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Evaluating the clinical significance of Anti-C1q and Anti-C3b antibodies in systemic lupus erythematosus patients

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ABSTRACT

Objective(s). *Systemic Lupus Erythematosus (SLE) is a multifaceted autoimmune disorder that is marked by a variety of autoantibodies. This study aimed to evaluate the association of anti-C1q IgG, anti-C3b IgG, and anti-dsDNA antibodies with disease activity in patients with SLE.*

Materials and methods. *A cross-sectional case-control study was conducted including 120 SLE patients and 30 age- and sex-matched healthy controls. Serum anti-C1q and anti-dsDNA IgG levels were measured by ELISA using manufacturer-defined positivity cutoffs (>10 U/mL and >18 IU/mL, respectively), anti-C3b IgG was quantified using a commercial ELISA kit without a predefined diagnostic threshold, while complement C3 and C4 were measured by nephelometry. This study used the independent samples t-test and the Pearson correlation coefficient to compare groups and assess associations between variables.*

Results. *Anti-dsDNA antibodies were detected in 80% of SLE patients, compared with 51.6% for anti-C1q and 30% for anti-C3b ($p < 0.01$). Serum concentrations of both anti-C1q and anti-dsDNA were significantly higher in patients with active disease than in those with inactive SLE (anti-C1q: 61.4 ± 10.9 vs. 7.54 ± 3.2 AU/mL; anti-dsDNA: 70.5 ± 21.5 vs. 12.6 ± 8.0 IU/mL). Complement levels (C3 and C4) were significantly lower in active SLE ($p < 0.05$). Anti-C1q showed strong positive correlations with anti-dsDNA ($r = 0.824$) and with SLEDAI scores, and a negative correlation with C3 ($r = –0.651$). Anti-C3b was also positively correlated with anti-dsDNA ($r = 0.608$) and with disease activity ($r = 0.613$).*

Conclusion. *Anti-C1q, anti-C3b, and anti-dsDNA antibodies are significantly associated with disease activity in SLE and may supplement complement measurements in clinical assessment. These findings reflect cross-sectional associations and highlight the potential utility of these markers in evaluating disease status, while longitudinal studies are required to establish prognostic value.*

Keywords: systemic lupus erythematosus, anti-C1q, anti-C3b, anti-dsDNA, complements, SLEDAI

INTRODUCTION

Systemic lupus erythematosus (SLE) is a chronic autoimmune disorder, whereby there is the generation of several autoantibodies directed to the self-antigens, especially the nuclear constituents [1]. Moreover, SLE patients have been defined as having over 160 autoantibodies, such as to double-stranded DNA (dsDNA),

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