

HIV AND CANCER

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Two parts!

AIDS-defining cancers

Non-AIDS-defining cancers

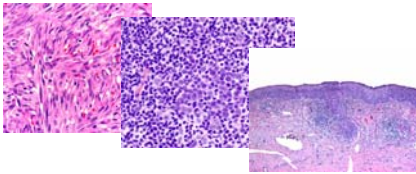
Part I: AIDS-defining cancers

Objectives

- Identify the AIDS-defining cancers (ADC)
- ADC etiology/viral associations
- ADC epidemiology
- ADC risk factors
- Disproportionate, unfavorable characteristics of ADC in HIV+ population
- General diagnosis and treatment of ADC
- ADC screening guidelines, if available

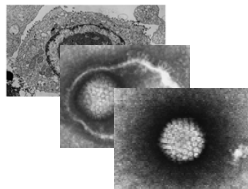
AIDS-defining cancers

- Kaposi Sarcoma (KS)
- Non-Hodgkin Lymphoma (NHL)
- Invasive Cervical Cancer

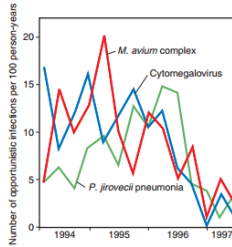


AIDS-defining cancers

- AIDS-defining cancers are opportunistic diseases
- Viral culprits
 - HHV-8
 - EBV
 - HPV

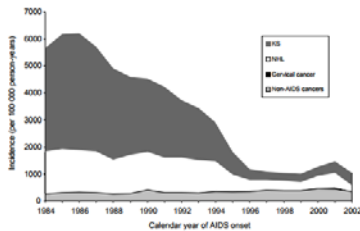


Opportunistic infections



Pienta FJ, Delaney KM, Moorman AC, et al. Declining morbidity and mortality among patients with advanced human immunodeficiency virus infection. *N Engl J Med*. 1998;338:851-59.

AIDS-defining cancers



Engels EA, et al. Trends in cancer risk among people with AIDS in the United States 1980-2002. *AIDS*. 2005; Aug 1; 19(12):1545-54.

HHV8-associated cancers and conditions

- Kaposi Sarcoma (KS)
- Primary Effusion Lymphoma
- Multicentric Castleman's Disease
- Inflammatory Cytokine Syndrome

HHV8-associated cancers

- KS described by Moritz Kaposi (Kohn), a Hungarian-born dermatologist in 1872
- Regarded as an indolent disease in elderly men of Mediterranean and Eastern European descent
- Recognized among MSM in 1980s
- Kaposi Sarcoma-associated herpesvirus (HHV-8) discovered in 1994

HHV8-associated cancers

- In USA, 15%-20% of HIV- and 40% of HIV+ MSM are HHV-8 seropositive
- 99-100% of individuals with KS are HHV-8 seropositive

Pauk J, Huang ML, Brodie SJ, et al. Mucosal shedding of human herpesvirus 8 in men. N Engl J Med. 2000;343: 1369-1377.

Kaposi Sarcoma

- Classic
 - Indolent, usually on lower extremities, affects elderly men of Mediterranean/Eastern European descent
- Endemic
 - Certain African countries (prior to HIV pandemic)
 - Indolent in adults (resembles classic variant), but aggressive in children
- Epidemic
 - Affects HIV-infected individuals
 - Aggressive, often affects skin (not confined to lower extremities), oral cavity, GI, respiratory tracts
- Iatrogenic
 - Affects HIV-negative, immunosuppressed individuals
 - Aggressive

Kaposi Sarcoma

- Risk factors in HIV infection
 - HHV-8 infection
 - CD4
 - Can occur at ANY CD4 count, but risk is substantially higher if <200 cells/ μ L
 - Low CD4 nadir
 - Absence of ART
 - Further immune suppression
 - Corticosteroid use (such as with Pneumocystis pneumonia)
 - Pro-inflammatory states
 - Opportunistic infection

Lodi F, Guigard M, Costagliola D, Fisher M, de Luca A, Porter K, CASCADE Collaboration. Kaposi sarcoma incidence and survival among HIV-infected homosexual men after HIV seroconversion. J Natl Cancer Inst. 2010;102(11):784.

