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EVALUATION OF CYTOMEGALOVIRUS INFECTION/DISEASE FREQUENCY AND RISK FACTORS FOLLOWING ALLOGENEIC STEM CELL TRANSPLANTATION: A SINGLE CENTER EXPERIENCE

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INTRODUCTION

Cytomegalovirus (CMV) infection is the most common infection after allo-SCT procedure and CMV disease still carries a relatively high risk of mortality despite advances in diagnostic and treatment methods.

AIM

The objective of this retrospective, observational study was to investigate the frequency of cytomegalovirus (CMV) infection and CMV disease in adult patients who underwent allogeneic stem cell transplantation (allo-SCT). Additionally, the study aimed to identify the risk factors associated with CMV infection and CMV disease.

METHOD

A total of 221 adult patients who underwent their first allo SCT between 2012 and 2020 at a single center were included in the study. Relevant data, including sociodemographic information, characteristics of the allo-SCT procedure, complications, donor characteristics, and parameters related to CMV infection and disease, were collected and analyzed.

RESULTS

The mean follow-up period was 1 067.4 days. Among the patients, 121 (54.8%) developed CMV infection, while 18 (8.1%) developed CMV disease. Of those with CMV infection, 111 cases (91.7%) occurred in the early period after allo-SCT and 10 cases (8.3%) occurred in the late period. Risk factors associated with both CMV infection and CMV disease included the presence of acute graft-versus-host disease (aGVHD) and chronic graft-versus-host disease (cGVHD). Additionally, the use of the busulfan plus cyclophosphamide protocol as a conditioning regimen increased the risk of developing CMV infection in the early period after allo-SCT. Moreover, CMV disease was found to involve the gastrointestinal system more frequently in the presence of aGVHD or in cases of unrelated donors matched with human leukocyte antigens. The peak CMV DNA level measured during CMV infection was associated with an increased risk of progression to CMV disease, although the count of leukocytes, neutrophils, and lymphocytes at the onset of CMV infection was inversely associated with the risk of recurrent CMV infection.

CMV Infection		Present (n=121)	Absent (n=100)	
Characteristics		n (%)	n (%)	P value
Donor Characteristics	Matched related	85 (70,2)	81 (81)	0,16
	Matched unrelated	30 (24,8)	17 (17)	
	Haploidentical	6 (5)	2 (2)	
Conditioning Regimen	Myeloablative	95 (78,5)	72 (72)	0,39
	RIC	16 (13,2)	20 (20)	
	Nonmyeloablative	10 (8,3)	8 (8)	
Conditioning Regimen	With cyclophosphamide	104 (86)	86 (86)	0,99
	Without cyclophosphamide	17 (14)	148 (14)	
Conditioning Regimen	With ATG	14 (11,6)	9 (9)	0,53
	Without ATG	107 (88,4)	91 (91)	
History of CMV Infection Prior to Allo-SCT	Positive	12 (9,9)	7 (7)	0,44
	Negative	109 (90,1)	93 (93)	
Acute GVHD	Positive	70 (57,9)	16 (16)	**<0,001**
	Negative	51 (42,1)	84 (84)	
Chronic GVHD	Positive	34 (33,7)	10 (11,1)	**<0,001**
	Negative	67 (66,3)	80 (88,9)	

CONCLUSIONS

This study identified separate risk factors for CMV infection and CMV disease among the parameters analyzed. Patients with high peak CMV DNA levels in their blood or cytopenia at the onset of CMV infection may require close monitoring for early detection of disease progression and recurrence of CMV infection, respectively. These findings emphasize the importance of vigilant surveillance and timely interventions in managing CMV infection and disease in allo-SCT patients.

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