

Cytomegalovirus frequency in allogenic hematopoietic stem cell transplant recipients from a Mexican oncologic reference center

EPH203

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Purpose:

This study aimed to determine the frequency of CMV infection in CMV seropositive allogenic Hematopoietic stem cell transplant (aHSCT) recipients in an oncologic reference center in México.

Introduction:

Bone marrow transplantation is a commonly used approach for patients with hematological neoplasms due to its positive impact on survival rates. The transplantation process involves three main procedures: bone marrow transplantation, peripheral blood stem cell transplantation, and cord blood transplantation. However, these procedures carry the risk of infection, which is a common complication resulting from invasive treatments and immunosuppressive therapies. In immunocompromised patients, cytomegalovirus (CMV) infection is particularly common and can lead to various serious diseases affecting different organs.

While CMV infection is typically harmless in immunocompetent individuals, those with immunodeficiencies, particularly cellular deficiencies, are susceptible to severe CMV-related diseases such as pneumonia, gastrointestinal disease, hepatitis, retinitis, and more. Reactivation of latent CMV infection is a major cause of CMV infection and end-organ diseases in HSCT recipients, with a higher prevalence observed in seropositive patients receiving seropositive donor grafts.

CMV infections after HSCT predominantly occur within the first 100 days post-transplantation. To address this, regular monitoring for high-risk patients and preemptive therapy in case of reactivations are implemented. Infection detection is typically performed through antigen or PCR-based viral load detection, with viral loads above 250 IU/mL associated with an increased risk of early post-transplant mortality and mortality without relapse.

According to the Latin American Group of Bone Marrow Transplantation, a significant number of HSCTs were performed in the region between 2009 and 2012, with autologous, related donor, and unrelated donor transplants comprising the majority. Mexico alone saw 224 HSCTs in 2012, consisting of autologous and allogeneic transplants from related and unrelated donors.

CMV infection in seropositive HSCT recipients occurs in approximately 50% of cases and is linked to substantially increased healthcare costs, often exceeding \$500 USD per day, even with timely preemptive therapy.

Considering these factors, it is crucial to estimate the prevalence of CMV infection in Mexican patients undergoing HSCT to optimize resource allocation and improve patient outcomes.