Yank EL, Nagrakanti S, Cole SR, Achenbach CJ, Geay S, Oshari A, Dittmer DP, Kishata MM, Mugenero MJ, Sanyal M, Moore RD, Mayer K, Matthews WC, Hare P, Rodriguez B, Eron JJ. Incidence and timing of cancer

Kaposi Sarcoma

- Cutaneous
- Non-cutaneous (visceral)
 - Oral cavity
 - Lymph nodes
 - Intestines
 - Respiratory tract
 - Liver
 - Pancreas
 - Heart
 - Skeletal muscle
 - Testicles
 - Bone marrow

Kaposi Sarcoma



Bruce Dezube, MD

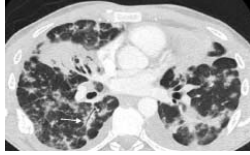


Bruce Dezube, MD

Kaposi Sarcoma



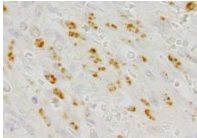
Shetty, KV MD



Hoskote, SS MD and Patel VP, MD

Kaposi Sarcoma

- Highly vascular
 - Poorly-organized vascular spaces
- Malignant spindle cells
- Monocyte/macrophage infiltration
- Positive LANA (Latency Associated Nuclear Antigen-1) stain for HHV-8



Kaposi Sarcoma

- Staging
 - T (tumor)
 - Minimal disease (confined to skin/node) – T0
 - Extensive disease (multiple sites, non-nodal viscera) – T1
 - I (immune system)
 - CD4 >200 – I0
 - CD4 <200 – I1
 - S (systemic illness)
 - Absent (no OIs, no B symptoms, Karnofsky performance score >70) – S0
 - Present (OI, B symptoms, Karnofsky performance score <70, other HIV/AIDS-related condition) – S1

Krown SE, Metricka C, Wertz JC. Kaposi's sarcoma in the acquired immune deficiency syndrome: a proposal for uniform evaluation, response, and staging criteria. AIDS Clinical Trials Group Oncology Committee. J Clin Oncol. 1998 Sep; 16(9):3201-2

Kaposi Sarcoma

- Important considerations
 - HIV clinical status
 - GI involvement
 - FOBT, endoscopy
 - Pulmonary involvement
 - CXR, bronchoscopy

Kaposi Sarcoma

- Treatment
 - ART
 - Usually all that's needed for T0 disease
 - IRIS can occur, and can be severe, especially in extensive disease or high baseline HIV viral load

Kaposi Sarcoma

- Treatment
 - Local therapy
 - Cryotherapy
 - Intralesional chemotherapy
 - Vinblastine
 - Often several treatments needed
 - Radiation
 - When lesions are too big for intralesional chemotherapy

Egstein JB. Treatment of oral Kaposi sarcoma with intralesional vinblastine. Cancer. 1993;71(5):1722.
Donato V, Guarnaccia R, Doglioli J, de Pascalis G, Caruso C, Bellagamba R, Minnola A. Radiation therapy in the treatment of HIV-related Kaposi's sarcoma. Anticancer Res. 2013 May;33(5):2163-7.

Kaposi Sarcoma

- Systemic chemotherapy
 - Indications
 - Extensive or refractory cutaneous disease
 - Symptomatic non-cutaneous disease
 - Extensive edema
 - IRIS
 - Agents
 - Doxorubicin/daunorubicin
 - Paclitaxel

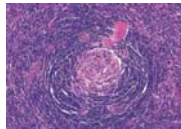
Sower M, Collins S, Cottrell C, Cwynarski K, Montoto S, Nelson M, Newkirk N, Powles T, Stubbings J, Walter N, Webb A. AIDS Malignancy Subcommittee. British HIV Association guidelines for HIV-associated malignancies 2008. *HIV Med*. 2008;9(9):1336.

Primary Effusion Lymphoma

- HHV8-related, but it's one of the AIDS-related lymphomas. Stay tuned.....

Multicentric Castleman's Disease

- Aggressive lymphoproliferative disorder
- Symptoms: fevers, weight loss, night sweats, generalized lymphadenopathy, splenomegaly
- Can progress to B cell plasmablastic lymphoma (and can co-exist with KS)
- High HHV-8 viral load
- Diagnosis: lymph node biopsy
- Treatment: Ganciclovir, rituximab, chemotherapy
 - *Treatment involves targeting HHV-8!*



Hernandez J, Caballero F, Rios L, et al. The clinical behavior of localized and multicentric Castleman disease. *Ann Intern Med*.

