Diminished Memory B-cells In Systemic Lupus Erythematosus Patients With Low Disease Activity

Sabine Zenz[1], Barbara Dreo[1], Barbara Prietl[2,3], Selina Kofler[2,3], Harald Sourij[2,3], Angelika Lackner[1], Florentine Fürst-Moazedi[1], Monica D'Orazio[1], Martin Stradner[1], Winfried Graninger[1], Hans-Peter Brezinschek[1]

[1]Division of Rheumatology and Immunology, Medical University Graz, Austria, [2]CBmed GmbH – Center for Biomarker Research in Medicine, Austria;
[3]Division of Endocrinology and Diabetology, Medical University of Graz, Austria

BACKGROUND

B-cells play a pivotal role in the initiation and perpetuation of systemic lupus erythematosus (SLE). Recently, it has been demonstrated that in active SLE patients, the peripheral blood is enriched in CD27+IgD- post-switched memory B-cells. The aim of our study was to delineate the B-cell repertoire of SLE patients with low disease activity (SLEDAI – 2K ≤4).

MATERIAL AND METHODS

Peripheral blood samples from 40 patients suffering from SLE (mean±SD; age 43±13 years, 88% females, disease duration 10.7±7 years) and 74 age-matched healthy controls (HC; age 46±17 years, 80% female) were drawn over 2 years. All SLE patients were in remission or with low disease activity (SLEDAI-2K; median 2.0, 95%CI 1.0 and 2.0). B-cells were characterized using CD19-, CD20-, CD5-, CD27- antibodies and grouped in naïve (IgD+27-), non-switched memory (IgD+, CD27+), memory (IgD-, CD27+), B1 (CD5+27-) and MBL-like (CD5++) B-cells. A quantitative flow cytometric bead-based assay (QuantiBRITE PE kit from Becton Dickinson) was used for the estimation of CD19 antibodies bound per cell. All cytometric measurements were performed using a standardized BD LSR Fortessa platform.