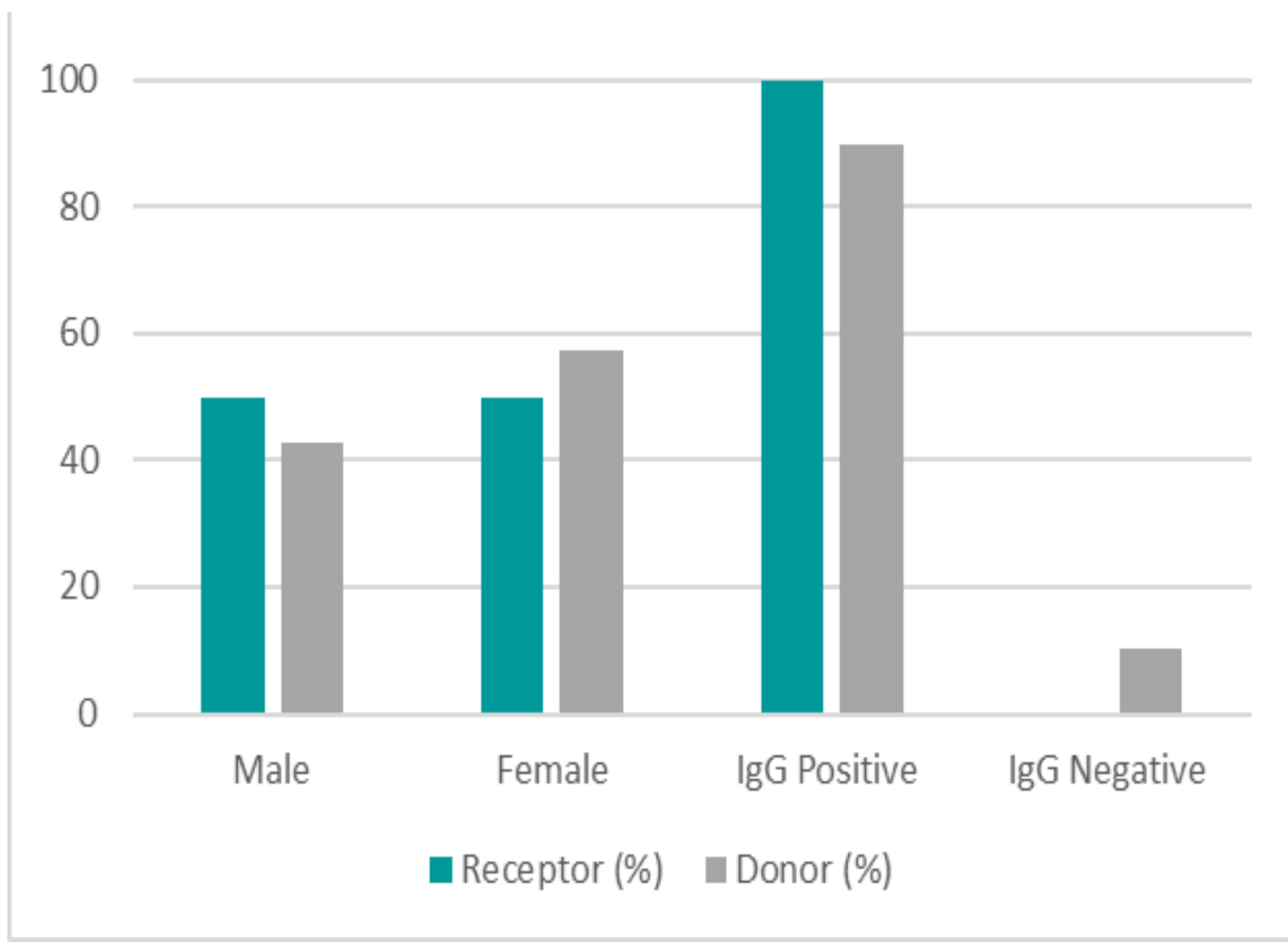
Methods:

Observational, descriptive, and retrospective study, based on secondary database analysis from a reference center. Data were collected from January 2014 to December 2019. Patients ≥18 years old, who were CMV seropositive and received aHSCT during this period were included in the study. Demographics, CMV serologic status of donors, frequency of CMV infection and disease in recipients, type of CMV prophylaxis and risk factors for survival and mortality; Classification of risk groups (low, intermediate, and high) based on transplant type, prevalence of CMV-specific immunoglobulin G (IgG), sex, and preemptive therapy (PET) (complete or incomplete).

