P286

Imperial College Healthcare NHS Trust

Evaluation of cardiovascular disease and associated risk factors in adults with perinatally-acquired HIV

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BACKGROUND

- In resourced settings, adults with perinatally-acquired HIV are approaching the 5th decade of life.
- Rates of non-AIDS co-morbidities among this population may be higher than in the age-matched general population*, such as hypertension (blood pressure (BP) ≥140/90 mmHg) and hypercholesterolaemia (total cholesterol ≥5 mmol/L), due to longstanding exposure to HIV and antiretroviral therapy.

*Rates of hypertension and hypercholesterolaemia in the UK general population aged 16-44 years are approximately 9% and 50%, respectively[1].

AIM

- To investigate cardiovascular and metabolic risk in a unique UK cohort with perinatally-acquired HIV.

METHODS

- Retrospective, electronic case-note review of an adult perinatal-HIV service.
- Data captured included: age, gender, ethnicity, ART, last CD4+ count, HIV-1 viral load, lipids, HbA1c, Body Mass Index (BMI), smoking history, and in-clinic BP across the last three attendances.
- Hypertension was defined as ≥140/90 mmHg by the U.K. National Institute for Health and Care Excellence (NICE) and World Health Organization (WHO), and ≥130/80 mmHg by American Heart Association (AHA) guidelines.
- Metabolic syndrome was defined as triglycerides ≥1.7 mmol/L, HDL <1.04 mmol/L (men) and <1.29 mmol/L (women), and BP ≥130/85 mmHg.

RESULTS

- Data was collected on 225 individuals ≥18 years with PaHIV. Median age 27 years (IQR 23, 30), 123 (55%) female and 189 (85%) of black ethnicity.
- 184/223 (83%) had an HIV-1 viral load <50 copies/mL and 199 (89%) <200 copies/mL. Median CD4+ count 634 cells/mL (IQR 438, 815) and years on ART was 19 (IQR 13, 22).
- 21/225 (9%) had NICE/WHO-defined hypertension and 48 (21%) AHA defined hypertension.
- 84/212 (39%) had abnormal triglycerides and/or HDL-C, 120/219 (55%) were overweight (BMI 25-29) or obese (BMI ≥30). 6 (3%) fulfilled the criteria for metabolic syndrome.
- 52/220 (24%) were smokers.
- For those with AHA-defined hypertension, 41 (85%) had suppressed HIV with 39 (81%) on integrase inhibitor-ART, and 9 (19%) received anti-hypertensive treatment.
- Both traditional and HIV-associated risk factors were associated with hypertension (Table).

Table. Predictors of hypertension

	NICE/WHO			AHA		
Characteristics	**Hypertensive (n =21)**	**Non-hypertensive (n =204)**	***P* value**	**Hypertensive (n = 48)**	**Non-hypertensive (n = 177)**	***P* value**
Age	30 (27 - 33)	27 (23 - 30)	**0.007**	28.5 (26 - 31)	26 (22 - 30)	**0.005**
BMI kg/m^2	27.9 (23.6 - 32.9)	25.5 (22.3 - 29.9)	0.13	26.9 (23.2 - 33.0)	25.3 (22.3 - 28.8)	0.07
Smoker	7 (33)	45 (23)	0.3	16 (33)	36 (21)	0.074
Nadir CD4 T cells, cells/mm^3	210 (45 - 340)	281 (66 - 476)	0.2	158 (29 - 320)	290 (90 - 516)	**0.005**
Years on ART	20 (15 - 24)	19 (13 - 22)	0.2	22 (17 - 25)	18 (13 - 22)	**0.003**
Previous ART						
Abacavir	8 (38)	42 (21)	0.094	17 (35)	33 (19)	**0.013**
PI	11 (52)	60 (29)	**0.031**	25 (52)	46 (26)	**<0.001**
Past AIDS-defining illness	9 (43)	30 (15)	**0.004**	15 (31)	24 (14)	**0.004**

Data are median (IQR) or n (%). Abbreviations: AHA, American Heart Association; AIDS, Acquired Immunodeficiency Syndrome; ART, antiretroviral therapy, BMI, body mass index; PI, protease inhibitors; WHO, World Health Organization. *P* values were calculated using Wilcoxon rank sum test for continuous data, and Pearson's Chi-squared test and Fisher's exact test for categorical data.

CONCLUSIONS

- Compared to the age-matched UK population, there was no increased frequency of NICE/WHO-defined hypertension or co-morbidities associated with CVD. However, when using AHA definitions 1 in 5 young people were hypertensive.
- Most individuals were virally suppressed on ART with restored immune function.
- Both traditional (age) and HIV-related risk factors (past AIDS-defining illness and previous PI use) were associated with NICE/WHO-defined hypertension.
- Linkage to interventions including weight reduction and cardiology prevention services could enhance long-term survival.

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Reference: NHS England. Health Survey for England 2021: Data Tables.