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THE EXPRESSION AND CLINICAL SIGNIFICANCE OF DIFFERENT FORMS OF LILRA3 IN SYSTEMIC LUPUS ERYTHEMATOSUS

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Background: LILRA3 is a member of the LILR family produced as a soluble molecule by monocytes and macrophages. A 6.7-kb deletion in the gene of LILRA3 results in a null allele and an absence of function. The frequencies of the 6.7-kb deletion vary greatly in different populations, considerably higher in Northeastern Asians (0.56–0.84) compared with Africans (0.10) or Europeans (0.17). The homozygous LILRA3 deletion (nonfunctional *LILRA3*) has been demonstrated to be associated with Sjogren's syndrome (SS) and multiple sclerosis (MS) in Caucasians. However, in our previous studies, we found that in Chinese Han population, the LILRA3 non-deletion (namely functional *LILRA3*) contributes to susceptibility and subphenotypes of SLE and SS. With respect to the significant role of LILRA3 in immune-modulatory functions, we studied the role of LILRA3 in SLE.

Objectives: Our previous study has shown that functional *LILRA3* contributes to susceptibility and subphenotypes of systemic lupus erythematosus (SLE). However, the mechanism remains unclear. We aimed to evaluate the role of LILRA3 in SLE.

Methods: 126 SLE patients and 48 healthy controls were recruited in this study. Functional studies were performed using intracellular flow cytometry and ELISA.

Results: Both LILRA3 levels in serum and CD14⁺ monocytes were significantly elevated in SLE patients compared with healthy controls. Elevated LILRA3 level was found positively correlated with SLEDAI. Furthermore, more elevated LILRA3 levels were found in patients with higher SLEDAI, presence of lupus nephritis and thrombocytopenia.

Conclusion: Both LILRA3 levels in serum and CD14⁺ monocytes significantly increased in SLE and positively correlated with disease activity and severity. The up-regulation of LILRA3 expression may serve as a biomarker of disease activity and severity of SLE.

Table 1. Correlations of LILRA3 levels with the studied parameters in SLE patients

Clinical manifestations	LILRA3 in monocytes (MFI)		LILRA3 in serum (pg/mL)	
	Spearman's <i>r</i>	<i>P</i> value	Spearman's <i>r</i>	<i>P</i> value
SLEDAI	0.398	0.0018**	0.257	0.0036**
24h proteinuria excretion	0.328	0.024*	0.159	0.09
Leucocytes	-0.033	0.680	-0.253	0.0037**
Thrombocytes	-0.176	0.213	-0.144	0.11
Anti-dsDNA Ab	0.066	0.627	-0.061	0.498
C3	-0.138	0.290	-0.076	0.392
C4	-0.140	0.282	-0.025	0.777
IgA	0.068	0.604	0.017	0.852
IgM	0.107	0.417	0.053	0.557
IgG	0.143	0.218	0.228	0.01*
CRP	-0.164	0.237	0.088	0.339

SLE: systemic lupus erythematosus; SLEDAI: systemic lupus erythematosus disease activity index; LILRA3: Leukocyte immunoglobulin-like receptor A3; ANA: antinuclear antibody; Anti-dsDNA Ab: anti-double strand DNA Antibody; ACL: anticardiolipin antibody; AnuA: antinucleosome antibody; Sm: anti-Smith antibody; SS: anti-SSA antibody; C3 Complement component 3; C4: Complement component 4. CRP: C-reactive protein. * *P* < 0.05, ** *P* < 0.01. Spearman's correlation coefficient (*r*) was applied to detect correlation between two types of numerical data.

Figure 1

Figure 2

Figure 3

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