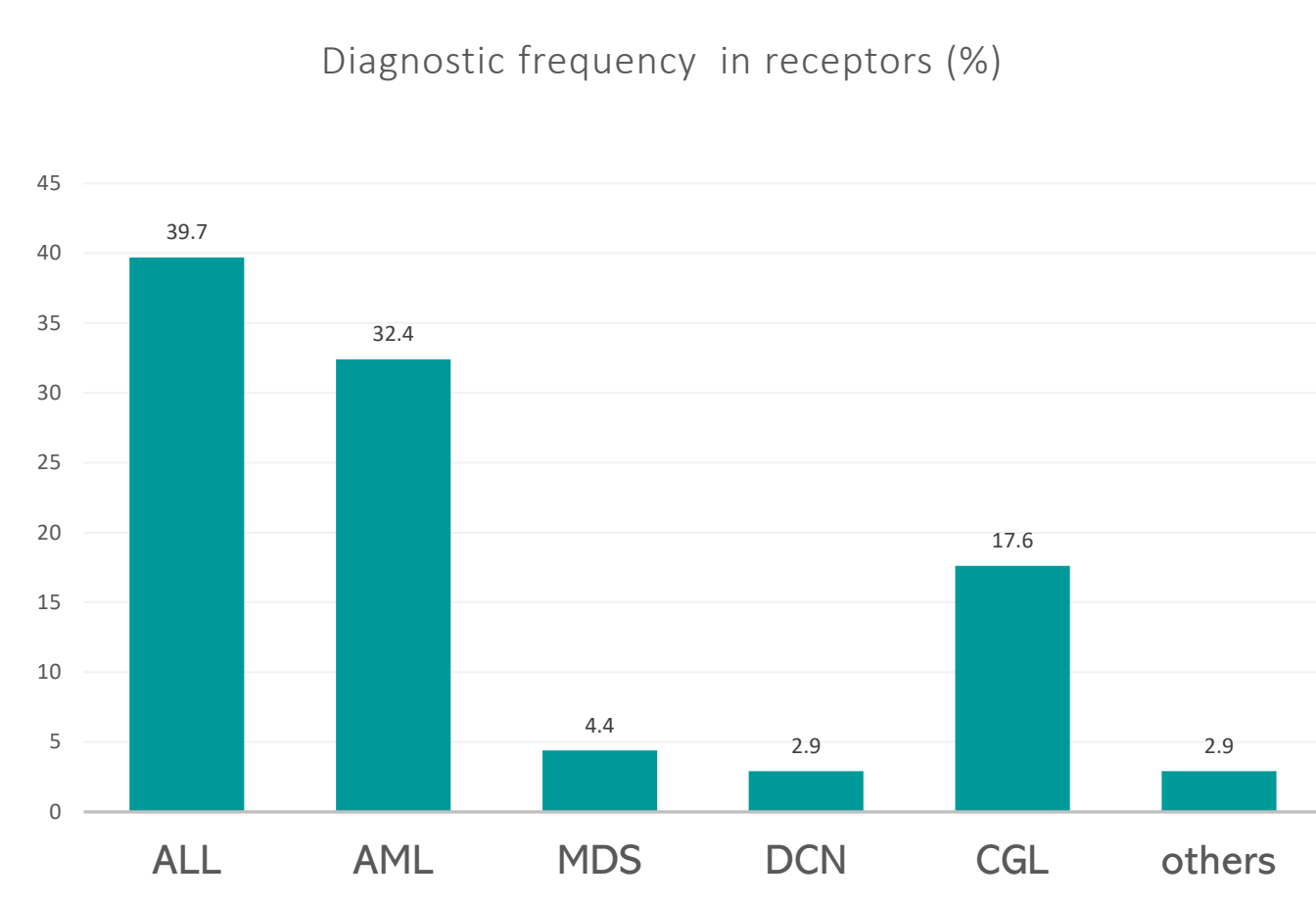
Descriptive analysis was performed using frequencies and proportions.

Results:

A total of 68 patients were analyzed. The mean age of the recipients was 34.5 ± 11.3 years, while in donors was 34 ± 13.1 years. In the recipient group, 50% (n=34) were men, and in the donor group, 42.6% (n=29) were men (Graph 1) The majority (83.8%, n=57) underwent bone marrow allogenic transplant.

