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HIV-1 subtype diversity and international travel in Romanian people who inject drugs

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BACKGROUND

Although subtype F1 is highly prevalent in Romania, increases in international travel have lead to increased detection of other subtypes in newly diagnosed HIV patients (1). The increasing incidence of HIV infection among intravenous drug users (IVDUs) in Romania, has determined a diversification of the circulating subtypes, which impacts the genetic profile of the Romanian HIV epidemic (2).

Objective:

• To describe the clinical and epidemiological patterns correlated with recent history of international travel in newly diagnosed IVDUs with HIV; to assess how travel contributes to the spread of different subtypes.

METHODS

- Retrospective study of 270 patients over 18 years old notified with HIV infection in one infectious diseases hospital in Bucharest, Romania, between October 2012 - September 2017.
- Epidemiological, demographic and clinical data were collected through a questionnaire survey.
- We excluded patients with missing data regarding travel history and/or available HIV pol sequences.
- Subtype analysis was done using Rega HIV-1 subtyping tool v2.0 and further phylogenetic analysis was performed with FastTree.
- Differences between groups were analyzed using the Mann-Whitney U test for continuous variables and the chi-square test for dichotomous variables.

RESULTS

• 201 patients were included in the study, 92 (46%) reported recent international travels. Travellers who used intravenous drugs and had unprotected sex during travel were infected in a higher proportion with non-F1 subtypes (Table1).

• Travel to Spain was reported more frequently for IVDUs infected with F1 strains than for those infected with other subtypes (52% vs 46%, p=0.6, OR[95%CI]0.74[0.26-2.08]). More IVDUs with non-F1 subtypes reported travel to Greece as compared to IVDUs with F1 subtype (p=0.002, OR[95%CI]6.71[2.02-22.25]).

• Phylogenetic analysis indicated that IVDUs sequences are clustering together, regardless of their travelling status. The sequences of travelling IVDUs are intermixed in the phylogenetic tree with the sequences of non-travelling IVDUs (Figure 1). For subtype B, the sequences from IVDUs who reported travelling abroad are more diverse and intermixed with reference sequences.

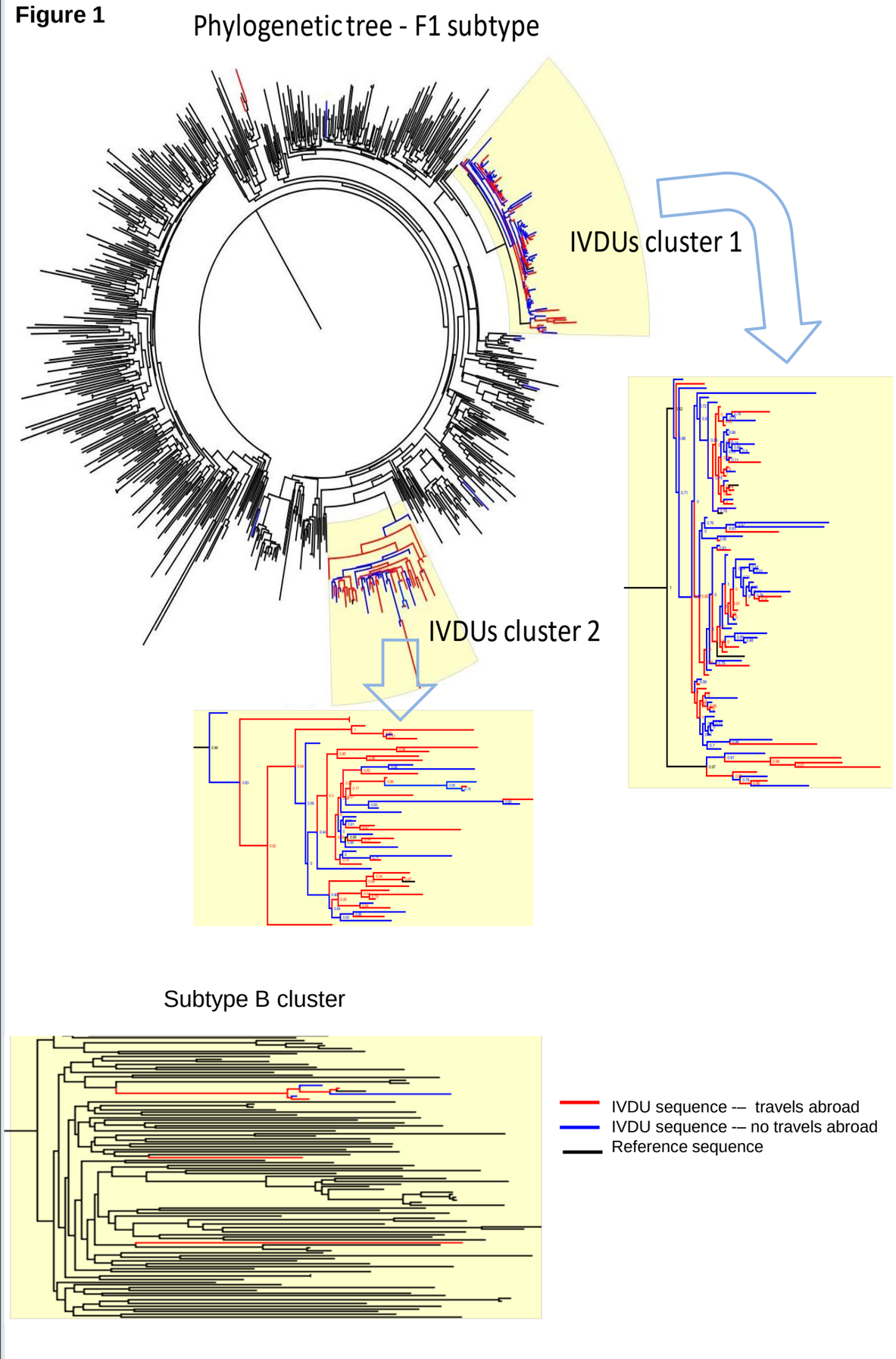
Epidemiological, clinical and laboratory markers in HIV-1 infected travellers vs non-travellers

