RECREATIVE DRUGS: NEW SUSPECTS IN HAND MYSTERY GAME

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BACKGROUND

- HIV associated neurocognitive disorder (HAND)
  - No clear pathogenesis mechanisms
  - Lack of diagnostic tools
  - High heterogeneity in neuroimaging studies
  - Lot of confounding factors
    - co-morbidities
    - use of recreational drug

METHODS

- Population
  - Asymptomatic young MSM
    - 23 HIV+ men (normal CD4+ cell count and undetectable viral load)
    - 26 PrEP users (matched for lifestyle and age)
    - 23 matched healthy controls (HC)

- Investigation
  - Structural brain MRI and FDG-PET on a hybrid PET-MR
  - Comprehensive neuropsychological testing
    - Executive functions, memory, language, praxis and attention
    - Recreative drug use survey for HIV+ and HIV-PrEP groups

- Data analysis
  - Voxel-based approach for FDG-PET
  - Atlas-based brain parcellisation for MRI

- Frascati criteria: not specific of HIV+
- Dysexecutive profile in HIV+ *vs* PrEP
- Hypometabolism correlating to recreational drug level
- Complex interplay between HIV+ and recreational drugs
- Dynamic prevention for recreational drug in both groups

PATIENT CHARACTERISTICS

	HIV+ (n=23)	PrEP (n=26)	Healthy controls (HC) (n=23)	p value
Age (years)	38 +/- 9.5	39 +/- 9.08	34 +/- 10.03	HIV+/HC: p=0.17 HIV+/PrEP; p=0.75 PrEP/HC; p=0.08
Duration of HIV infection (months)	58 +/- 46.74	/	/	/
CD4+ (cell count /mm3)	834 +/- 294.83	/	/	/
Timespan with CV>40 (ma copy/ml)	31.11 +/- 41.69	/	/	/
Recreative drug use (RDU) score	4.21 +/- 3.26	4.78 +/- 3.51	0.54 +/- 0.59	HIV+/HC: p<0.001 HIV+/PrEP; p=0.58 PrEP/HC; p<0.001
TDF index (nb of pills)	45.30 +/- 45,94	11.40 +/- 10.12	/	P<0.001

RESULTS

- Neurocognitive:
  - 23 HIV+ and 21 HIV-PrEP with asymptomatic neurocognitive impairment (Frascati's criteria)
  - Significant lower performances in HIV+ compared to HIV-PrEP for:
    - executive functions
    - attentional and working memory functions
- Neuro-imagery:
  - HIV+ *vs* PrEP: No structural or metabolic brain difference
  - HIV+ and HIV-PrEP *vs* HC:
    - Significant hypometabolism in the right dorsolateral and dorso-mesial prefrontal cortex (fig 1)
      - Significant Correlation to the level of recreational drug use (fig 2)
      - No correlation with neurocognitive data.

CONCLUSIONS

- High level of asymptomatic cognitive impairment in both HIV+ and PrEP subjects (Frascati criteria).
- Dysexecutive syndrome in HIV+ compared to PrEP
- Common prefrontal hypometabolism, without brain atrophy, in HIV+ and PrEP related to the level of drug of abuse.
- Complex interplay between recreational drugs and HIV in the induction and development of HAND

ADDITIONAL KEY INFORMATION

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Figure1

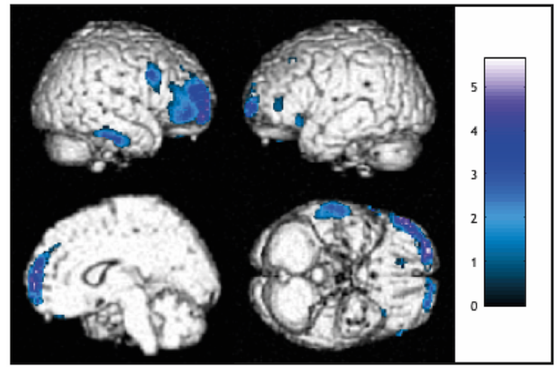


Figure 2