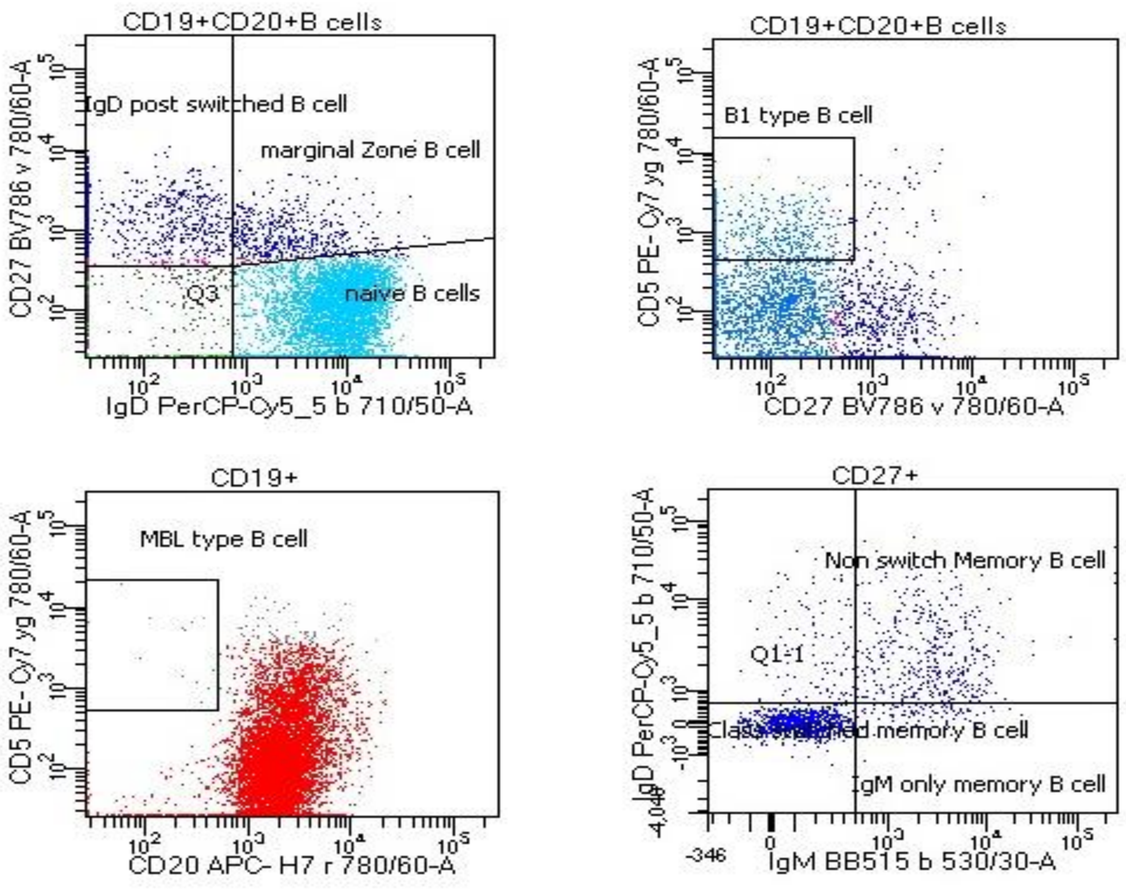

Figure 1 Identification and characterization of B-cell subsets in SLE patients

Table 1 Clinical and Demographic Characteristics of SLE Patients and Healthy Controls (HC)

	SLE	HC
Number (% female)	40 (88)	74(80)
Age (years; mean ± SD)	43±13	46±17
Weight (kg; mean ± SD)	66±13	73±15
Disease duration (years; mean ± SD)	10.7±7	-
SLEDAI-2K (median, 95%CI)	2.0, 1.0-2.0	-

RESULTS

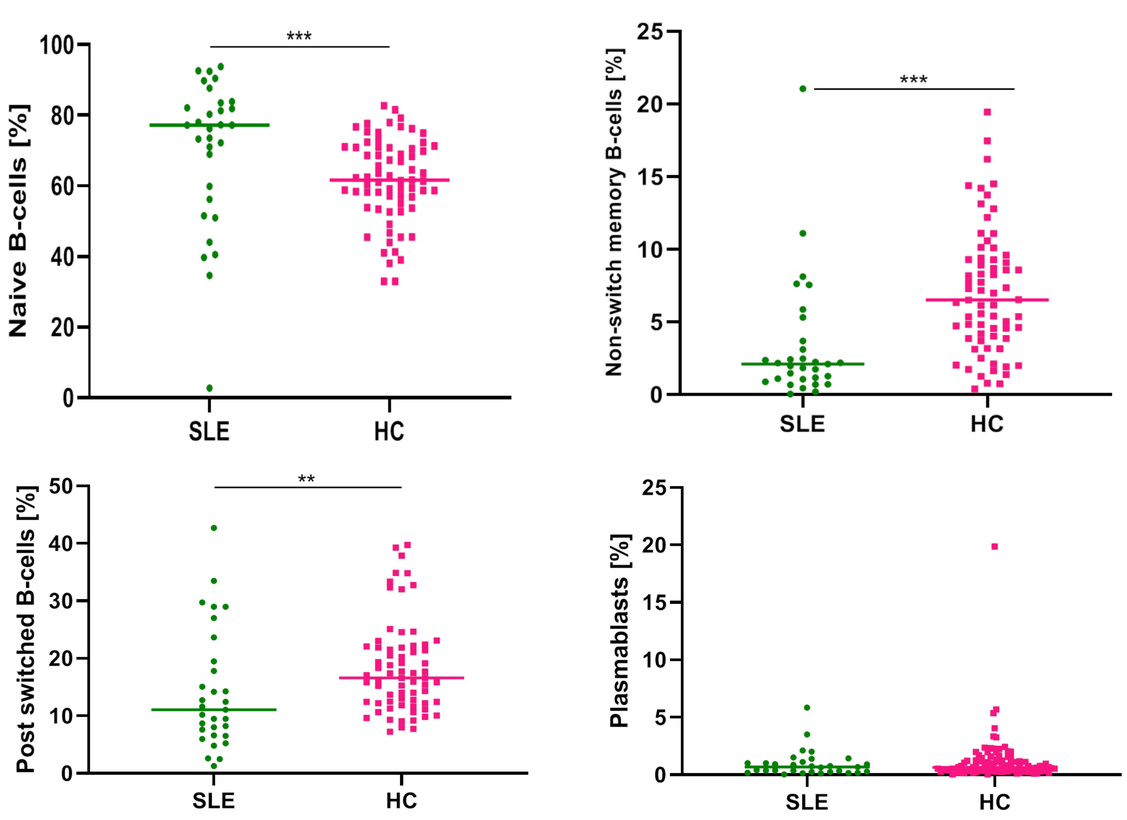

Figure 2 B-cell subsets in SLE patients and healthy controls (HC). Lines represent median. P<0.05 *, P<0.01 **, P<0.001 ***

