

## **Pathophysiological Mechanisms of HIV**

HIV, a retrovirus, targets the immune system by infecting CD4+ T- Cells, resulting in immune suppression. After binding to CD4 receptors, the virus enters the cells, integrates into the host's DNA replicates, and cause cell death. This ongoing depletion of CD+ cells diminishes immune defenses, allowing opportunistic infections and unseals conditions to develop as immunity weakens. As CD4+ counts decline and viral load increase, individuals may progress to Acquired Immunodeficiency Syndrome (AIDS), a severe form of immunodeficiency (Fauci & Lane, 2020).

## **Explanation if Wilbur's Clinical Manifestations**

Wilbur's flat, purple rash could indicate Kaposi's sarcoma, a common AIDS- associated malignancy due to immunosuppression. Additionally, the white coating on his tongue suggests oral candidiasis (thrush), common in immunocompromised patients and a sign of advanced HIV. His frequent illness and stem from recurrent infections linked to immune systems weakening, aligning with HIV progression (CDC, 2021).

## **Analysis if Clinical Findings in Relation to HIV**

Wilbur's symptoms support HIV diagnosis, as clinical manifestations align with advanced HIV stages, particularly opportunistic infections like thrush and AIDS-defining illness like Kaposi's; sarcoma. These findings likely indicate a significantly reduced CD4+ count suggestive of advanced HIV or possible AIDS.

## **Diagnostic Tests for HIV**

Rapid HIV antibody tests are used to detect HIV antibodies, while P24 antigen testing directly detects the virus, facilitating early diagnosis (CDC, 2021). Additionally, a CD4+ T-Cell count below 200 can confirm AIDS, while viral load testing measures the viruses' activity, aiding in diseases progression assessment and treatment monitoring (Fauci & Lane, 2020). Oral swabs for Candida and skin biopsies for suspected Kaposi's sarcoma are also common for evaluating opportunistic infections in advanced HIV cases (CDC, 2021).

## **Anticipated Test Results**

For Wilbur, a positive HIV antibody or antigen test, a low CD4+ count, and a high viral load would support a diagnosis of advanced HIV. The presence of Candida or Kaposi's sarcoma would further confirm immune compromise, supporting HIV related complications.

## **References:**

Centers for Disease Control and Prevention, (2021). *HIV basics*. U.S. Department of Health and Human Services. <https://www.cdc.gov/hiv/index/html>