Kaposi Sarcoma-Associated Herpesvirus Inflammatory Cytokine Syndrome (KICS)

- Features of MCD (fevers, inflammation, high HHV8 viral load) but without characteristics of MCD on pathology
- Can overlap with other HHV8-associated cancers/conditions

Udrick TS, Wang V, O'Mahony D, et al. An interleukin-6-related systemic inflammatory syndrome in patients coinfected with Kaposi sarcoma-associated herpesvirus and HIV but without multicentric Castlemann disease. Clin Infect Dis. 2010;51:350-358.

AIDS-Related Lymphomas

- Non-Hodgkin Lymphoma (Systemic) – **85%**
- Primary CNS Lymphoma (non-systemic NHL) – **15%**
- Primary Effusion Lymphoma – **1-4%**

Incidence is 25 – 150-fold higher than among the general population!

Polesel J, Clifford GM, Rickenbach M, et al. AIDS. 2008;22(2):301-6. 33
Zoufaly A, Sautterink HJ, Helden MA, et al. J Infect Dis. 2009;200(1):79-87. 24
Rosen MI, Fisher M, Hill T, et al. Haematologica. 2009;94(5):675-80. 25
Linden C, Bouladoup V, De Wit S, et al. Int J Epidemiol. 2012;41(2):433-45.

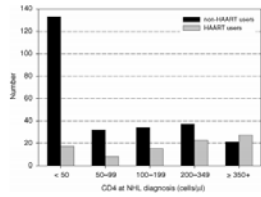
Non-Hodgkin Systemic Lymphoma

- AIDS-related systemic NHL subtypes
 - Diffuse Large B-cell Lymphoma (**75%**)
 - Burkitt Lymphoma (**25%**)
 - Other (Plasmablastic Lymphoma, NHL-NOS)

CoxTR, et al. Int J Cancer. 1997;73(5):645.
1993 revised classification system for HIV infection and expanded surveillance case definition for AIDS among adolescents and adults
MMWR Recomm Rep. 1992;41c:1-19.
Gibson TM, Morion LM, Shells ML, Clarke CA, Engels EA. AIDS. 2014;28(24):2915-2918.

Non-Hodgkin Systemic Lymphoma

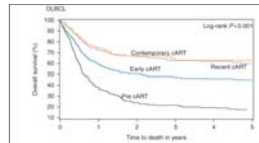
- Risk factors:
 - Low CD4 count (and low CD4 nadir)



Potesil J. et al. Non-Hodgkin lymphoma incidence in the Swiss HIV Cohort Study before and after highly active antiretroviral therapy. AIDS 2005; 19:251-256

Non-Hodgkin Lymphoma

- Risk factors:
 - Low CD4 count (and low CD4 nadir)
 - High HIV viral load (>100,000 copies/mL)
 - Absence of ART



Gauguet M et al. Effect of immunodeficiency, HIV viral load, and antiretroviral therapy on the risk of individual malignancies (PITCH-ANRS-CO4): a prospective cohort study. Lancet Oncol 2009; 10:1132-1142
 Silverberg MJ, Neubaus J, Bower M. et al. Epidemiology and Social Risk of cancers during interrupted antiretroviral therapy in the SMART study. AIDS 2007; 21:141-150-63

Non-Hodgkin Systemic Lymphoma

- Risk factors:
 - Low CD4 count (and low CD4 nadir)
 - High HIV viral load (>100,000 copies/mL)
 - Absence of ART
 - ART interruption associated with 6-fold increase in cancer incidence
 - HIV viremia is thus an important risk factor
 - History of AIDS
 - Co-infection with EBV
 - Up to 80% of DLBCL are EBV-positive

Carbone A. et al. AIDS-related lymphomas: from pathogenesis to pathology. 2006; 15(5):662

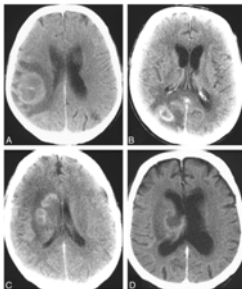
Non-Hodgkin Systemic Lymphoma

- Clinical presentation
 - Since most are aggressive, B-cell lymphomas...
 - B symptoms (fevers, night sweats, weight loss)
 - Lymphadenopathy
 - Atypical locations (i.e. GI, CNS involvement)

