Differential Antinuclear Antibodies Pattern

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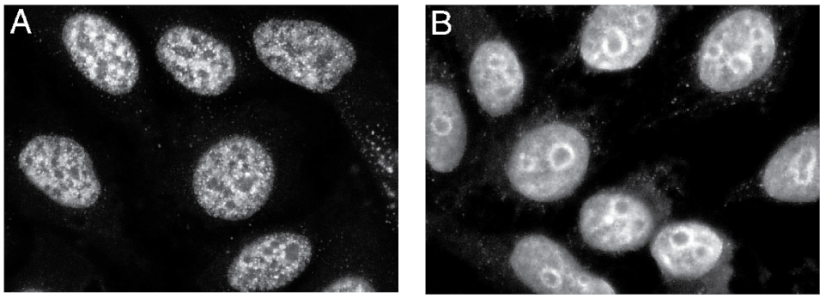
Antinuclear antibodies have the capability of binding to certain structures within the nucleus of the cells. The presence of ANA is usually indicative of systemic lupus erythematosus. We report here a case of neuropsychiatric lupus where the ANA staining pattern in the serum was different to that in the cerebrospinal fluid. This report highlights the concept of "autoantibody compartmentalization," meaning that the presence of a specific antibody might be restricted to a single organ in the body.

PATIENT DESCRIPTION

A 38 year old woman with a history of systemic lupus erythematosus manifested by nephritis, arthritis, rash, pancytopenia and supportive serology presented with acute confusional state accompanied by episodes of localized seizure. There was no history of trauma, drug abuse or fever. Her medications included low dose prednisone, hydroxychloroquine and ramipril. The physical examination was unremarkable. Differential cell count and chemistry panel were normal. Brain magnetic resonance imaging was normal. Cerebrospinal fluid analysis demonstrated opening pressure of 15 cm, with normal cell count, protein and glucose levels. Gram stain, cultures, and polymerase chain reaction for herpes were negative. Blood serology studies were positive for antinuclear antibodies (1:640) in a fine speckled-staining pattern [Figure A]. Enzyme-linked immunoabsorbent assays revealed positive anti-double stranded DNA antibodies (> 200 units) while antiphospholipids, and -Ro, -La and -Sm antibodies were absent. Further CSF analysis revealed positive ANA in both fine speckled and nucleolar rim-staining patterns [Figure B]. The patient was diagnosed with neuropsychiatric SLE and was treated successfully with high dose corticosteroids and cyclophosphamide.

Fine speckled immunofluorescence staining pattern in patient's serum **[A]** and additional nucleolar rim staining pattern in patient's cerebrospinal fluid **[B]** – both on HEp-2-fixed cells.



COMMENT

This case is unique since the ANA staining pattern in the serum was different to that in the CSF. Moreover, a nucleolar rim staining pattern is rarely described, and to the best of our knowledge has never been reported in the CSF. Several autoantibodies have been reported in association with NP-SLE. Among these and the most widely investigated are antineuronal and antiribosomal P antibodies [1]. The role of these autoantibodies in the pathogenesis of NP-SLE is not well understood. For example, it is not clear what the consequences are when these antibodies penetrate the blood-brain barrier and thereby gain direct access to neuronal tissues. One of the antineuronal antibodies is directed against N-methyl-D-aspartate receptor subunit NR2 (anti-NR2). One group of investigators found that the levels of anti-NR2 antibodies in the CSF were significantly elevated in patients with NP-SLE compared with the levels in the control group, whereas there were no significant differences in serum anti-NR2 levels among the groups [2]. Among the women with NP-SLE, 82% had anti-NR2 antibodies in the CSF compared to 35% with these antibodies in the serum. Moreover, the former was not associated with clinically overt NP-SLE [3]. Another study examined whether antiribosomal P antibodies were present in the CSF of patients with SLE and found that 29% of the patients had antiribosomal P antibodies in the CSF compared to 46% in the serum. Interestingly, the presence of the antibodies in CSF, and not in the serum, was strongly associated with the appearance of NP-SLE [4,5].

In summary, it is established that

ANA = antinuclear antibodies

CSF = cerebrospinal fluid
SLE = systemic lupus erythematosus
NP-SLE = neuropsychiatric SLE

there is a differential distribution of NP-SLE-associated autoantibodies in the serum compared to the CSF, while their presence only in the former is associated with the clinical course. We report here a new ANA staining pattern in the CSF of a patient with NP-SLE. Its presence might suggest a novel, yet unidentified, autoantibody in the CSF of patients with this condition.

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