Virologic Failure with Cabotegravir-Rilpivirine Injections: A Single-Site Experience

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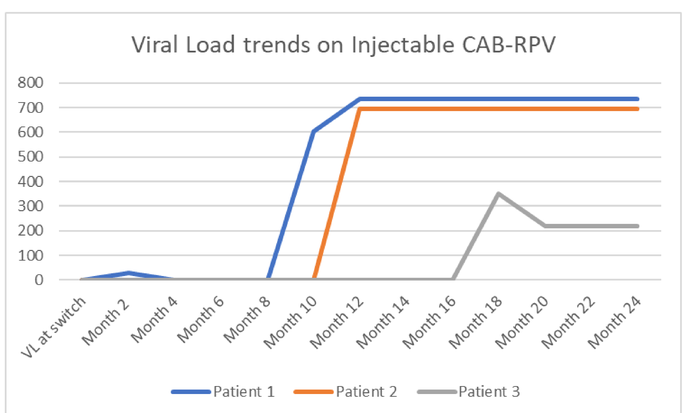
Background

Cabotegravir-rilpivirine (CAB-RPV), the first intramuscular injectable antiretroviral therapy (ART) for people with HIV is associated with high compliance rates and patient satisfaction. Multiple studies demonstrate low rates of virologic failure (VF) and development of resistance, confirmed by real world analyses. Here we describe our experience with a higher rate of VF at an HIV clinic in Chicago, IL.

Methods

We assessed baseline viral loads (VL) at time of switch in ART, clinic location for the injections and response after transitioning to CAB-RPV. VF was defined as two consecutive VL >200 copies/ml. Resistance mutations in patients with VF were recorded.



We identified higher than expected rates of virologic failure (4%) in patients transitioned to injectable Cabotegravir-Rilpivirine

Patient Characteristics

Demographics		Patient 1	Patient 2	Patient 3
Age at VF		24	44	47
Gender		F	M	M
Race/ethnicity		Other/Latinx	African American/Non Latinx	African American/Non Latinx
Years since HIV diagnosis		23	18	1
No. of prior ART regimens		>3	2	1
Smoker		N	N	N
BMI		27	35	28
Injection delivery site				
	Clinic	Y		
	Infusion center		Y	Y
UD on INI at time of switch		Y	Y	Y
Prior Rilpivirine exposure		Y	N	N
Prior known resistance mutations		M184V	K103N	N/A
Resistance mutations at VF		L74L/M, T97T/A, **G140S, Q148H K101P, E138K,** I178L, Q207E	L74I, T97T/A, S147S/G, **N155H**	**G140G/S, Q148Q/R**

Results

75 undetectable patients (UD, VL <40 copies/ml) were switched to CAB-RPV. 10 received their injections at an independent infusion center (IC) with trained injectors. 65 received injections at our clinic. Two of ten patients at IC and 1 of 65 patients at our clinic developed VF (4%). At the time of HIV diagnosis, one patient (pt1) had an M184V , the second (pt2) had non-nucleoside reverse transcriptase inhibitor (NNRTI) resistance (K103N) while a genotype failed for the third patient (pt3). All three patients were UD on an integrase inhibitor (INI) based regimen; pt1 was also on rilpivirine at the time of switch. Patient characteristics are displayed in the table. The patients were UD for 8, 10 and 16 months respectively on CAB-RPV before VF. Genotypes at the time of VF revealed INI mutations in all three patients with pt1 also demonstrating NNRTI mutations. 1.5-inch needles were used in all three. The two IC patients raised concerns about irregular injection techniques. All three switched to a protease inhibitor-based regimen and were subsequently UD.

Conclusions

While injectable ART are revolutionary in HIV care, clinicians should be aware of possible higher real-world failure rates due to nonstandard injection practices, smoking status, high BMI or unknown pre-existing resistance mutations. Ensuring appropriate training for injecting staff, use of longer needles and obtaining HIV-1 proviral DNA resistance assays may be considered prior to switching to CAB-RPV to further decrease the risk of VF.