Publication of the Month

EliA™ Excellence in Autoimmunity

January 01/07: Detection of DNA antibodies

Antibodies to double-stranded DNA (dsDNA) can be found in patients with systemic lupus erythematosus (SLE) and, much less frequent, in patients with other rheumatic diseases (using more sensitive methods). Thus, pathological concentrations of dsDNA antibodies are one of the 11 diagnostic criteria for the classification of SLE, which where established by the American Rheumatism Association (ARA) in 1982. In addition, dsDNA antibodies reflect the disease activity, serve as a predictor of disease exacerbation and are suitable to monitor the response to therapy. Sensitivity and specificity of dsDNA antibodies in SLE are highly dependent on the method used. In the following study the authors give a brief review on the different methods, how they work and their advantages and disadvantages:

Rouquette AM, Desgruelles C (2006)
Detection of antibodies to dsDNA: an overview of laboratory assays
Lupus 15, 403-407

The most frequently used methods in routine clinical laboratories are the CLIF test (immunofluoresence on Crithidia luciliae), the Farr assay (RIA), the ELISA (enzyme linked immunosorbent assay) and some newer methods such as EliA dsDNA from Phadia or the Liaison dsDNA assay from Diasorin.
When comparing different methods for the detection of anti-DNA antibodies it has to be considered that anti-DNA antibodies are a very heterogeneous group, reacting with different epitopes and with different degrees of avidity. Obviously, each method detects a slightly different subgroup of anti-DNA antibodies and although there is an international standard for anti-dsDNA (WHO 80) it will never be possible to compare results which are obtained by different methods.
While the Farr RIA finds the diagnostically most relevant high avidity antibodies, the ELISA may detect also antibodies with lower avidity, what leads to a higher sensitivity but a lower specificity compared to RIA. EliA on the ImmunoCAP instruments tries to be a compromise between these methods, measuring mainly high avidity antibodies for anti-dsDNA. The specificity and sensitivity is found to be in between the values of a typical ELISA and the RIA.

The authors conclude that discrepancies of anti dsDNA results exist between laboratories in spite of increasing quality insurance procedures from both manufacturers and users. Therefore, results must be interpreted by a physician who is aware of the technique used in the laboratory and experienced in evaluating a complex disease such as SLE.