EVALUATION OF BK POLYOMAVIRUS INFECTION FREQUENCY AND RISK FACTORS FOLLOWING ALLOGENEIC STEM CELL TRANSPLANTATION (ALLO-SCT): A SINGLE CENTER EXPERIENCE

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INTRODUCTION

Hemorrhagic cystitis (HC) is a clinical entity that mostly occurs after allo-SCT and reduces the quality of life of patients and prolongs hospitalization. While the main reason for early-onset HC is the toxicity of the conditioning regimen, BK polyomavirus (BKV) is the main cause in late-onset HC.

AIM

The aim of this study was to investigate frequency and risk factors of BKV-HC development.

METHOD

Overall, 221 adult patients who underwent first allo-SCT between 2012 and 2020 at our institution were included in this single center, retrospective, observational study. Data on patients' sociodemographic information, characteristics of the allo-SCT procedure and complications, donor characteristics, and parameters related to BKV-HC were collected.

RESULTS

The mean follow-up period was 1067.4 days. Matched related donors in 166 (75.1%), matched unrelated donors in 47 (21.3%) and haploidentic donors in 8 (3.6%) transplants were used. Of the conditioning regimens used in transplants, 167 (75.6%) were myeloablative, 36 (16.3%) were reduced-intensity and 18 (8.1%) were nonmyeloablative.

The mean engraftment time was 17.9 days. aGVHD, cGVHD, BKV-HC occured in 86 (38.9%), 44 (23%), 17 (7.7%) of the patients included in the study, respectively. Use of myeloablative conditioning regimen (P = 0,047), development of cytomegalovirus (CMV) infection (P = 0.02) and history of CMV infection prior to allo-SCT (P = 0.009) were determined as risk factors for the development of BKV-HC.No correlation was observed between the severity of BKV-HC and peak BKV DNA in urine.

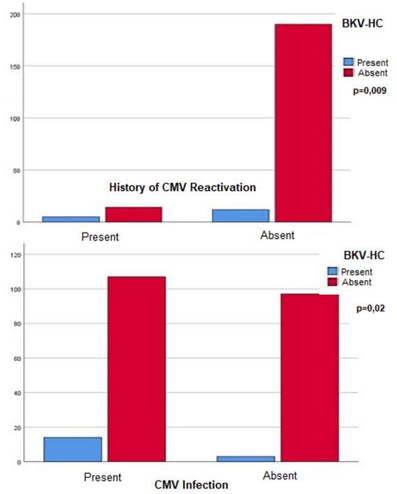


Image-1: Comparison of BKV-HC according to CMV infection and history of CMV infection prior to allo-SCT

CMV Infection		Present (n=121)	Absent (n=100)	
Characteristics		n (%)	n (%)	P value
Donor Characteristics	Matched related	10 (58,8)	156 (76,5)	0,09
	Matched unrelated	7 (41,2)	40 (19,6)	
	Haploidentical	-	8 (3,9)	
Conditioning Regimen	Myeloablative	17 (100)	150 (73,5)	**0,047**
	RIC	-	36 (17,6)	
	Nonmyeloablative	-	18 (8,8)	
Conditioning Regimen	With cyclophosphamide	16 (94,1)	174 (85,3)	0,48
	Without cyclophosphamide	1 (5,9)	30 (14,7)	
History of CMV Infection Prior to Allo-SCT	Positive	5 (29,4)	14 (6,9)	**0,009**
	Negative	109 (90,1)	93 (93)	
Acute GVHD	Positive	10 (58,8)	76 (37,3)	0,08
	Negative	7 (41,2)	128 (62,7)	
Chronic GVHD	Positive	2 (15,4)	42 (23,6)	0,74
	Negative	11 (84,6)	136 (76,4)	
CMV Infection after Allo-SCT	Positive	14 (82,3)	107 (52,5)	**0,02**
	Negative	3 (17,7)	97 (47,5)	

CONCLUSIONS

In our study, frequency and risk factors of BKV-HC were determined. Reporting of development of CMV infection and a positive history of CMV infection prior to allo-SCT as risk factors for development of BKV-HC was especially significant. The results suggest that in patients with a history of CMV infection prior to allo-SCT, avoidance of other factors that may increase the risk of BKV-HC, such as the use of a myeloablative conditioning regimen, may be preferred.

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