

Anti-Neuronal IgG antibodies in SLE with CNS patients and Other autoimmune Diseases

Shen G, Metzger A, Song Y*, Correia P, and Morris R
RDL Reference Laboratory, Los Angeles. CA 90034

* Department of Internal Medicine, Seoul National University College of Medicine; Korea.

Neurologic and/or psychiatric manifestations occur in up to two thirds of patients with Systemic Lupus Erythematosus (SLE). Anti-neuronal antibodies are more frequently found in the blood and CSF of neuropsychiatric lupus erythematosus (NPLE) patients to a much greater frequency than in SLE patients without NPLE. Anti-neuronal antibodies (NA) were found up to 90% of SLE patient with active CNS, 5 to 20% of all SLE patients and 5% RA patients.

We have developed a Flow Cytometric (FC) assay to detect NA using the SK-N-MC neuroblastoma cell line. We evaluated NA in 21 SLE patients with CNS and 25 SLE patients without CNS involvement, and 43 disease group patients, including 15 Rheumatoid Arthritis (RA), 18 Sjogren's Syndrome (SS), 10 Scleroderma, as well as 65 healthy controls without autoimmune disease. The twenty-six pairs of serum and CSF specimens were from 21 SLE patients with CNS and 5 Behcet patients. Eighteen normal CSF samples obtained from RDL Serum Bank were verified and used for the determination of the neuronal antibodies assay's reference interval. These specimens were tested with anti-neuronal antibody by FC, and tested Sm, SSA, SSB, and Ribosomal-P protein antibodies by EIA.

The results were showed in the following table. NA in the CSF specimens of SLE-CNS patients were significantly higher (P 0.04) than in the serum. The brain-reactive antibodies may be synthesized intrathecally and diffuse to the blood through the choroids plexus, due to disruption of the blood-brain barrier secondary to vasculitis micro infarcts. There were no different for Sm, SSA and Rib-P antibodies between serum and CSF in SLE-CNS patients. The SLE-CNS patients had significantly high neuronal antibodies (P values less than 0.0004) than others. Three of 25 SLE patients without CNS (12%) had NA in the serum samples, but lower than SLE patients with CNS (67%, P value 0.004). In 18 SS patients, the patients had higher SSA and SSB antibodies (67% and 61%) than SLE-CNS patients (57% and 19%), but only one patient (6%) had low positive NA. One of 65 healthy donor sera (2%) had low positive NA. None were positive for NA in normal CSF, Behcet, Scleroderma patients.

The Rib-P antibody detection in SLE-CNS patients is lower sensitive (19% and 24%) comparing with NA (67% and 81%). The conclusion is that the detection of serum or CSF NA may provide laboratory correlative evidence for the diagnosis NPLE. Also detecting NA in the CSF is more sensitive than in serum.

Comparison of Neuronal antibody in SLE with CNS and other Autoimmune Diseases

Groups	N	NA Pos	Sm Pos	SSA Pos	SSB Pos	Rob-P Pos
SLE with CNS-Serum	21	14/21 (67%)	7/21 (33%)	12/21 (57%)	4/21 (19%)	5/21 (24%)
SLE with CNS-CSF	21	17/21 (81%)	6/21 (29%)	9/21 (43%)	3/21 (14%)	4/21 (19%)
SLE without CNS-Serum	25	3/25 (12%)	3/25 (12%)	4/25 (16%)	0	1/25 (4%)
Sjogren's syndrome	18	1/18 (6%)	0/18	12/18 (67%)	11/18 (61%)	0/18
RA	15	2/15 (13%)	0	1/15 (7%)	0	0
Scleroderma	10	0	0	0	0	0
Behcet-Serum	5	0	0	1/5 (20%)	0	0
Behcet-CSF	5	0	0	1/5 (20%)	0	0
Healthy Donors-CSF	18	0/18	0/18	0/18	0/18	0/18
Healthy Donors	65	1/65 (2%)	0	0	0	0