Primary CNS Lymphoma

- B-cell lymphoma
- Strong EBV association (virtually all are EBV+)
- Focal symptoms
 - Seizure
 - Altered mental status
- Non-focal symptoms
 - B symptoms

Primary CNS Lymphoma



Halderson IS, et al. Central Nervous System Lymphoma: Characteristic Findings on Traditional and Advanced Imaging. American Journal of Neurology. June 2011; 32 (5): 584-592

Primary CNS Lymphoma

- Diagnosis
 - Establish presence of brain mass
 - Distinguish between PCL and CNS toxoplasmosis
 - Lumbar puncture with cytology and EBV DNA
 - Serologic Toxoplasma testing
 - Empiric Toxoplasma-directed antibiotics
 - Brain biopsy
- Treatment
 - Not well-defined, but ART is of substantial benefit

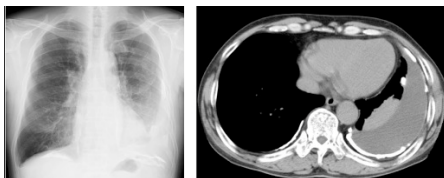
Hoffmann C, et al. Survival of AIDS patients with primary central nervous system lymphoma is dramatically improved by HAART-induced immune recovery. 2001;15(16):2119.

Primary Effusion Lymphoma

- The HHV-8-related, AIDS-related lymphoma
- B-cell origin, often with EBV co-infection
- Usually occurs in pleural, pericardial or peritoneal body cavities
- Malignant cells are without a solid/mass component
- Can be extra-cavitary (solid-tumor variant, usually involving GI tract)
- Poor prognosis

Altaehi DV, Chettyrino LG, Whittman JE Jr, et al. Spectrum of Kaposi's sarcoma-associated herpesvirus or human herpesvirus 8 diseases. Clin Microbiol Rev. 2002;15(4):454.

Primary Effusion Lymphoma



Hara N, et al. Lymphoproliferative disorder in pleural effusion in a subject with past asbestos exposure. Respiratory Medicine Case Reports. 2015;16:169-171.

Invasive Cervical Cancer

- Unlike KS and NHL, incidence has NOT decreased in the contemporary ART era

Engels EA, et al. Trends in cancer risk among people with AIDS in the United States, 1985-2002. AIDS. 2008 Aug 1;20(12):1645-54.

Invasive Cervical Cancer

- Risk is 1.5 – 8 times that of general population
- Majority of burden is in developing countries
 - Lack of cervical cancer screening programs
 - Lack of quadrivalent HPV vaccine

Eaton M, Phair D. Issues in cervical cancer incidence and treatment in HIV. Curr Opin Oncol 2010;22(5):449-55.

Invasive Cervical Cancer

- HIV+ women
 - are more likely to be **infected with HPV** (and have multiple HPV types)
 - are less likely to **clear HPV or atypical cells** (*independent of CD4 count!*)
 - are more likely to **develop intraepithelial neoplasia**
 - develop **higher grade lesions at faster rates**
 - have more **advanced disease at diagnosis** (higher grade tumors, metastases)
 - have **poorer response to therapy**
 - have **higher recurrence rates**
 - have **higher mortality rates**
- Strong correlation with immune status
 - Women with CD4 count >500 cells/uL have significantly higher remission and survival rates than women with CD4 count <500 cells/uL

Francoschi S, et al. Changing patterns of cancer incidence in the early- and late-HAART periods: the Swiss HIV Cohort Study. Br J Cancer. 2010;103(3):418.

Maiman M. Management of cervical neoplasia in human immunodeficiency virus-infected women. J Natl Cancer Inst Monogr. 1998;23:43-9.

Maiman M, Fruchter RG, Senol E, et al. Human immunodeficiency virus infection and cervical neoplasia. Gynecol Oncol. 1992;38:377-82.

Kim AP, Abercrombie PD, Foster A. Vulvar intraepithelial neoplasia in women infected with human immunodeficiency virus-1. Gynecol Oncol. 1996;61:384-8.

