Cytomegalovirus Infection in People Living with HIV: Our Experience

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Background

- Cytomegalovirus (CMV) is a **double-stranded DNA virus** belonging to the **herpes virus** family (β Herpesvirus).

- CMV infection is usually benign in immunocompetent individuals but **remains latent indefinitely**.

- CMV infection remains a **major opportunistic infection** in people living with HIV (PLWHIV) with severe immunosuppression (CD4 <100), and causes **various organ impairments (CMV disease).**, leading to significant morbidity, mortality, and severe sequelae.

- Asymptomatic CMV reactivation is conventionally referred as "**CMV infection**" and **often precedes CMV disease**.

objective

- The objective of this study is to analyze the **clinical, biological, and evolutionary characteristics of CMV infection in PLWHIV**.

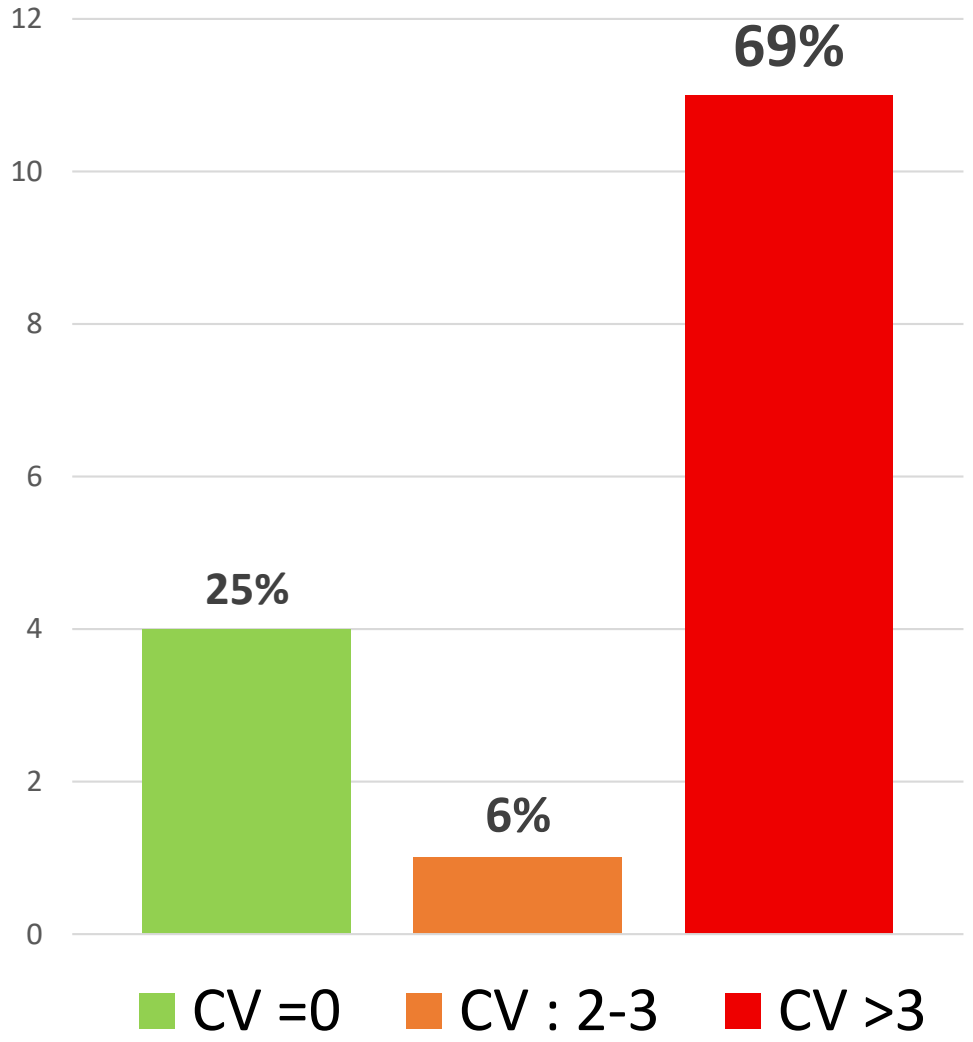
Patients and Methods

- **Retrospective** study
- **31 PLWHIV** hospitalized in an infectious disease department in Algiers are included between **January 1, 2014, and December 31, 2024**, for **confirmed or suspected CMV disease based on classic manifestations.**
- Analysis based on PLWHIV records for **clinical, biological, and progression characteristics under specific anti-CMV treatment.**

