Low Prevalence of Protease Inhibitor Mutations Among People Living with HIV in Botswana: Insights from the Botswana Combination Prevention Project

#P131

Marea Neo Pema[1], Dorcas Maruapula[1], Doreen Ditshwanelo[1], Natasha O. Moraka[1, 2], Nokuthula S. Ndlovu[1,3], Ontlametse T Bareng[1,2], Patrick T Mokgethi[1,3], Wonderful T Choga[1, 2], Boitumelo J L Zuze[1], Catherine K Koofhethile[1,4], Sikhulile Moyo[1,4,5,6], Simani Gaseitsiwe[1,4]

[1] Botswana Harvard Health Partnership, Gaborone, Botswana,[2] School of Allied Health Professions, Faculty of Health Sciences, University of Botswana, Gaborone, Botswana,[3]Department of Biological sciences and Biotechnology, Botswana International University of Science and Technology, Palapye, Botswana, [4]Department of Immunology and Infectious Diseases, Harvard University T.H. Chan School of Public Health, Boston, MA, USA, [5]School of Health Systems and Public Health, University of Pretoria, South Africa
[6]Division of Medical Virology, Faculty of Medicine and Health Sciences, Stellenbosch

BACKGROUND

- The use of protease inhibitors (PIs) in Botswana has immensely contributed to the management of HIV, however, there is limited data on PI drug resistance profiles in Botswana.

- We therefore investigated the prevalence of PI resistance associated mutations (RAMs) from the Botswana Combination Prevention Project (BCPP), a cohort which recruited participants from 2013 to 2018.

METHODS

- Among the 6075 participants with proviral HIV-1 *pol* sequences, a subset of 6060 participants with available antiretroviral (ART) status were screened for PI RAMs.

- All sequences were screened for hypermutations using the Los Alamos database-Hypermut tool.

- The Stanford University HIV Drug Resistance Database was used to interpret PI mutations for both ART naïve and experienced individuals.

RESULTS

- ART-naïve participants were 1281 (21.1%) while ART-experienced participants were 4779 (78.9%).

- The overall prevalence of PI RAMs was 0.68% (41/6060) of which the prevalence of PI RAMs among the ART-naïve participants was 0.39% (5/1281), while among the ART-experienced participants the PI RAMs prevalence was 0.75% (36/4779).

- Among the 36 ART-experienced participants with PI mutations, 3 were unsuppressed, 31 were suppressed and 2 were suppressed and on PI regimen.

- The most prevalent PI RAM among the ART-experienced and naïve participants was M46I (Figure 1).

- Among the participants with PI RAMS, 10 of the ART-experienced participants had more than one PI RAMs and 3 of the ART-naïve participants had more than one PI RAMs.

- Out of the 4779 ART-experienced participants, 268 were on PI containing regimen.

- From the 268 participants, 14 were unsuppressed, 142 were suppressed, 58 had no ART status and 54 were on ART for less than 3 months.

The frequency of PI mutations on ART-experienced and naïve participants

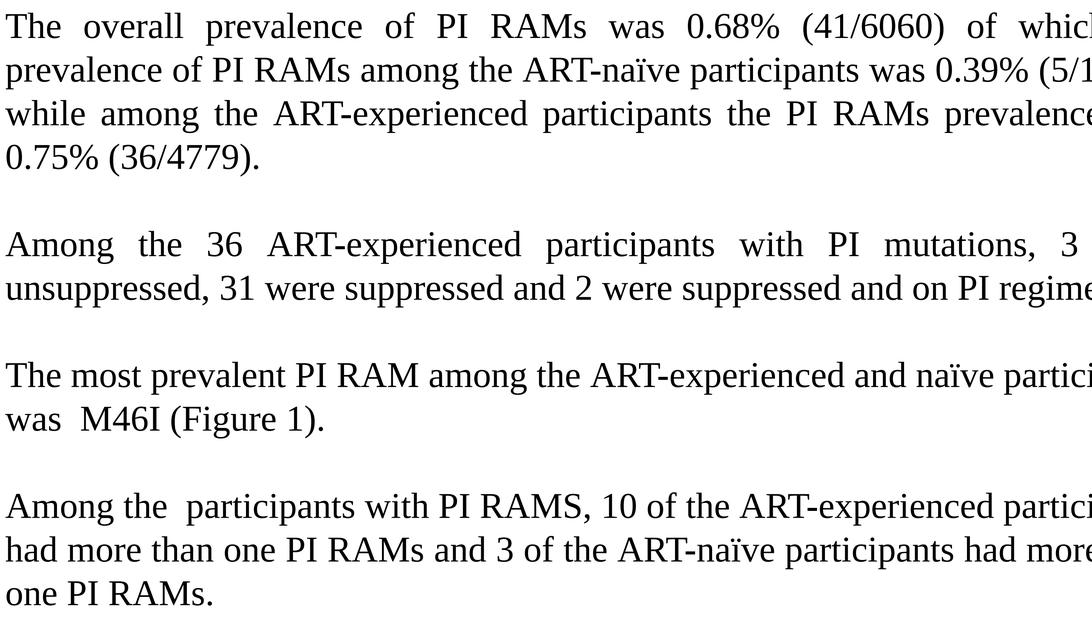

Figure 1: A graph showing the frequency of PI mutations on ART-experienced and naïve participants