Cervical Cancer Screening *caveats in HIV infection*

- Initiate within first year after HIV diagnosis, but not later than age 21
- Screening should continue throughout a woman's lifetime (not stopping at 65)
- In women <30, screening should occur every 12 months. If 3 consecutive screens are normal, screening can occur every 3 years
- In women >30 and have had 3 normal consecutive annual screens with cytology alone, or 1 normal cotest screen (cytology and HPV testing), screening can occur every 3 years

Clinical Management Guidelines for Obstetrician-Gynecologists. Cervical Cancer Screening and Prevention. Number 168, Updated October 2016

Anal Cancer

- Similar to cervical cancer, incidence has not decreased in the contemporary ART era
- More on this in Part II (Non-AIDS-defining cancers)...

<https://pubmed.ncbi.nlm.nih.gov/26888888/> accessed 7/7/17

Conclusion

- ADCs are opportunistic diseases
- KS and NHL have decreased in incidence, but remain leading causes of mortality and morbidity in HIV-infection
- While much more likely to occur in advanced disease, ADCs can occur in HIV regardless of immune status
- Cervical cancer incidence remains high
- Cervical (and anal) cancer screening are key components of HIV primary care

PART II: NON-AIDS DEFINING CANCERS

Objectives

- Epidemiology of non-AIDS defining cancers (NADC)
- NADC risk factors
- Identify specific NADC that disproportionately affect the HIV+ population
- General diagnosis and treatment of specific NADC
- NADC screening guidelines, if available

Non-AIDS defining cancer

- Increasing incidence in the contemporary ART era
 - 4-fold cancer incidence increase from 1991 – 2005 (96,179 – 413,080 cases)
 - Now the leading cause of death among ART-experienced
 - AIDS-defining cancers decreased during same period

Shelis MS, Pfluffer RM, Gail MH, et al. Cancer burden in the HIV-infected population in the United States. *J Natl Cancer Inst*. 2011;103(9):733-42

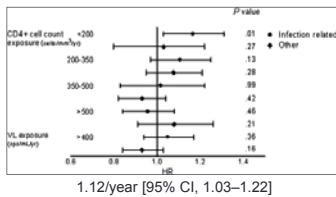
Non-AIDS defining cancer

- Role of immunosuppression
 - Both the HIV-infected population and solid organ transplant population are disproportionately affected by most cancer types
 - Immune deficiency is likely a strong contributor of oncogenesis in HIV

Orlich AE, et al. Incidence of cancers in people with HIV/AIDS compared with immunosuppressed solid-transplant recipients: a meta-analysis. *Lancet*. 2007; 367:709-721.

Non-AIDS defining cancer

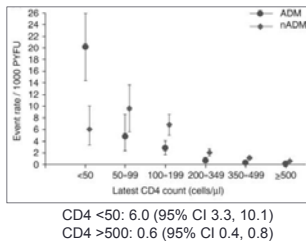
- Duration of CD4 <200 cells/uL associated with higher risk of malignancy



Kesseling A, et al. Immunodeficiency as a risk factor for non-AIDS-defining malignancies in HIV-1-infected patients receiving combination antiretroviral therapy. *Clin Infect Dis*. 2011 Jun 15;53(12):1458-65.

Non-AIDS defining cancer

- Higher risk of malignancy based on depth of recent CD4 count



Montora AD, et al. HIV-induced immunodeficiency and mortality from AIDS-defining and non-AIDS-defining malignancies. *AIDS*. 2008 Oct 15;22(16):2143-51.

Non-AIDS defining cancer

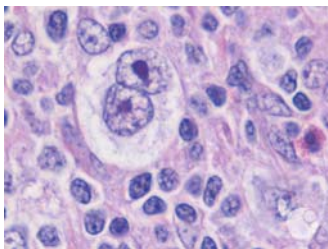
- Other potential contributors:
 - Chronic immune activation/inflammation of HIV infection
 - Aging HIV-infected population
 - Higher smoking and EtOH-abuse prevalence of HIV-infected population
 - Co-infections with other viruses

Dubrow R, et al. HIV infection, aging, and immune function: implications for cancer risk and prevention. Curr Opin Oncol. 2015; Sep 24:293-296-18.