Patient Characteristics (N=31)

Average age	44 years
Sex ratio	1.58
Average CD4 count	38 (2-94) cells/mm³
Average HIV plasma viral load	5.3 LOG10
Average CMV plasma viral load	3.5 LOG10 (N=16)

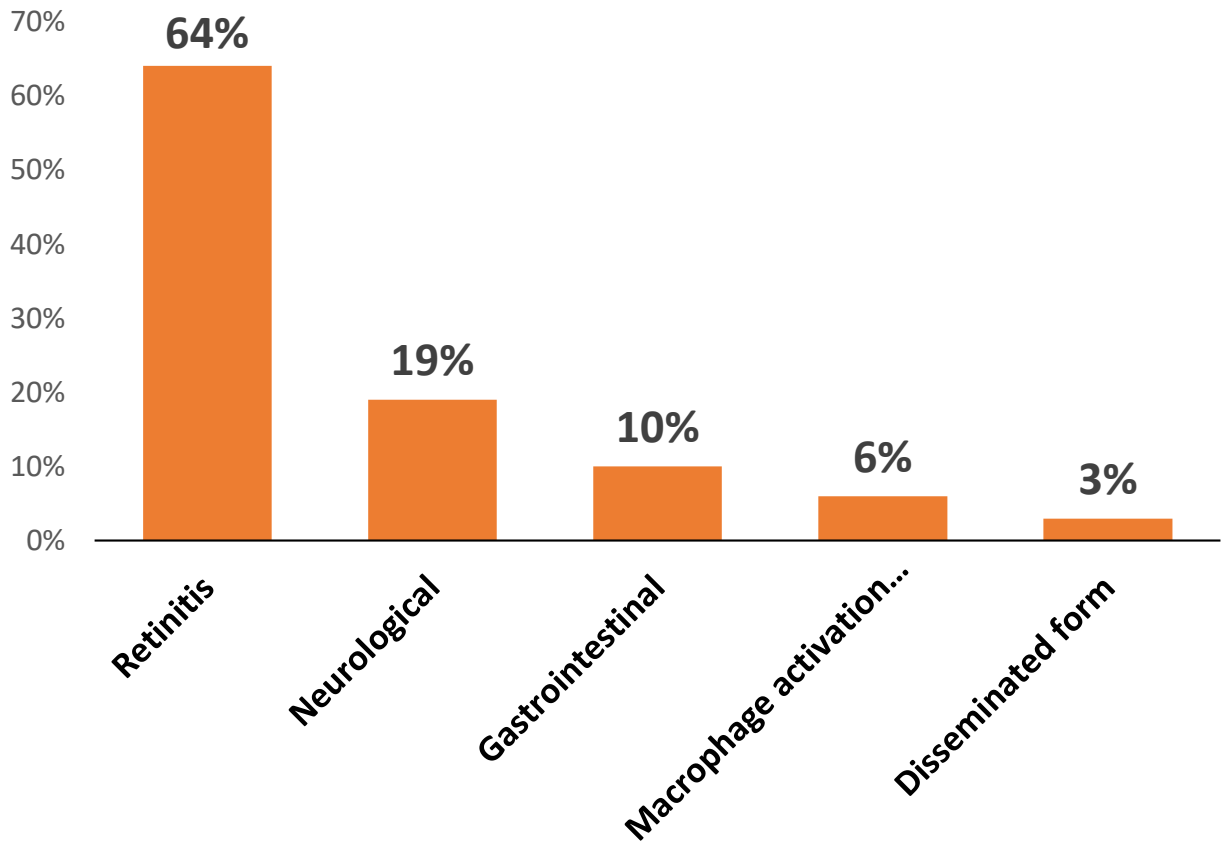
CMV Plasma Viral Load



Association with Opportunistic Co-infections

Tuberculosis	**07**
Pneumocystosis	**04**
Toxoplasmosis	**01**
Lymphoma	**02**
Kaposi Sarcoma	**01**
Total	**15**