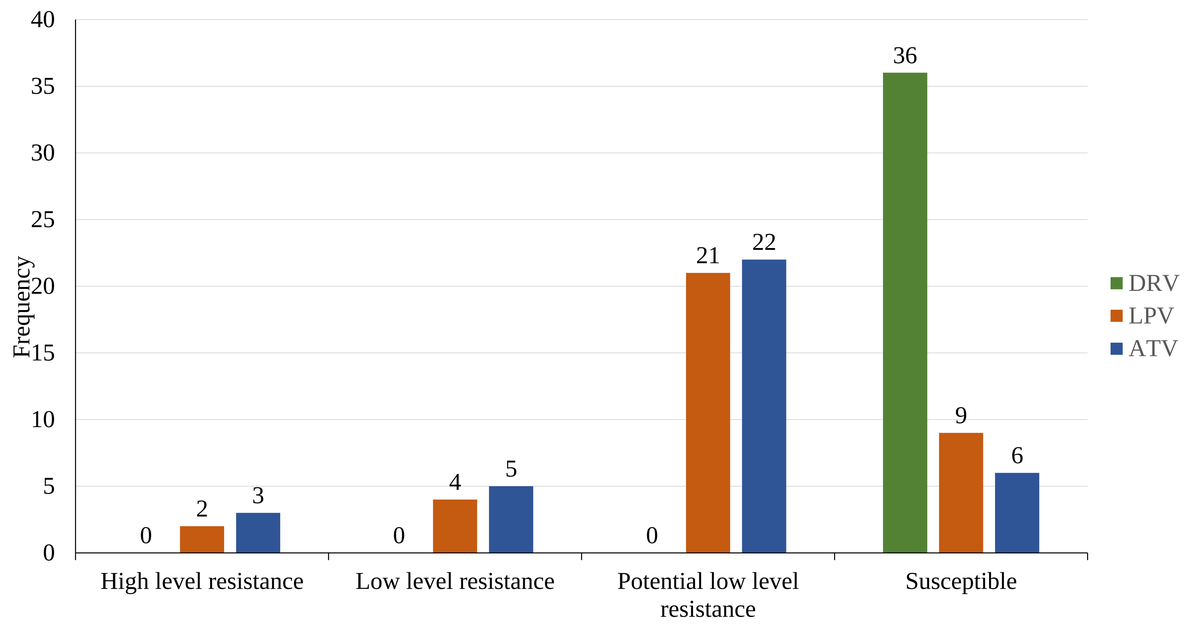

Figure 2: A graph showing PI regimens and susceptibility levels in ART-experienced participants with PI mutations.

Table 1: HIV DRMs detected in individuals who were experiencing virological failure while on PIs

		Frequency of DRMs in participants experiencing virological failure (N=268), (n=22)
Drug Class	**DRMs**	**n (%)**
NRTI	V75I	1 (0.37)
	M184V	9 (3.36)
	D67N	2 (0.75)
	K70R	2 (0.75)
	T215I	1 (0.37)
	K219E	2 (0.75)
	T215F	1 (0.37)
NNRTI	A98G	1 (0.37)
	K103N	5 (1.87)
	Y188L	1 (0.37)
	E138A	4 (1.49)
	K103S	1 (0.37)
	P225H	1 (0.37)
	V108I	1 (0.37)
	M230I	1 (0.37)
	V106A	1 (0.37)
	F227L	1 (0.37)

NRTI, nucleoside reverse transcriptase inhibitors;
NNRTI, non-nucleoside reverse transcriptase inhibitors; N , the total number of participants on Pi; n, participants experiencing virological failure

CONCLUSION

- The overall reported PI prevalence among the BCPP cohort is relatively low at 0.72%.

- The study reported low PI prevalence among treatment-naïve participants at 0.6% and among treated participants at 0.75%. Additionally, the observed multiclass drug resistance was also low, suggesting that the use of PIs may potentially reduce the risk of virological failure.

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BCPP STUDY PARTICIPANTS

BHP BOTSWANA HARVARD HEALTH PARTNERSHIP