Non-AIDS defining cancer

- Cancers that disproportionately affect the HIV-infected population
 - Hodgkin lymphoma (HL)
 - Hepatocellular carcinoma
 - Lung cancer
 - Head and neck squamous cell carcinoma
 - Anal cancer

Hodgkin Lymphoma



Hodgkin Lymphoma

- Risk in HIV infection is 10-25x higher than among general population
- HL tends to have more high-risk characteristics in HIV
- HIV-infected patients have more:
 - B Symptoms
 - Extra-nodal disease
 - Bone marrow involvement

Spiia M, Carbone A, Gioghi A, et al. Hodgkin's Disease in Patients with HIV Infection. Adv Hematol 2011;2011, pp. 402062
Alix J, Montoto S. Managing HIV and Hodgkin lymphoma in the twenty-first century. Curr Hematol Malig Rep. 2014 Sep;9(3):227-32.

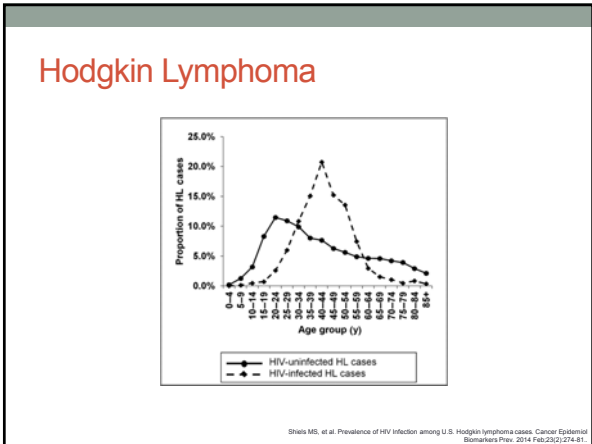
Hodgkin Lymphoma

- Outcomes are poorer
- Predictive factors:
 - >45 years of age
 - Male gender
 - Stage IV disease
 - Low albumin
 - Anemia
 - Lymphopenia
 - Leukocytosis

Spiia M, Carbone A, Gioghi A, et al. Hodgkin's Disease in Patients with HIV Infection. Adv Hematol 2011;2011, pp. 402062
Alix J, Montoto S. Managing HIV and Hodgkin lymphoma in the twenty-first century. Curr Hematol Malig Rep. 2014 Sep;9(3):227-32.

Which age group is at highest risk for Hodgkin Lymphoma among the HIV+ population?

- A. 20-25
- B. 25-35
- C. 35-45
- D. 45-55
- E. >55



Hodgkin Lymphoma is most likely to occur at which CD4 count?

A. <50 cells/ μ L
 B. 50 cells/ μ L
 C. 100 cells/ μ L
 D. 200 cells/ μ L
 E. >200 cells/ μ L

Hodgkin Lymphoma

- Most cases occur at relatively high CD4 counts (>200 cells/ μ L)
- Fast gain in CD4 T-cells after starting ART is associated with development of HL
- Possible that CD4 T-cells support development of Reed-Sternberg cells
- Immune reconstitution may contribute to the development of HL
- 80-100% associated with EBV (higher than in non-HIV HL)

Sinha M, Carbone A, Ghossein A, et al. Hodgkin's Disease in Patients with HIV Infection. *Adv Hematol* 2011;2011: pii: 402682
 Little RP, Dunleavy K. Update on the treatment of HIV-associated hematologic malignancies. *Hematol Am Soc Hematol Educ Program.* 2013;2013:362-8

Hodgkin Lymphoma

- HIV-associated HL tends to be unfavorable histological subtypes
 - Nodular sclerosis - 30% (HIV+) vs. 60% (HIV-)
 - Mixed cellularity - 25% (HIV+) vs. 12% (HIV-)
 - Lymphocyte deplete – 4% (HIV+) vs. 1% (HIV-)

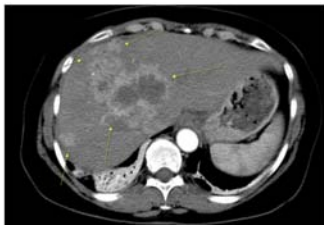
Shiels MS, et al. Prevalence of HIV infection among U.S. Hodgkin lymphoma cases. Cancer Epidemiol Biomarkers Prev. 2014 Feb;23(2):274-81.