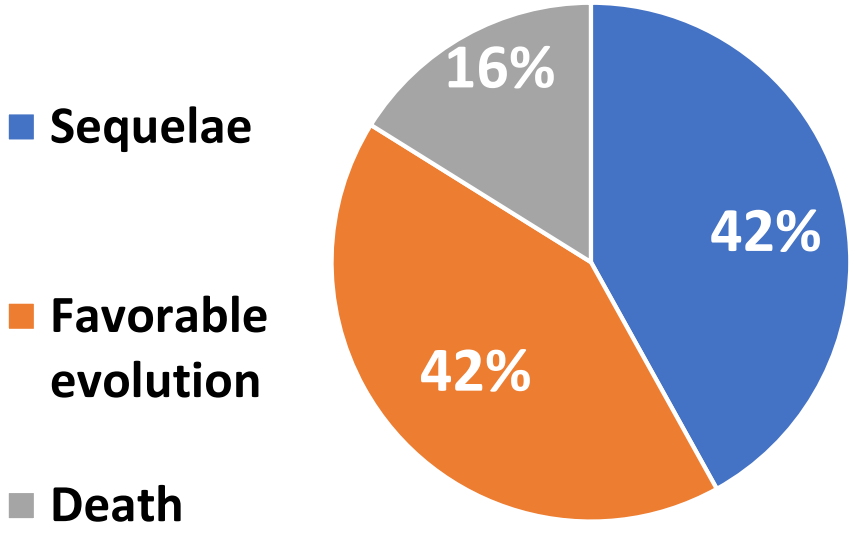
Distribution of Organics damage



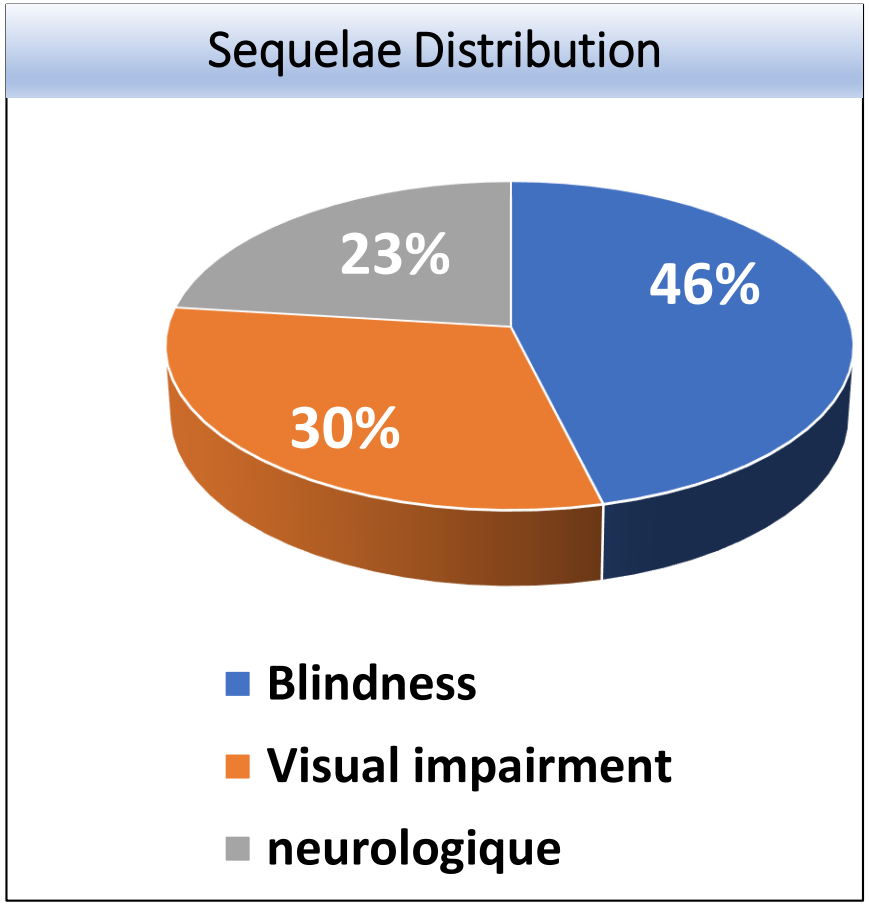
Management and progression of patients

Anti-CMV Medications Used (31)	
GANCICLOVIR	**64%**
VALGANCICLOVIR	**22%**
FOSCARNET	**9.6%**