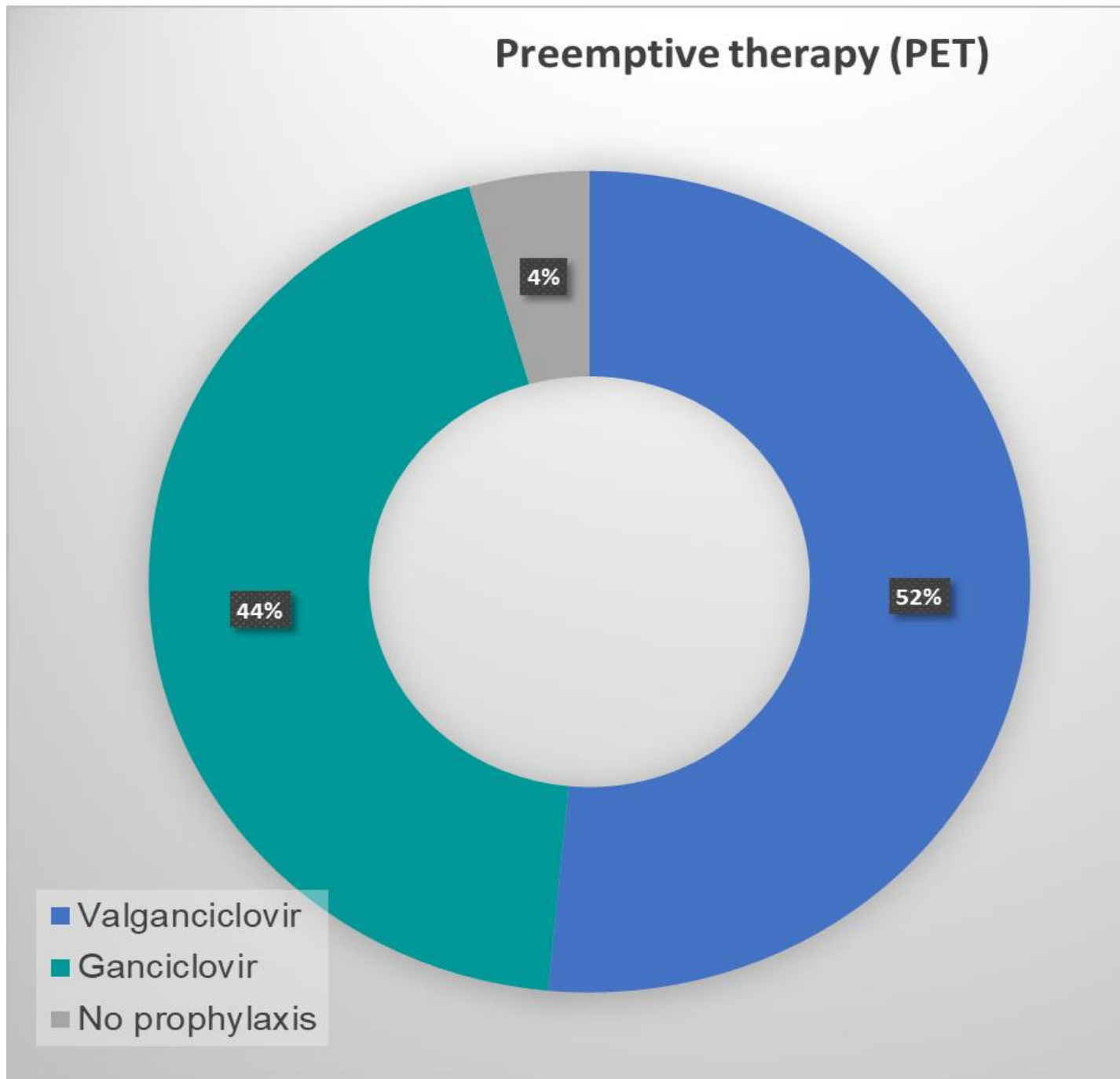


Graph 1. Sex and Immunoglobulin G (IgG) in all patients (receptors and donors) studied.

