Letermovir for cytomegalovirus prophylaxis in patients post hematopoietic stem cell transplant

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Introduction

- Patients that undergo hematopoietic stem cell transplants (HSCTs) are at an increased risk of viral infections, specifically cytomegalovirus (CMV), post-transplant due to being in a prolonged immunocompromised state.
- The risk of CMV is highest between days 30 to 100 post-transplant.[1]
- Medications for treatment of CMV infections such as ganciclovir or valganciclovir have myelosuppressive effects and increased adverse events which limits their use for CMV prophylaxis.[2]
- Letermovir inhibits CMV viral terminase complex which is required for viral DNA processing and repackaging. It is ideal for CMV prophylaxis due to its mechanism of action only targeting viral components.[2,3]
- Letermovir is approved as prophylaxis for CMV-seropositive recipients due to high rate of early CMV reactivation after HSCT, which is associated with increased mortality.[2]
- Letermovir can be initiated on day 0 though day 28 post-allogeneic HSCT and is continued through day 100 post transplantation. Use may be continued through day 200 post transplantation in certain patients. Per Marty et al., the median day of starting letermovir was on day 9.[2,3]

Objectives

- To assess whether initiating oral letermovir for CMV prophylaxis at day 5 versus at day 10 following a HSCT would lead to differences in cost savings without worsening patient outcomes.

Methods

- **Research design:** Retrospective single-center chart review to evaluate letermovir use.
- **Inclusion criteria:** Patients were included if they received letermovir post-HSCT from July 9, 2019 through December 13, 2022.
- **Exclusion criteria:** Patients were excluded if they were not a CMV IgG positive recipient or if they received intravenous letermovir during their inpatient stay.

Results

Table 1: Demographics

	Overall n=54
Sex, n (%)	
Male	29 (53.7)
Race, n (%)	
White	38 (70.4)
Black	5 (9.3)
Hispanic	3 (5.6)
Asian	2 (3.7)
Other	2 (3.7)
Unknown	4 (7.4)
Diagnosis, n (%)	
AML	27 (50.0)
ALL	6 (11.1)
MDS	10 (18.5)
Aplastic anemia	4 (7.4)
Hodgkin lymphoma	3 (5.6)
Other	4 (7.4)
Graft Source, n (%)	
Cryopreserved PBSCT	23 (42.6)
Fresh PBSCT	24 (44.4)
Cryopreserved BM	4 (7.4)
Fresh BM	3 (5.6)
Type of Donor, n (%)	
MUD	33 (61.1)
Haplo	15 (27.8)
MRD	5 (9.3)
MMUD	1 (1.9)
Donor Recipient CMV status, n (%)	
D+/R+	28 (51.9)
D-/R+	26 (48.1)

Abbreviations: acute myeloid leukemia (AML); acute lymphocytic leukemia (ALL); myelodysplastic syndrome (MDS); matched unrelated donor (MUD); haploidentical (Haplo); matched related donor (MRD); mismatched unrelated donor (MMUD); graft versus host disease (GVHD); post-transplant cyclophosphamide (PTCy); mycophenolate (MMF); tacrolimus (FK); mini-dose methotrexate (miniMTX); peripheral blood stem cell transplant (PBSCT); bone marrow (BM)

Table 2: CMV Viremia

	Overall n=54
CMV viremia, n (%)	
Positive	20 (37.0)
Positive CMV viremia, days	
Average	71.3

Figure 1: GVHD Prophylaxis

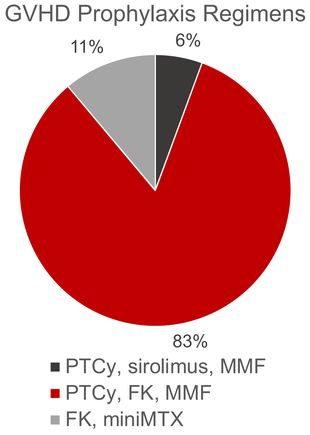
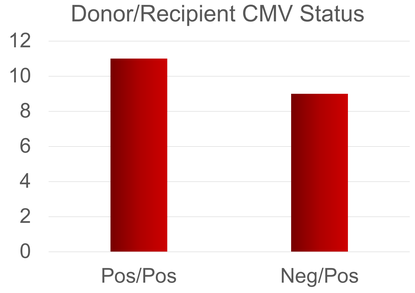


Figure 2: Donor/Recipient CMV Status in Patients with CMV Viremia post-HSCT



Discussion

- The cost for being on oral letermovir for an average of 16.6 inpatient days when initiating letermovir on day 5 post-HSCT was $4,171.25. If the initiation of oral letermovir was delayed to 10 days post-HSCT, the cost would be decreased significantly to $2,914.85.
- The cost savings would be 30% if the initiation of oral letermovir was changed from day 5 to day 10.
- In this review, 37% of patients tested positive for CMV viremia. The average day that patients tested positive for CMV viremia was 71.3 days [median 23, range 3-272].
- PTCy was used for GVHD prophylaxis but is associated with increased CMV infections post-HSCT based on literature. In this review, 88.9% of patients received PTCy for GVHD prophylaxis.[4]
- **Limitations:** Exclusion of patients who were on intravenous letermovir, single-center, patient survival was not assessed, and total duration of letermovir usage was not known.

Conclusion

- Delaying the start of oral letermovir from day 5 to day 10 post-HSCT would result in a reduction in inpatient costs following a HSCT.
- In this review, rates of CMV viremia post-HSCT were similar compared to Marty et al.[2]
- Rates of CMV viremia based on donor/recipient status were similar between the two groups in this review.
- While the analysis was not powered, further research in evaluating delaying the initiation of letermovir prophylaxis for cost savings is suggested.
- Further research is needed to see if Donor/Recipient status or GVHD prophylaxis treatment regimens play a role in development of CMV viremia.

Disclosures

- The authors of this poster have no personal, professional, or financial relationships related to this project to disclose.

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