Retrospective Evaluation of CMV Retinitis Screening Protocol in a Pediatric Hematopoietic Stem Cell Program

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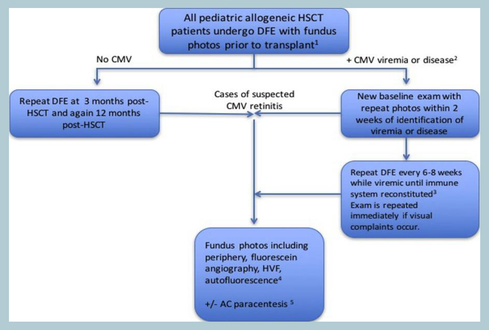
Introduction

- Cytomegalovirus (CMV) reactivation poses significant risks in pediatric patients undergoing allogeneic hematopoietic stem cell transplant (HSCT).
- CMV viremia can lead to CMV retinitis, which can lead to severe ocular morbidity.
- A previously published CMV retinitis screening protocol called for intensive and frequent screening exams with retinal photography.



Supplemental Figure 1. Previous Ophthalmologic screening protocol at Children's Hospital Colorado enacted in 2015

Purpose

To evaluate the prevalence and incidence of CMV retinitis, institutional adherence to previously published screening protocol, and to determine the impact and efficacy of previously published CMV retinitis screening protocol.

Methods

A retrospective cohort study of 228 pediatric patients who underwent their first allogeneic HSCT at Children's Hospital Colorado from 2015 to 2021.

Data was collected into a secure RedCap database.

Results

- **25%** of allogeneic HSCT patients **developed CMV viremia** and only **3** of those **developed CMV retinitis**—each diagnosed long after initial examination per protocol.
- Only **28%** of patients with viremia **underwent the recommended dilated fundal exam (DFE) and retinal photography within two weeks of diagnosis.**
- **No significant long-term ocular complications** noted
- While other ocular complications, such as ocular GVHD was noted, these were associated with pre-existing systemic conditions.

Post-HSCT Viremia Rates	
Viremia (Any)	168 (73.69%)
CMV	58 (25.43%)
EBV	79 (34.65%)
Adenovirus	37 (16.22%)
HHV6	90 (39.47%)
VZV	1 (0.44%)

Table 1. HSCT Viremia. Abbreviations: CMV: cytomegalovirus, EBV: Epstein-Barr virus, HHV6: Human Herpesvirus 6, VZV: Varicella Zoster virus

Ophthalmologic Complications	
Any Ocular Pathology	35 (15.35%)
Anterior Segment Complications	
Ocular GVHD	14 (6.14%)
Cataracts	9 (3.95%)
Other**	12 (5.26%)
Posterior Segment Complications	
Retinitis	3 (1.31%)
Maculopathy	1 (0.44%)

Table 3. Ophthalmologic Complications post HSCT. Abbreviations GVHD: Graft-vs-Host Disease.

Pt	Primary Indication for HSCT	Donor & Source	Donor/Recipient CMV Serostatus	Symptomatic?	Age at Retinitis Diagnosis	Long-term visual outcome
1	Hemoglobin SS	MSD, BM	+/+	No	4 yrs	Normal
2	Severe Aplastic Anemia	Haplo, BM	-/-	Unable to assess	13 months	Normal
3	AML	Unrelated Cord	-/-	No	5 yrs	Normal

Table 2. Characteristics of patients diagnosed with CMV Retinitis. Abbreviations: MSD: Matched Sibling Donor, BM: Bone Marrow

Conclusions

- Incidence of CMV retinitis is lower than previously documented
- Adherence to established screening protocol was low
- Patients with CMV retinitis had no long-term complications

Recommendations

Re-evaluation of screening protocols, emphasizing the need for a more streamlined approach that prioritizes patient well-being without compromising ocular health monitoring during the vulnerable post-transplant period.

Disclosures

There are no relevant financial disclosures or conflicts of interest

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