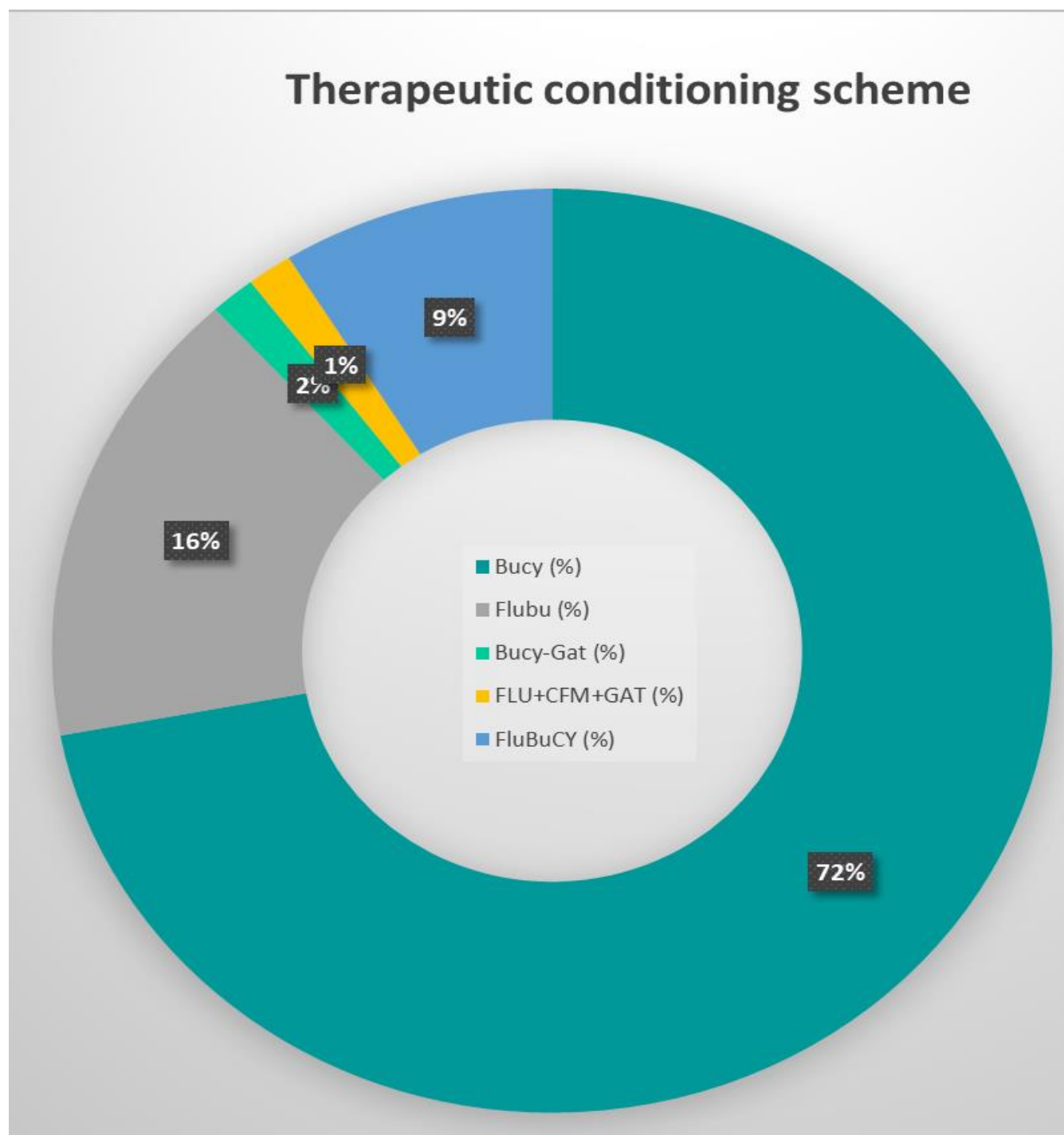


Graph 2. Distribution of diagnostics in receptors showed in percentages. ALL=Acute lymphoblastic leukemia; AML=Acute myeloid leukemia; MSD=Myelodysplastic síndrome; CGL=Chronic granulocytic leukemia

The prevalence of CMV infection in seropositive recipients was 25% (n=17), with 8.8% (n=6) developing CMV disease. Based on CMV-specific IgG levels, pretreatment, and prophylaxis used, 91% (n=62) of recipients were classified as intermediate risk, and 8.8% (n=6) as high risk.



Graph 3. Schemes of PET used in the receptors expressed in percentages, valganciclovir and ganciclovir were the most common schemes used.