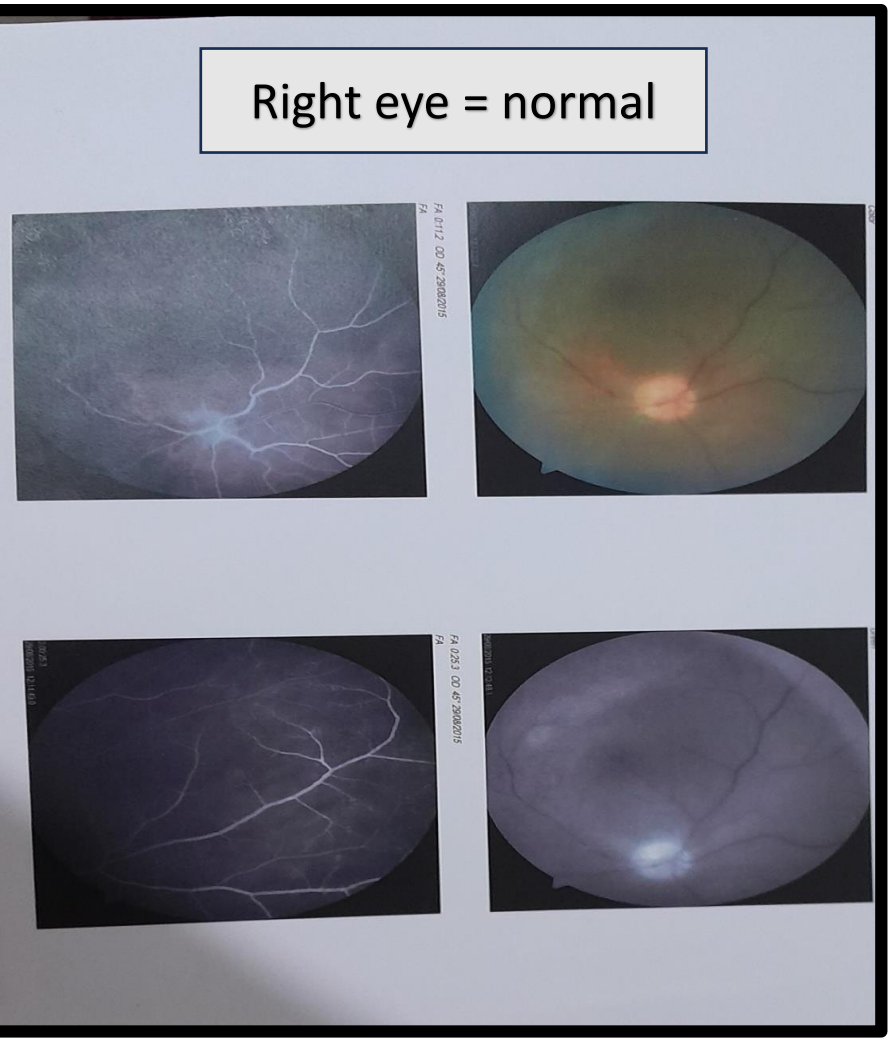
Evolution

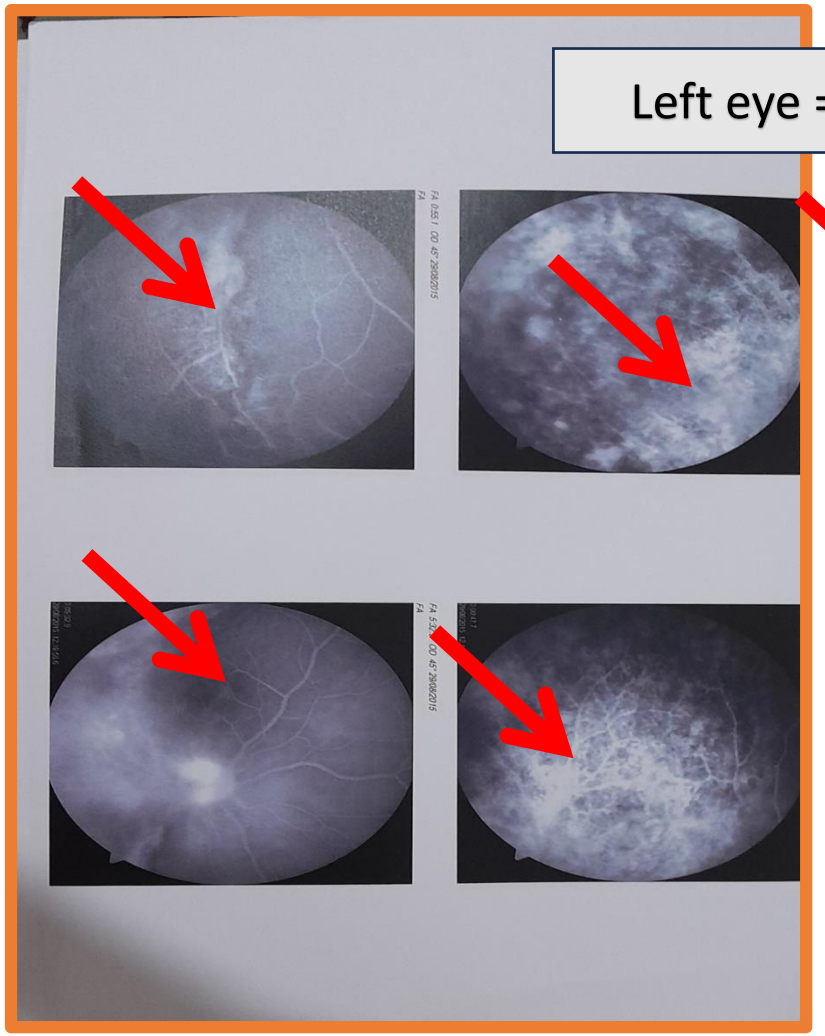


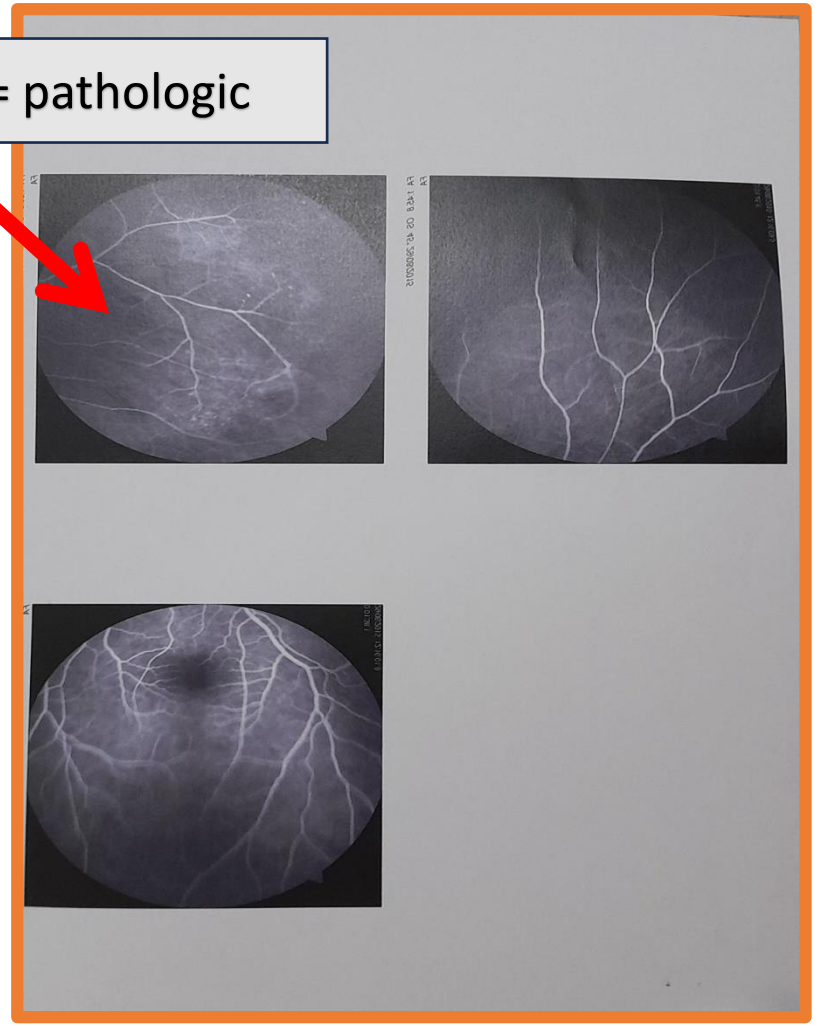
Sequelae Distribution



Retinal angiography







Sequelae of acute retinal necrosis with ischemic retinopathy in patient from the study

