Monolonal B-Cell Lymphocitosis (MBL) in Kidney Transplantation

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Introduction

Monoclonal B-cell lymphocytosis (MBL) is a **heterogeneous lymphoproliferative disorder** characterized by **clonal expansion of B-cell population in peripheral blood** of otherwise healthy subjects. **The condition is asymptomatic** and displays a chronic "stable" course in general population. Nevertheless, some clones carry out a potential risk of transformation in malignant lymphoproliferative disease like chronic lymphocytic leukemia (CLL) or lymphoma. According to the immunophenotypic features with CLL, MBL can be divided in three subtypes:
(i) **CLL-like**, (ii) **atypical CLL** and (iii) **non-CLL phenotype**[3].

Methods

We retrospectively reviewed charts of kidney transplant (KT) recipients whom underwent nephrology follow-up care after transplantation from January 2008 to December 2015. During the follow-up, 157 out of 579 KT recipients underwent peripheral blood flow-cytometry for clinical indications. B-cell population was identified using six-color flow cytometry which was not equipped to detect minimal residual disease. Clonality of the circulating B-cell population was determined by k/λ ratio and was considered abnormal when it was more than 3:1 or less than 1:3. At diagnosis of MBL, patients underwent radiological assessment in order to exclude organs involvement.

Results

MBL was detected in 6 KT recipients (3.8% of the studied population). Clinical and laboratory characteristics of patients are reassumed in Table 1. **Immunophenotypic characterization of MBL showed five cases (83%) of non-CLL MBL and one case (17%) of CLL-like MBL**. Four cases of non-CLL and one case of CLL-like MBL were detected after a mean age of 13.4±7.1 years from KT. **Only a HIV/HCV-coinfected patient had MBL (non-CLL phenotype) before KT**. After a mean follow-up of 3.2±1.5 years from KT, **MBL patients did not progress either to CLL or lymphoma. The disorder did not increase the risks of malignancies, severe infectious diseases, graft loss and mortality among KT recipients.** Surprisingly, **all the six cases were affected by monoclonal gammopathy of undetermined significance (MGUS)** which was detected after the diagnosis of MBL (mean age 3.2±1.5 years).

Table 1. Clinical and laboratory characteristics of patients with MBL

Case n.	Sex	Transplant	Age (year)	Chronic infectious disease	Timing of diagnosis after KT	Laboratory data White-cell count (cell x 10^9/L)	Lymphocytes (cell x 10^9/L)	Flow cytometry IgG/IgA/IgM	sIgκ:sIgλ ratio	MBL count (cell /µl)	MBL subtype	Indication for flow cytometry	Timing of MBL diagnosis after MGUS	MGUS Heavy chain	MGUS Light chain	Progression to CLL or lymphoma	Development of malignancy	Serious infectious disease	Dead (cause)	Follow-up since MBL presentation (month)
1	Female	Cadaveric KT	73	None	13 (yr)	7.28	2.37	1044/76/79	13:1	564	Non-CLL	MGUS protocol	5 (yr)	IgG	λ	None	None	None	None	38,3
2	Male	Cadaveric KT	50	HIV+ HCV+	pre-KT	4.24	1.91	465/13/326	192:1	1146	Non-CLL	CD4/CD8 count	0 (yr)	IgM	K	None	None	None	None	68,4
3	Male	Cadaveric KT	65	None	15 (yr)	8.82	3.7	1602/130/228	3.5:1	67	Non-CLL	MGUS protocol	9 (mo)	IgG	k	None	None	None	None	31,5
4	Male	Cadaveric KT	61	None	18 (yr)	8.68	2.72	1074/255/119	4.2:1	136	Non-CLL	MGUS protocol	4.7 (yr)	IgG IgG	λ k	None	None	None	None	61,4
5	Male	Double KT	64	None	3 (mo)	22.9	1.9	1586/166/427	14:1	285	Non-CLL	Leukocytosis Thrombocytopenia	0 (yr) (simultaneous)	IgM	k	None	None	Bacterial, fungal sepsis	Yes (Stroke)	12
6	Male	Cadaveric KT	72	None	21 (yr)	8.48	1.79	698/359/90	5.6:1	35	CLL-like	MGUS protocol	2,5 (yr)	IgA	λ	None	None	None	None	9,8

CLL, chronic lymphocytic leukemia; KT, kidney transplant; MBL, monoclonal B-cell lymphocytosis, MGUS, monoclonal gammopathy of undetermined significance

Conclusion

Non-CLL phenotype seems to be prevalent in KT recipients. Both non-CLL and CLL-like MBL did not affect the clinical outcomes in our patients. The absence of progression to overt lymphoproliferative malignancies under the burden of immunosuppression might reflect a non-aggressive behavior of the disorder in KT. The significant association between MBL and MGUS is elusive and might be expression of an individual excessive dysregulation and senescence of immune system[4,5].

References

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