Hodgkin Lymphoma

- Treatment
 - ABVD as standard therapy
 - ART can be used concurrently
 - Avoid PIs due to CYP450 3A4 interactions
 - Ritonavir can exacerbate vinblastine-induced neurotoxicity and neutropenia

Jacobson CA, Abramson JS. HIV-Associated Hodgkin's Lymphoma: Prognosis and Therapy in the Era of cART. Adv Hematol. 2012;2012:107297.

Hepatocellular carcinoma



Hepatocellular carcinoma

- Usually secondary to HBV or HCV co-infection
- Process is accelerated by HIV (increases HCC risk 7-fold)
 - Time to develop HCC after HCV infection is about 10 years shorter in setting of HIV
 - HIV increases risk of development of chronic HCV
 - HIV increases rate of fibrosis

Puoti M, Bruno R, Soriano V, et al. HIV/HCC Cooperative Italian-Spanish Group. Hepatocellular carcinoma in HIV-infected patients: epidemiological features, clinical presentation and outcome. AIDS 2004;18(17):2285.
Nunari G, et al. Hepatocellular carcinoma in HIV positive patients. Eur Rev Med Pharmacol Sci. 2012 Sep;16(9):1267-70.

Hepatocellular carcinoma

- Incidence varies by country
 - Highest in HBV endemic countries of East Asia, Africa
 - In developed countries, most are in HIV/HCV co-infection
 - Up to 25% of HIV+ patients have chronic HCV
 - 5-10% of HIV+ patient have chronic HBV

Puoti M, Bruno R, Soriano V, et al. HIV/HCC Cooperative Italian-Spanish Group. Hepatocellular carcinoma in HIV-infected patients: epidemiological features, clinical presentation and outcome. AIDS 2004;18(17):2285.
Nunari G, et al. Hepatocellular carcinoma in HIV positive patients. Eur Rev Med Pharmacol Sci. 2012 Sep;16(9):1267-70.

Hepatocellular carcinoma

- Usually asymptomatic initially
- Clinical presentation varies significantly depending on tumor growth rate, burden, number and location

Nunari G, et al. Hepatocellular carcinoma in HIV positive patients. Eur Rev Med Pharmacol Sci. 2012 Sep;16(9):1267-70.

Hepatocellular carcinoma

- HCC in HIV infection:
 - More advanced/infiltrative at diagnosis
 - More advanced cirrhosis at diagnosis
 - Younger age at diagnosis
 - Higher alpha-fetoprotein levels
 - Worse survival
 - Though not significantly worse if early stage

Nunnari G, et al. Hepatocellular carcinoma in HIV positive patients. Eur Rev Med Pharmacol Sci. 2012 Sep;16(9):1257-70.
Beretta M, et al. Hepatocellular carcinoma in HIV-infected patients: check early, treat hard. Oncology. 2011;116(9):1258-69. doi: 10.1159/000304400. Epub 2011 Aug 25.

Hepatocellular carcinoma

- Curative treatment
 - Surgical resection
 - Radiofrequency ablation
 - Ethanol injection
 - Orthotopic liver transplantation
- Palliative treatment
 - Transarterial chemoembolization (TACE)
 - Kinase inhibitors
 - Sorafenib
 - Sunitinib
 - Erlotinib
 - Systemic chemotherapy

Nunnari G, et al. Hepatocellular carcinoma in HIV positive patients. Eur Rev Med Pharmacol Sci. 2012 Sep;16(9):1257-70.

Hepatocellular carcinoma

- Primary prevention
 - HBV vaccination
 - HCV screening and treatment
 - IVDU counseling
 - EtOH avoidance
 - Screening in cirrhotic patients

Nunnari G, et al. Hepatocellular carcinoma in HIV positive patients. Eur Rev Med Pharmacol Sci. 2012 Sep;16(9):1257-70.

Lung cancer



Lung cancer

- Higher incidence among HIV+ adults (about 2-fold) than HIV- adults in USA
- Significant associations include older age, smoking >10 years, h/o Pneumocystis or recurrent pneumonia, h/o asthma

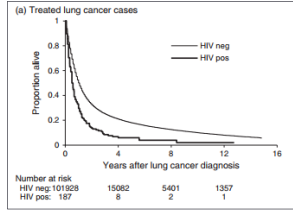
Hessel NA, et al. Lung cancer incidence and survival among HIV-infected and uninfected women and men. AIDS. 2015 Jun 19;29(10):1183-91.

