Prevalence of Polypharmacy and potential drug-drug interactions in PLWH: a cross sectional study from the Modena HIV Metabolic Clinic cohort

P 150

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Introduction

- Comorbidities parallel the aging epidemic affecting PLWH and implies an increasing number of co-medications and polypharmacy.
- Polypharmacy increases the risk for potential drug−drug interactions (DDIs), adverse drug reactions and grows pill burden.
- Our aim was to describe more frequently used co-medications, assess polypharmacy prevalence, and estimate the number of potential drug-drug interactions in PLWH attending Modena HIV Metabolic Clinic (MHMC) in the year 2017. Secondary objective was to estimate independent predictors of potential DDIs.

Study Design and Methods

- Cross-sectional study targeting HIV+ patients on ART, attending MHMC in 2017-2018. Comprehensive drug therapy was collected from patient charts using the 5th level of Anatomical Therapeutic Chemical (ATC) classification system and divided into categories.
- Polypharmacy (PP) was defined in patients with ≥ 5 medications not including antiretrovirals (ART).
- Potential DDIs were assessed according to University of Liverpool HIV drug interactions database. For each category of drugs, the highest degree of interaction with every ART classes was reported as critical; the presence of minor interaction was reported as potential.
- Factors associated with DDIs were identified using univariate X2-test for categorical variables and t-test or Mann-Whitney U-test for normally or non-normally distributed continuous variables, respectively.

Results

- 1834 patients were included, 1349 (73.56%) were men, mean age was 53 (sd 8.3). 408 (22,5%) had polypharmacy of concomitant medications and 819 (44.66%) had potential interactions with ongoing ART regimen, 166 of them with critical interaction.
- As shown in Figure 1, the most represented classes of concomitant medications were vitamins such as VitD supplementation (1415 patients, 77.15%), lipid lowering (640, 34.90%) and anti hypertensive (630, 34.35%). In Figure 2 the classes of drugs are distributed by age group; the difference in use by age was statistically significant for all classes of drugs except steroids and drugs for thyroid dysfunction.
- Potential DDIs, as illustrated in Table 1, were significantly associated with age, comorbidities, type of ART and CD4+ nadir (all p<0.001). No association was observed between DDIs and sex or current immunological situation. Polypharmacy was more prevalent in older patients: only 2% of ≤40-year-old patients presented polypharmacy, 11% in 41-50 years, 24% in 51-60 years, and 48% in >60-year-old patients (p<0.001).

Conclusion

- In a well described cohort of PLWH, we found a polypharmacy prevalence of 22.5%. Prevalence of polypharmacy increased in older subgroups reaching 48% in patients older than 60 years, as previously reported from other study groups.
- The high prevalence of polypharmacy resulted in a high prevalence of potential DDIs, especially in older patients.

Variables	No Interactions n= 1015	Potential Interactions n= 819	p value
Women, n (%)	271 (26.7)	214 (26.1)	0.783
<40 years, n (%)	110 (10.8)	26 (3.2)	<0.001*
41-50, n (%)	315 (31)	180 (22)	<0.001*
51-60, n (%)	496 (48.8)	451 (55)	0.010*
>60, n (%)	94 (9.2)	162 (19.8)	<0.001*
HTN, n (%)	341 (33.5)	464 (56.6)	<0.001
CVD, n (%)	35 (3.4)	81 (9.9)	<0.001
Diabetes, n (%)	134 (13.2)	163 (20)	<0.001
Osteoporosis, n (%)	190 (18.7)	232 (28.3)	<0.001
COPD, n (%)	33 (3.2)	46 (5.6)	0.013
On PI, n (%)	85 (8.4)	556 (67.9)	<0.001
On INSTI, n (%)	561 (55.2)	308 (37.6)	<0.001
On NRTI, n (%)	861 (84.8)	426 (52)	<0.001
On NNRTI, n (%)	386 (38)	289 (35.2)	0.225
On antiDM, n (%)	44 (4.3)	76 (9.3)	<0.001
On antiacid, n (%)	124 (12.2)	163 (20)	<0.001
On anti-HTN, n (%)	205 (20.1)	425 (51.9)	<0.001
On hypolipemic, n (%)	257 (25.3)	383 (46.7)	<0.001
Polypharmacy, n (%)	**144 (14.2)**	**264 (32.2)**	**< 0.001**
CD4 nadir, median (IQR)	224 (109-344)	190 (83-290)	<0.001
CD4, median (IQR)	729 (543-920)	728 (547-915)	0.991
CD8, median (IQR)	788 (575-1068)	820 (606-1081)	0.107
CD4/CD8 ratio, median (IQR)	0.9 (0.66-1.22)	0.8 (0.65-1.18)	0.086
Previous AIDS, n (%)	203 (21.3)	205 (26.1)	0.019

After Bonferroni adjustment

Table 1. Sample characteristics by potential interactions (significant covariates)

