Increased rates of malignancy in youth living with perinatally acquired HIV; a single centre case series

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Introduction

- The incidence of malignancy between 10-24 years of age in the general UK population is 0.2/1000 person-years(1).
- Adults living with HIV have an increased risk of malignancies(2) which is markedly reduced by suppressive anti-retroviral therapy (ART).
- Adolescents and young adults (AYA) have poorer rates of retention in care and ART adherence(3). AYA with perinatally acquired HIV (PaHIV) also have lifelong exposure to the virus and immune dysregulation.
- Currently, there is paucity of malignancy data disaggregated by age and route of transmission and limited longitudinal data on the outcomes for AYAPaHIV with a malignancy diagnosis.

Aims

- Conduct a retrospective review of all AYA aged 10-24 with PaHIV and a malignancy diagnosis looking at HIV-related parameters, years of viraemia, malignancy presentation, treatment and outcomes.
- Compare incidence rate (IR*) of malignancy to age-matched UK general population data.

Methods

- A single-centre retrospective review of malignancy diagnoses in AYA aged 10-24 years with PaHIV between January 2004 – December 2017.
- All AYA were followed from the age of 10 or from the start of the study period if they were already over the age of 10 years, to the end of the study period/ their 25th birthday/ death/ transfer of care/ loss to follow up, whichever was sooner.
- IRs were modelled using a Poisson distribution and presented for all malignancy. These were compared to age-matched UK population data using incidence rate ratios (IRR).

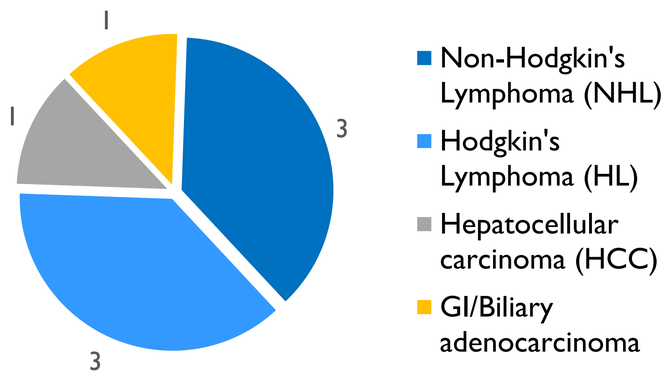
* Incidence rate is the number of new cases per population at risk in a given time period. In this case it is described as number of new cases per 1000 people per year.

Results

Baseline Characteristics

- 290 AYAPaHIV aged 10-24 registered with service; 2644 years of follow-up
- 2 (0.7%) were lost to follow-up; 14 (4.8%) transferred care; 6 (2.1%) died – 3 due to malignancy and 3 of other causes
- **8 (2.8%) were diagnosed with malignancy.** 7/8 were male; 6/8 Black British/African
- Median age of malignancy diagnosis was 19 years (inter-quartile range (IQR) 14-23 years)

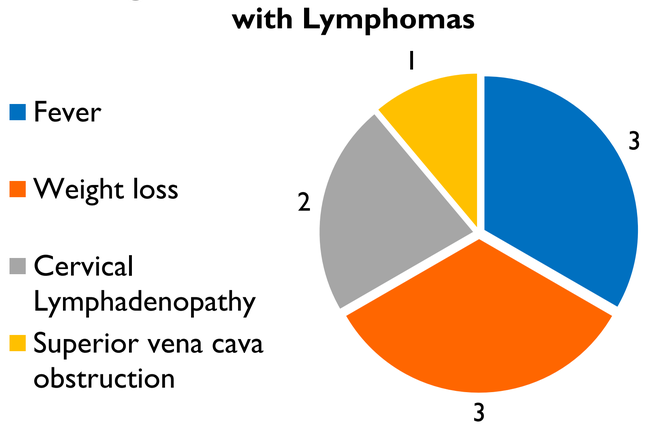
Figure 1. Malignancy diagnoses in AYAPaHIV



The IR of any malignancy was 3.0/1000 person-years (95% confidence interval (CI) 1.3 – 6.0)

Presentation

Figure 2. Presentation of AYAPaHIV with Lymphomas



- **4/6 lymphomas presented with advanced disease**; Ann Arbor Stage III/IV.
- GI adenocarcinoma: abdominal pain and weight loss; MRI and biopsy findings suggesting HIV-associated cholangiopathy. Subsequent laparotomy due to bowel obstruction revealed disseminated adenocarcinoma.
- HCC: diagnosis made on routine alfa-fetoprotein screening in an adolescent on suppressive ART for HIV and Hepatitis B virus for over a decade.

Immunology at Malignancy Diagnosis	
Median CD4 (cells/μL)	453 (IQR 231-645)
Median nadir CD4 (cells/μL)	220 (IQR 9-417)
Median years of detectable viraemia	15 (IQR 12-17)
Median viral load in those detectable (c/mL)	16,004 (range 4863 – 275, 675)

- **4/8 had a detectable viral load** at malignancy diagnosis
- **6/8 patients had a history of longstanding poor ART adherence**
- All had suppressive ART regimens available; 4/8 had two or more class HIV-1 associated resistance mutations

Treatment and outcomes

In Remission
- HL (2) and Burkitt's Lymphoma (1)
- Completed chemotherapy 12, 1.5 and 5 years ago respectively

Undergoing Treatment
- Recently diagnosed B-cell NHL; chemotherapy
- Secondary relapsing HL; bone marrow transplantation

RIP
- B-cell NHL aged 13
- Disseminated GI adenocarcinoma aged 15
- Metastatic HCC aged 20

Conclusions

- **In this cohort the incidence of a malignancy was almost 13 times that of the aged-matched general population (IRR 12.9 (95% CI 5.6-25.5), p<0.0001), largely driven by lymphomas**
- **It is hoped that with earlier access to sustained, suppressive ART some of the excess risk will be ameliorated**

References
(1) Cancer Research UK. *Cancer Incidence by age*. 2015
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(3) Enane L *et al. Curr Opin HIV AIDS*. 2018 in press