Lung cancer

- HIV+ with lung cancer
 - Tend to be younger
 - Present with more advanced disease
 - Have worse overall survival
 - May receive treatment less frequently
 - HIV+ adults found to be less likely to receive potentially curative resection
 - Less likely to receive chemotherapy, radiation

Srinija G, et al. Disparities in the treatment and outcomes of lung cancer among HIV-infected individuals. AIDS. 2013 Jun 28;27(13):469-81.

Lung cancer



Sunjja G, et al. Disparities in the treatment and outcomes of lung cancer among HIV-infected individuals. AIDS. 2013 Jun; 25(12):1469-88

Head and Neck Squamous Cell Carcinoma

- Higher incidence of head and neck cancer (2 – 4-fold) in HIV infection
- HIV+ population has a higher prevalence of primary risk factors
 - Tobacco use
 - EtOH use
 - Oral HPV infection (2-fold higher)

D'Souza G, et al. Epidemiology of head and neck squamous cell cancer among HIV-infected patients. J Acquir Immune Defic Syndr. 2014 Apr; 65(4):603-10

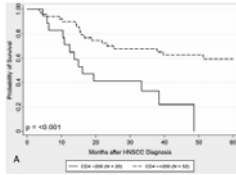
Head and Neck Squamous Cell Carcinoma

- HIV+ adults with head and neck cancer:
 - Are mostly men, 91% (vs 68%)
 - Are younger, median age 50 years (vs 62 years)
 - Are mostly nonwhite, 49% (vs 18%)
 - Are mostly current smokers, 61% (vs 18%)
 - Present at advanced stage, 60% (vs 20%)

D'Souza G, et al. Epidemiology of head and neck squamous cell cancer among HIV-infected patients. J Acquir Immune Defic Syndr. 2014 Apr; 65(4):603-10

Head and Neck Squamous Cell Carcinoma

- Poor survival outcome associations:
 - Current smoking (in both HIV+ and HIV-)
 - Lower CD4 count at diagnosis



D'Souza G, et al. Epidemiology of head and neck squamous cell cancer among HIV-infected patients. *J Acquir Immune Defic Syndr*. 2014 Apr; 65(4):503-10.

Anal Cancer

- Incidence has not decreased in the contemporary ART era, likely increasing
- Highest risk population: HIV+ MSM, risk up to 128/100,000 (vs ~1.5-2/100,000 in the general population)
- The quadrivalent HPV vaccine has been shown to reduce anal HPV infection and neoplasia in men

Crum-Cloftone NF, Hullsiek KH, Marconi VC, et al. Anal cancers among HIV-infected persons: HAART is not slowing rising incidence. *Aids* 2010;24(4):535-43. <http://dx.doi.org/10.1093/aids/aqz009>, accessed 7/7/17

Anal Cancer

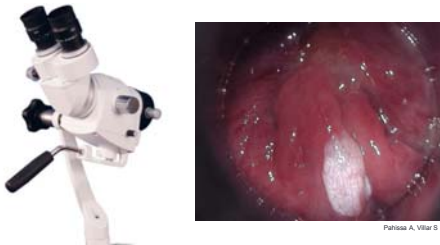
- There are no national recommendations for routine anal cancer screening, but should be strongly considered in HIV-infected MSM and women (especially if history of other HPV-related lesions)
- Anal cancer screening should NOT be performed without the availability of high-resolution anoscopy (HRA)

<http://dx.doi.org/10.1093/aids/aqz009>, accessed 7/7/17

Anal cancer

- Appropriate screening would include both cytology, HPV cotesting and DRE
- Abnormal cytology (ASCUS and LSIL), should get high-resolution anoscopy
- Any palpable masses on DRE or HSIL – referral to colorectal surgery
- Consider annual screening after normal cytology

High Resolution Anoscopy



Conclusions

- HIV-infected adults are at disproportionately high risk of many cancer types
- Contributing factors include immunosuppression, chronic inflammation, co-infections, and behaviors/exposures
- Outcomes are generally worse for HIV-infected patients
- Cancer prevention is a cornerstone of HIV care
 - Especially among those at high risk (i.e. chronic HCV)

Thank you!