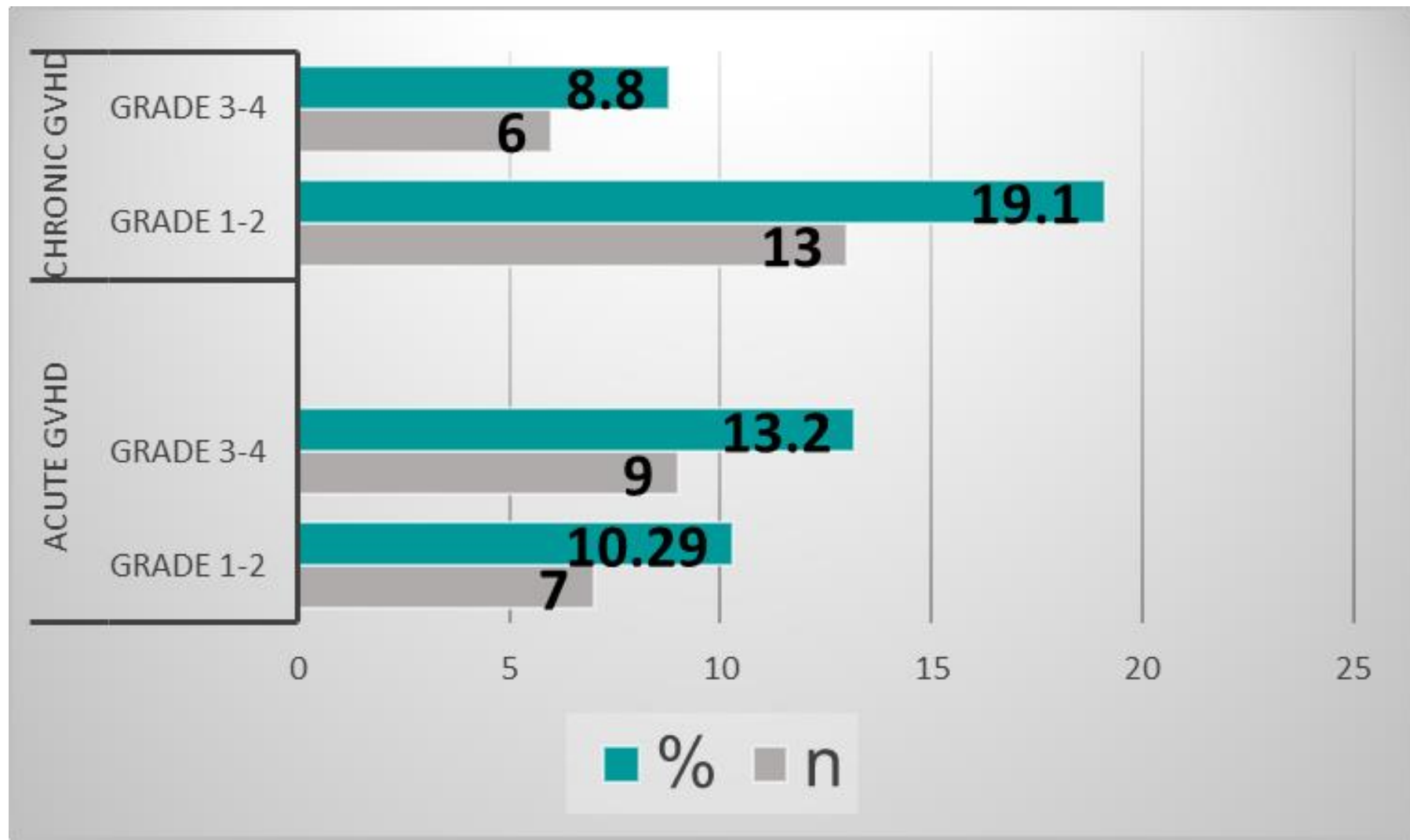


Graph 4. Conditioning therapeutic scheme in percentage

Among the CMV-patients' diseases (n=6), four presented with CMV-related pneumonitis, and one exhibited gastrointestinal disease. Notably, none of the patients died due to CMV infection. However, four patients experienced mortality due to other causes:

- One patient succumbed to fungal pneumonia; another patient passed away due to septic shock post-transplant; two patients had fatal complications resulting from progressive hematologic disease.

Regarding antiviral treatment, three patients received prophylaxis with Valganciclovir, and three received Ganciclovir. Among those who developed increased viremia during treatment, two switched to Ganciclovir, and one switched to Valganciclovir.



Graph 5. Distribution of GVHD and their stage in population studied. GVHD= graft-versus-host disease

Frequencies of acute and chronic graft-versus-host disease known as GVHD are showed in graph 5.

Regarding the clinical course, fever was recorded in 41 patients (60%), of which 25 cases were due to an infectious focus other than CMV. The main sites of infection in these cases were as follows: gastrointestinal: n=9, 36%, lung n=7, 25%, vascular access site n=3, 12%, oral n=3, 12%, UTI n= 1, 4%, otic n=1, 4%, skin n=1, 4%. These events were considered pre-viremias

Conclusion:

The prevalence of CMV infection in this study is like those reported in other geographic regions. The high prevalence of CMV emphasizes the importance of an adequate and effective prophylaxis strategies to prevent CMV-related morbidity and mortality in aHSCT recipients.

References and founding:

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