



AIDS and the Domino Effect of Opportunistic Infections: A Case Investigating Concomitant Opportunism in a Single Patient



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ABSTRACT

This case report is centered around a 46-year-old male who was admitted to the hospital due to worsening weakness and altered mental status. Patient has a known history of acquired immunodeficiency syndrome (AIDS) with medication noncompliance, increasing the concern for an opportunistic infection (OI). While hospitalized, patient underwent different procedures and laboratory evaluations to reveal he had multiple opportunistic infections. Infectious disease was consulted to assist with the patient's antibiotic regimen. Overall, patient had a prolonged hospitalization, complicated by other healthcare needs, the concern for medication noncompliance if discharged, and lab abnormalities. Once these issues were resolved, patient was able to be discharged home on a multi-drug regimen for his opportunistic infections and follow-up with OSU Internal Medicine Ryan White Clinic.

INTRODUCTION

Learning Objectives:

1. Discuss human immunodeficiency virus (HIV) and the progression to AIDS with its clinical sequelae
2. Discuss the diagnosis and treatment of opportunistic infections while inpatient
3. Define immune reconstitution inflammatory syndrome (IRIS) and its role in patient management
4. Discuss long-term management of opportunistic infections and how treatment recommendations could interfere with one another

HIV

- Retrovirus that uses envelope glycoprotein on viral surface to facilitate entry into the host CD4+ T-lymphocyte helper cells via chemokine co-receptors. Confirmational change in envelop protein leading to fusion between cellular membranes.
- Reverse transcription occurs allowing viral integration into host DNA
- Immune system becomes suppressed via loss of cells, ultimately leading to AIDS if untreated