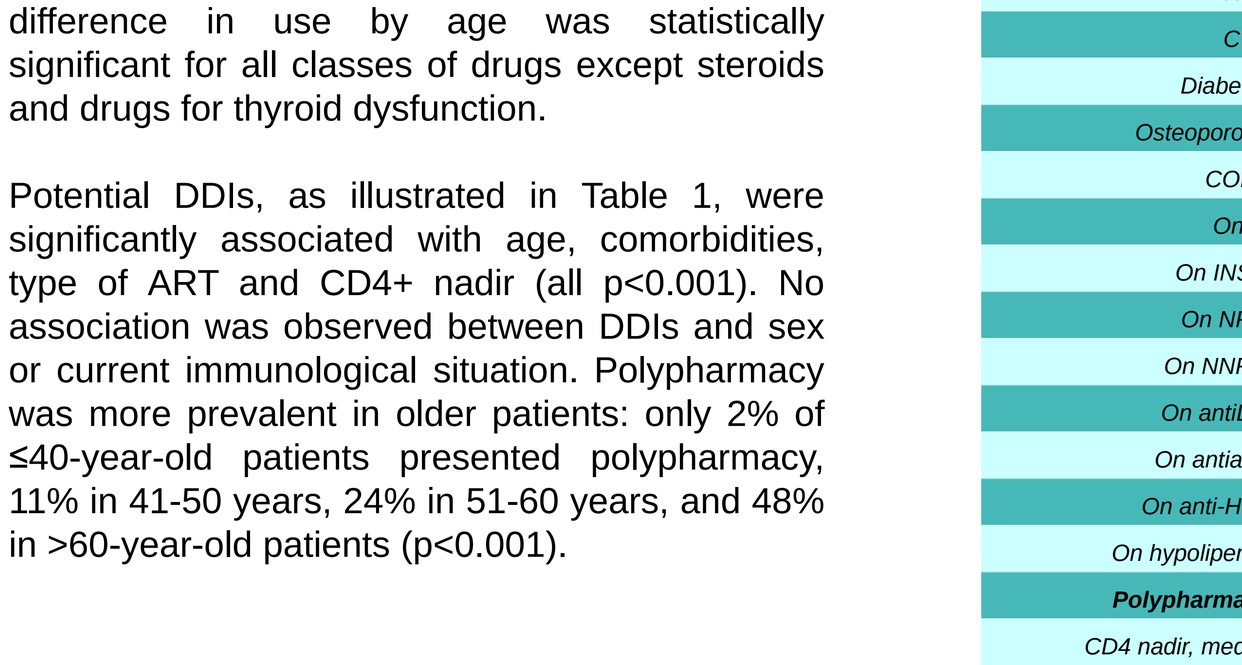

Figure 1. Concomitant medications by class

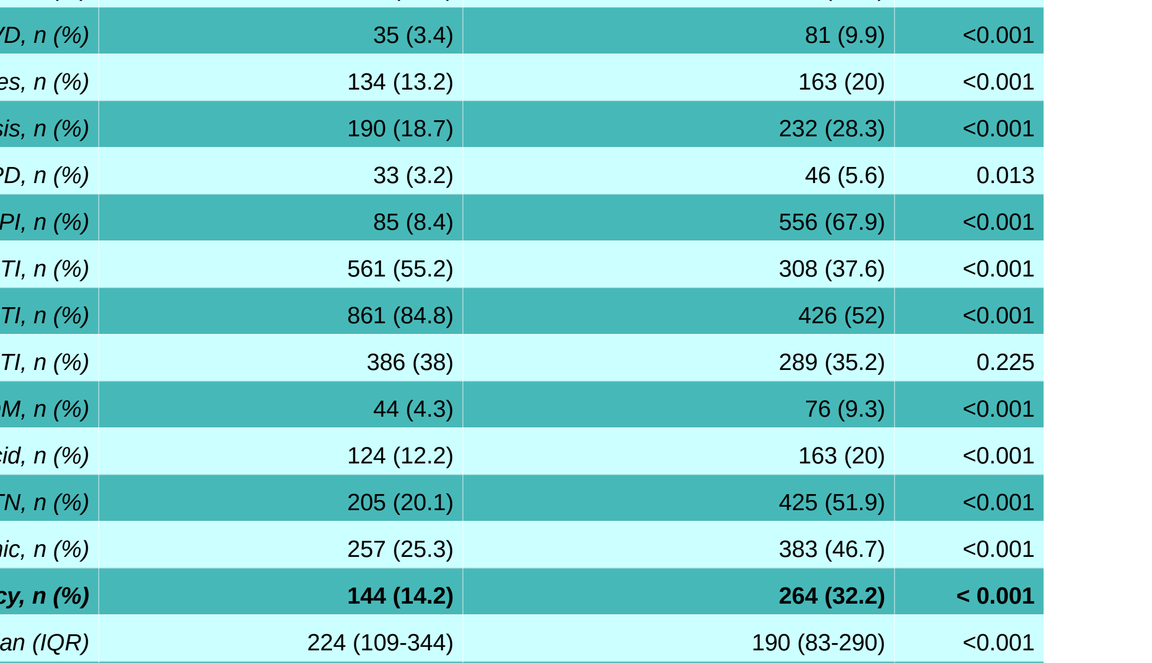

Figure 2. Concomitant medications (class) per age groups (years)

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