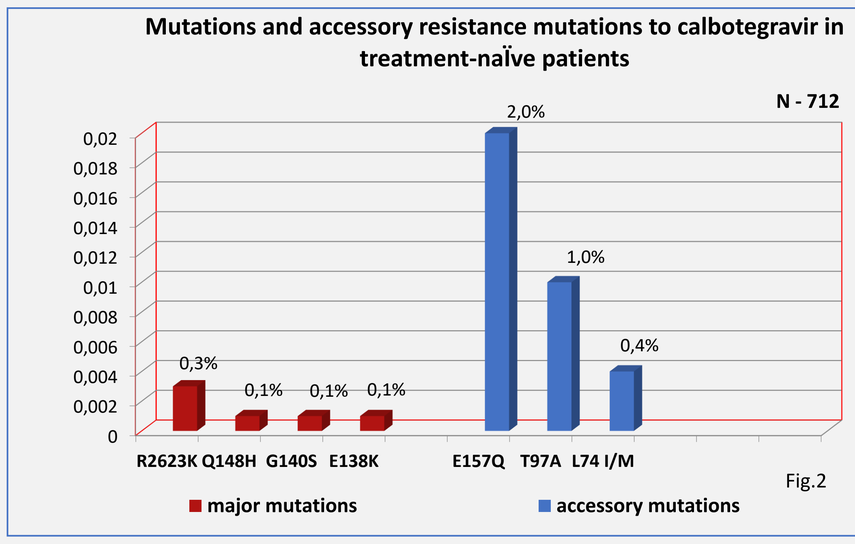


Fig.2

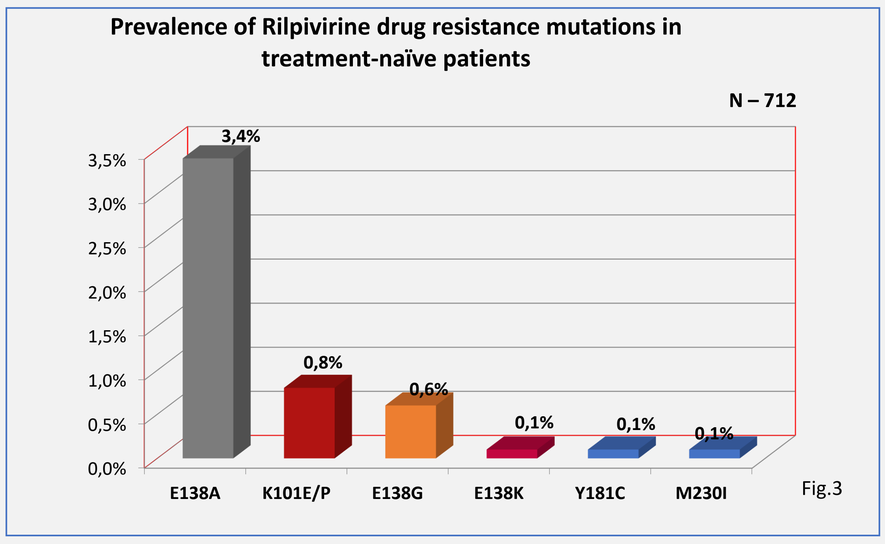


Fig.3

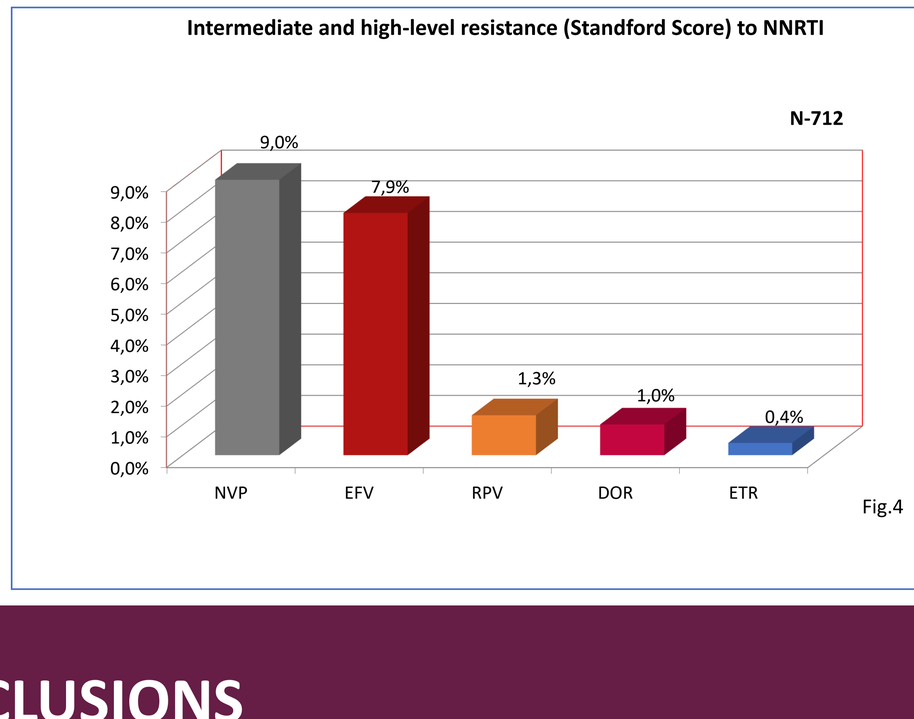


Fig.4

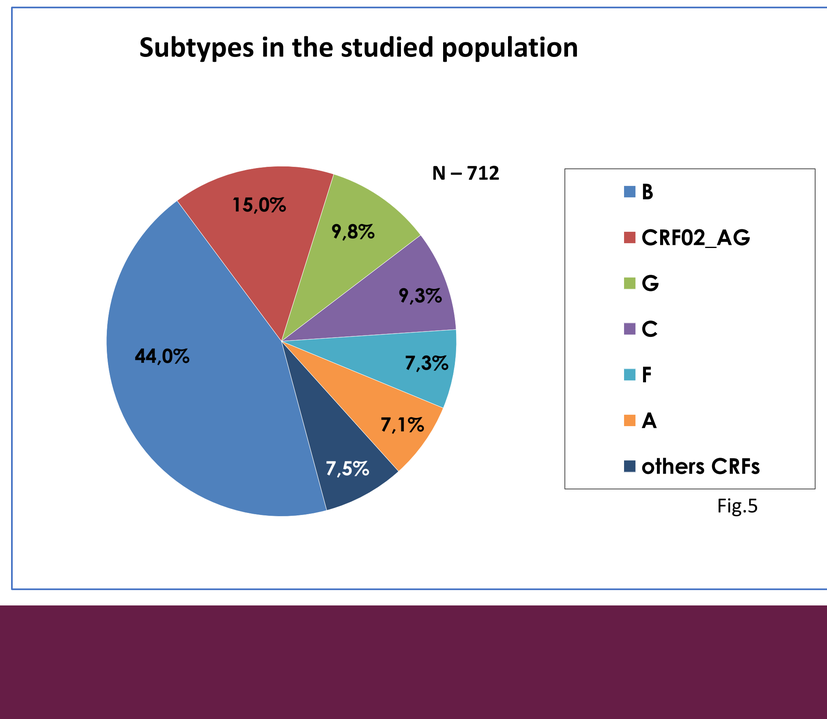


Fig.5

CONCLUSIONS

In our study, there was a low prevalence of resistance to both drugs (0,4% and 2,2%) which leads us to conclude that this regimen is a good alternative to current therapies. This regimen is also more convenient, protecting patients privacy. In the SOLAR study 90% of participants in BIC/ FTC/ TAF preferred to switch to CAB + RVP LA.

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