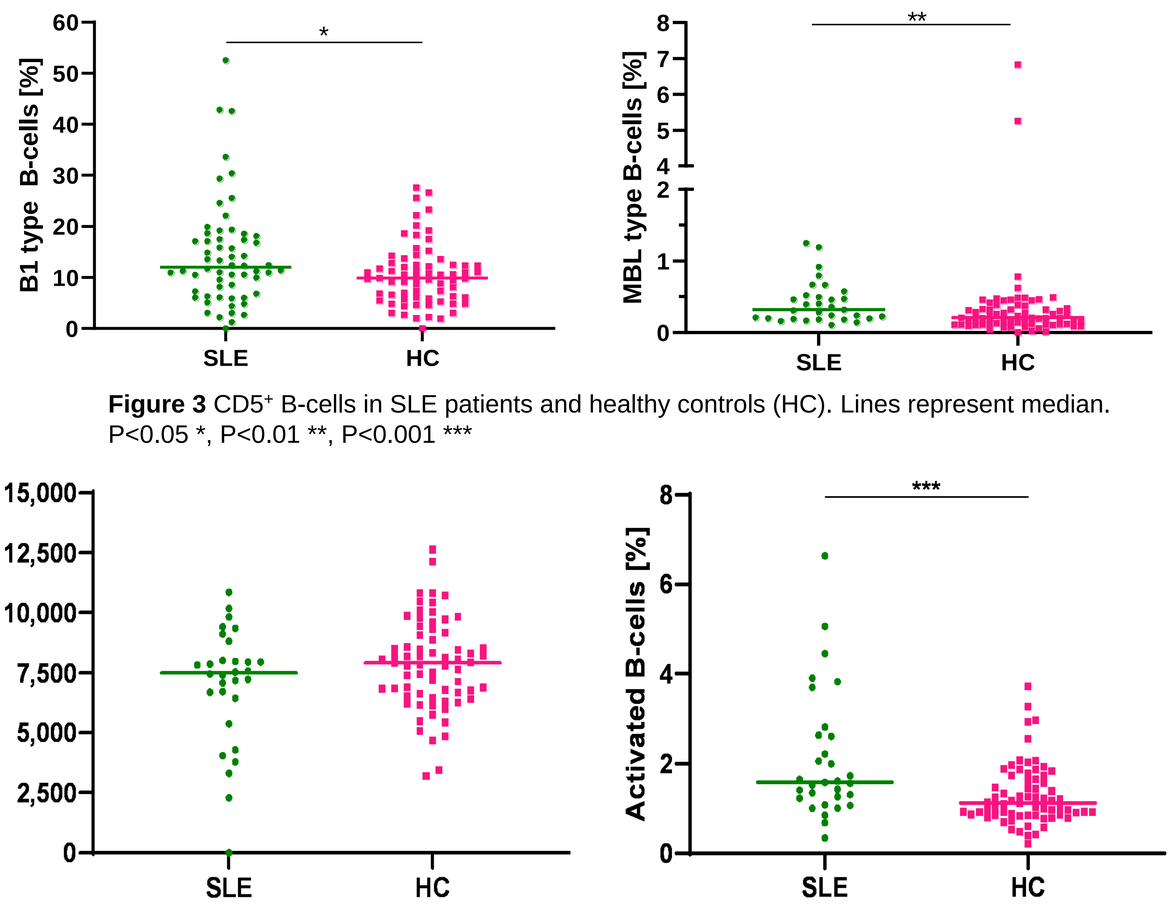

Figure 3 CD5⁺ B-cells in SLE patients and healthy controls (HC). Lines represent median. P<0.05 *, P<0.01 **, P<0.001 ***

Figure 4 Activation markers on b-cells in SLE patients and healthy controls (HC). Lines represent median. P<0.05 *, P<0.01 **, P<0.001 ***

CONCLUSION

Our results suggest that a successful SLE therapy leads to alterations in the B-cell population, which are characterized by naïve and inactive B-cells. Further studies are needed to elucidate whether our findings are limited to certain therapies or not.

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