Correlation of volumetric brain imaging with Western blot testing for Lyme Disease

Aims: Antibody testing alone, when used to confirm Lyme disease (LD), is unsatisfactory as a diagnostic standard due to poor accuracy, inter-laboratory congruence, and predictive significance. Further, changes in disease status are not associated with changes in antibody levels (titers). NeuroQuant (NQ) evaluates the volume of 11 brain structures, is FDA-cleared and in our experience clinically useful. Brain abnormalities in patients with traumatic brain injury and in illness linked to exposure from water-damaged buildings (CIRS-WDB). Use of volumetric brain imaging in LD is unreported in the peer-reviewed literature. NQ results (N=80, three practices) from patients with LD were compared by NQ findings with clinical assessments and antibody-based tests.

Methods: De-identified NQ findings were recorded using standard MRI protocols. Patients were identified as having LD by attending physicians according to the following criteria: Presence of a multisystem, multi-symptom illness consistent with LD and/or having a history of EM rash after known tick bite and/or presence of a positive IgM or IgG Western blot. Patients were stratified sequentially as untreated or treated. These patients were compared against a bank of 25 normal controls.

Results: Analysis of NQ identified structural abnormalities (putamen atrophy and interstitial edema of the right thalamus) in untreated, and in the putamen of treated LD patients. These abnormalities were identified in patients with EM rash and negative Western blot. This difference predicted successful treatment. NQ findings bore little relationship to Western blot testing, particularly IgM, for diagnosis. Antibody status bore *no* relationship to treatment. NQ showed correction of interstitial edema in right thalamus of treated patients.

Conclusions: Use of NQ shows promise as a rapid, non-invasive, accurate and inexpensive tool to assist clinicians in diagnosis and treatment progress for LD.

Presenting author: Ritchie C. Shoemaker MD; Medical Director
Center for Research on Biotoxin Associated Illnesses
500 Market St Suite 103
Pocomoke Md 21851 USA
ritchieshoemaker@msn.com Ph 410-957-1550 (day) 410-430-4710 (evening)

Request oral presentation

Authors: Ritchie Shoemaker MD; Scott McMahon MD, private practice; James Ryan PhD, Proteogenomics LLC, Vero Beach, Florida; Mary Ackerley MD, private practice; Margaret DiTulio FNP, private practice; Keith Berndtson MD, private practice; Andrew Heyman MD, Director, Graduate Education in Integrative Medicine, George Washington University; Russell Jaffe MD PhD, Vienna, Virginia