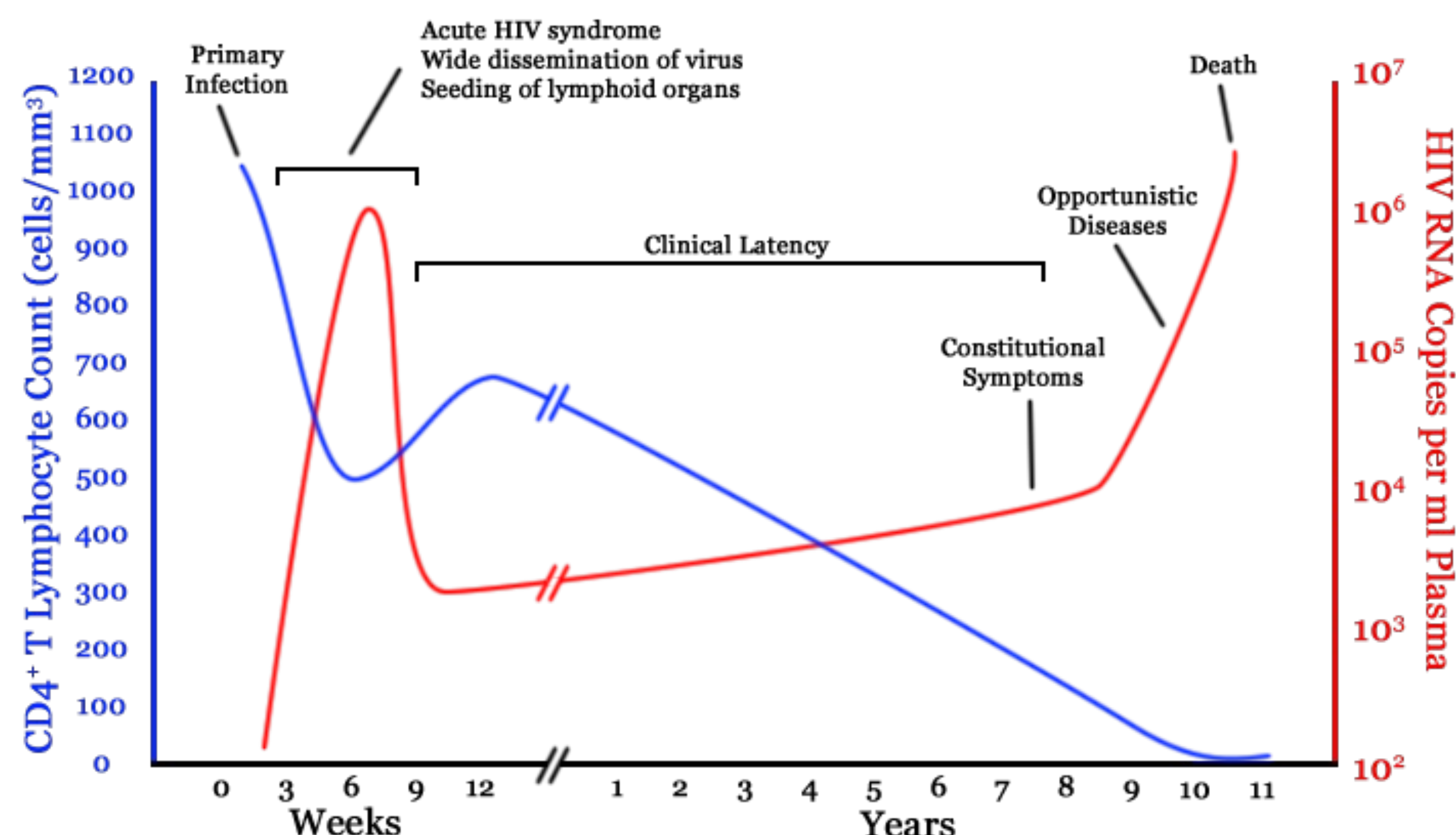


Figure 1: Graph representing timeline comparing HIV viral load and CD4 count with symptomatic progression

CASE PRESENTATION

Background

46-year-old male presented to our facility with a chief complaint of weakness and confusion
PMH: AIDS with medication noncompliance, sympathomimetic abuse, and syphilis

Emergency Department Course

- Febrile, tachycardic, acute hypoxic respiratory failure, alert and oriented x 1
- Laboratory analysis revealed troponinosis, acute kidney injury, transaminitis, neutropenia, and anemia; Urine drug screen positive for amphetamines
- CT head w/o contrast was negative for an acute process. CT chest/abdomen/pelvis w/contrast did reveal a soft tissue density mass with diffuse esophageal wall thickening, multifocal consolidations, gastroenteritis, 1.6 cm hypodense lesion in the right liver lobe
- Lumbar puncture performed and cerebrospinal fluid (CSF) studies obtained
- Management: IV Vancomycin, Rocephin, Ampicillin, and Azithromycin

Hospitalization

Intensive Care Unit (Days 1-2):

- Severe sepsis requirements, IV fluid bolus received; did not need vasopressors
- CSF studies positive for cryptococcal neoformans meningitis; VDRL negative
- Blood cultures x2: positive for Streptococcal pneumoniae; IV Rocephin continued
- Bronchoscopy with bronchoalveolar lavage and endobronchial ultrasound-guided transbronchial needle biopsy performed
- Infectious disease consulted:
 - Induction therapy of IV Ambisome 5mg/kg for 4 weeks
 - Consolidation therapy of Fluconazole 800mg daily
 - Maintenance therapy of Fluconazole 200mg daily
 - Hold Flucytosine due to pancytopenia
 - Hold anti-retroviral therapy (ART) for 4-6 weeks due to risk of IRIS

Progressive Care Unit (Days 3-9):

- CD4 Count: 19
- Pneumocystis jirovecii DFA from BAL: negative
- Urine histoplasma antigen: positive
- Repeat blood cultures negative
- AFB culture and gram stain positive for mycobacterium avium complex
- Lymph node biopsy positive for Cryptococcal neoformans and Histoplasma capsulatum, indicating dissemination
- Streptococcal pneumoniae colonies grew from lavage
- Per ID, antimicrobials expanded to include Azithromycin, Ethambutol, and Rifabutin for MAC

General Medical Floor (Days 10-Discharge):