	International travellers N=92	Non-travellers N=109	p OR [95%CI]
Male, N (%)	78 (85)	91 (843)	0.84 0.91[0.42-1.94]
Age (years)(median, IQR)	31 (26-34)	30 (26-35)	0.75
In-prison, N (%)	63 (68)	56 (56)	0.01 2.05[1.15-3.66]
HIV stage: A, N (%)	48 (52)	78 (72)	0.09 0.42[0.16-1.07]
HIV stage: B, N (%)	11 (12)	7 (6)	0.07 2.53[0.92-6.97]
HIV stage: C, N (%)	33 (36)	24 (22)	0.01 1.97[1.06-3.71]
Chronic hepatitis B, N (%)	1 (1)	10 (9)	0.02 0.12[0.01-1.01]
Chronic hepatitis C, N (%)	91 (99)	105 (96)	0.62 2.6[0.26-25.44]
CD4 T-cell count, (cells/mm^3)(median, IQR)	404 (246-508)	402 (256-575)	0.91
RNA-HIV, (copies/ml)(median, IQR)	85819 (31095-242622)	93573 (25496-225120)	0.37
RNA-HCV, (IU/ml)(median,IQR)	1494000 (177167-4058796)	1189613 (100536-5400387)	0.2
Heroin abuse, N (%)	88 (96)	100 (92)	0.38 1.98[0.58-6.65]
NPS* abuse, N (%)	80 (87)	100 (92)	0.35 0.6[0.24-1.49]
HIV subtype F1, N (%)	66 (72)	82 (75)	0.63 0.83[0.44-1.56]
HIV subtype B, N (%)	5 (5)	2 (2)	0.25 3.07[0.58-16.23]
HIV subtype CRF14_BG, N (%)	14 (16)	14 (13)	0.68 1.21[0.54-2.71]
HIV subtype CRF14_F1, N (%)	5 (5)	3 (3)	0.47 2.03[0.47-8.73]
HIV other recombinant subtypes, N (%)	2 (2)	7 (6)	0.18 0.32[0.06-1.59]

* New psychoactive substances

RESULTS

Figure 1



CONCLUSIONS

• Regardless the history of international travel, non-F1 subtypes were found in similar proportions.

• Among travellers, drug use and unprotected sex were reported especially in patients with non-F1 subtypes. Non-F1 subtypes were associated with travelling to Greece.

• Phylogenetic analysis also suggested international transmission events for CRF14_BG and B subtypes.

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