Discussion 1 : Study Population and Immunological Vulnerability

- CMV infection **remains a frequent** opportunistic infection in PLWHIV in **our country**,

- It occurs mainly in **young adults** with an **average age of 44 years**.

- The occurrence of CMV disease **correlates with profound immunosuppression (average CD4 count: 38/mm³)**. The patient profile needs further study (late HIV diagnosis, non-adherence, discontinuation of care).

- **AIDS-defining** opportunistic infection (OI) **revised CDC 1993 classification .**

Discussion 2: Dominant Clinical Manifestations

- **CMV retinitis is the most common form** (64%), reinforcing its major role in CMV-related morbidity in uncontrolled PLWHIV.

- **Neurological** and **gastrointestinal** involvement **(19%** and **10%,** respectively) highlight the **systemic nature of CMV.**

- **Macrophage activation syndrome(MAS**), though **rare (6%),** is a **severe complication with high mortality**.

CMV retinitis and risk of IRIS

TERMINOLOGY

- **IRIS**:Immune Reconstitution Inflammatory Syndrome
- A phenomenon observed in PLWHIV following the initiation of antiretroviral therapy (ART), characterized by an excessive inflammatory response due to immune reconstitution." .
- **Paradoxical IRIS**: Refers to the worsening of a previously diagnosed disease after ART initiation.
- **Unmasking IRIS**: Refers to the appearance of a previously undiagnosed disease following ART initiation.

RECOMMENDATIONS

- Clinicians should not initiate ART immediately in patients with known or strongly suspected CMV retinitis
- Clinicians should refer patients with HIV who have CD4 counts <100 cells/mm3 but without known or suspected CMV for funduscopy
- Clinicians should ensure that after initiating ART, patients with a history of CMV retinitis are monitored by funduscopy

Discussion 3: Association with Opportunistic Co-infections

- There is a **strong association** with **tuberculosis** (7 cases), **pneumocystosis** (4 cases), and **lymphoma** (2 cases).

- Profound immunosuppression often leads to **CMV being associated with multiple simultaneous opportunistic infections**, **complicating diagnosis and management and making the prognosis uncertain.**

Discussion 4: Role of CMV Plasma Viral Load in Diagnosis

- CMV PCR (CMV DNA) was evaluated in only **16 PLWHIV Due to reagent unavailability .**

- The **average** plasma CMV viral load was **3.5 log**, suggesting a **correlation with CMV disease**. However negative CMV PCR does not rule out diagnosis (4 patients had negative CMV PCR).

- Routine CMV PCR testing for PLWHIV with CD4 <100 is essential to initiate **preemptive treatment**.

Discussion 5:Therapeutic Evaluation and Patient Outcomes

- **Ganciclovir** (64%), **valganciclovir** (19%), and **foscarnet** (9.6%) are the specific treatments used.

- **The mortality rate of 16%** highlights the severity of these infections and the need for **early diagnosis and intervention**.

- About **45% of PLWHIV developed sequelae**, predominantly **blindness (46% of cases**), reinforcing the importance of early **screening and preemptive treatment for CMV retinitis**.

Conclusion & Recommendations

Reducing the incidence of CMV disease and its negative impact in PLWHIV requires:

- **Early detection and treatment of HIV infection**

- **Systematic screening and early treatment of CMV retinitis** via fundoscopy in PLWHIV with CD4 <100

- **Screening for CMV infection using CMV PCR** in PLWHIV with CD4 <100 and initiating preemptive treatment before organ involvement

- **Development of more effective anti-CMV drugs** with less of adverse effects and refinement of diagnostic strategies

Thank you for your attention