- Infectious disease changes consolidation and maintenance therapy to Diflucan 800mg daily due to concomitant fungal infections
- Developed hyperkalemia, so Bactrim-DS changed to thrice weekly
- Worsening thrombocytopenia, lowest was 19; Ferritin 50,917, triglycerides 202
 - Initial concern for hemophagocytic lymphohistiocytosis; refused bone marrow biopsy
- Refused skilled nursing facility/in-patient rehab placement
- Discharged home after 29-day hospitalization with close interval follow-up with Oklahoma State University Internal Medicine Ryan White Clinic

Disseminated cryptococcus	Fluconazole 800mg QD		
Disseminated histoplasmosis	Fluconazole 800mg QD		
Mycobacterium avium complex	Ethambutol 1g QD	Azithromycin 500mg QD	Rifabutin 300mg QD
AIDS	No ART at DC	Bactrim-DS MWF for prophylaxis	

Table 1: Medications prescribed at discharge

DISCUSSION/CONCLUSION

IRIS:

- State of hyperinflammatory response that can be a complication of initiating ART
- Risk factor: Current diagnosis of opportunistic infection with treatment
- Initiate ART no sooner than two weeks after treatment initiation, dependent on infection and provider preference

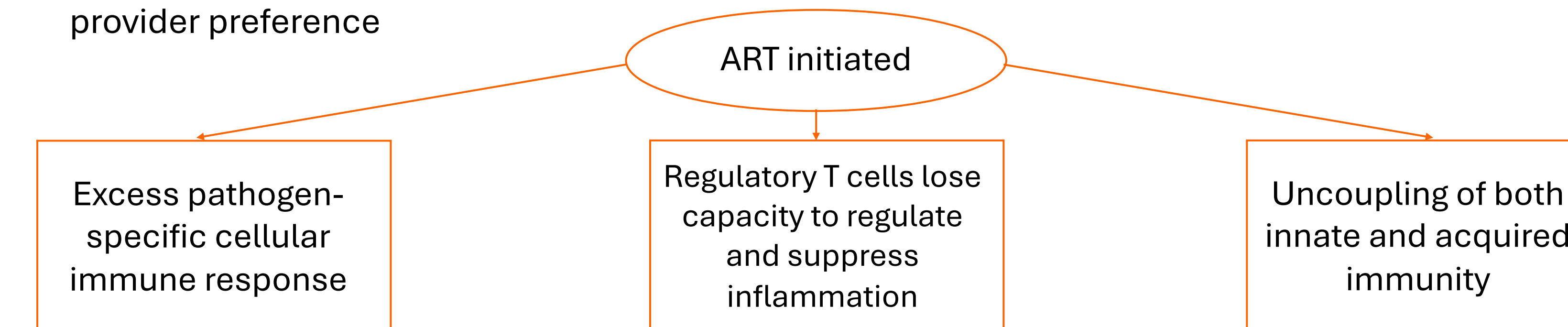


Figure 2: Diagram representing pathogenesis of IRIS when ART is initiated

Long-Term Management:

- Mycobacterium avium complex: Azithromycin, Ethambutol, and Rifabutin at least 12 months of treatment; CD4 count should be >100 for ≥6 months before discontinuation of therapy
- Cryptococcus: Fluconazole 200mg daily for at least 12 months; CD4 count should be >100 with suppressed HIV RNA before discontinuation of therapy
- Histoplasmosis: Itraconazole 200mg twice daily for at least 12 months; Fluconazole 800mg daily is an alternative therapy

Complication:

- Fluconazole can increase Rifabutin levels to be toxic; Rifabutin decreases levels of Fluconazole
- Rifabutin can decrease levels of bictegravir leading to reduced levels in the body and viral resistance

Patient today:

- ART: Truvada and Tivicay (Previously on Biktarvy)
- Most recent CD4 count – 129
- Rifabutin discontinued recently; only on double therapy for MAC

AIDS-mediated immunosuppression as the cause of OIs is becoming less frequent with continued advancements in ART. This case exemplifies the severity and consumptive nature of AIDS, but also enlightens us on the importance of the prophylactic and definitive treatment strategies of OIs.

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