CASE STUDY #3

Severe OCD and tics improve with immune-modulatory treatment

Clinical and laboratory results support autoimmune-based illness

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Autoimmune Brain Panel™ test results

(formerly known as the Cunningham Panel™)

Presentation: 16-year-old female with abrupt onset at age 11 of severe OCD (food restriction), tics and choreiform movements, poor concentration, significant cognitive and academic decline, sensory abnormalities, severe mood dysregulation, urinary urgency and frequency, and dysgraphia. Aggressive behaviors prompted 6 calls to local police for assistance.

Course of Illness: Relapsing and remitting symptoms with three major episodes reported. Sudden increase in symptoms with strep exposure.

Previous Diagnoses: Autoimmune disease NOS, post-infectious encephalitis and encephalomyelitis, other diseases involving the immune system NOS

Previous Lab Results: Positive Lyme Western blot, elevated Mycoplasma and Coxsackie titers

Medical History: Non-contributory

Family History: Maternal and paternal grandmothers with autoimmune disorders, history of rheumatic fever. Sibling with Pediatric Autoimmune Neuropsychiatric Disorders Associated with Strep infection (PANDAS).

Pre-Treatment Autoimmune Brain Panel™ Results: Elevated Calcium/calmodulin-dependent protein kinase II (CaMKII) 167 (normal range 53-130)

Treatment: Plasmapheresis and IVIg with symptom improvement, low dose Zoloft, Abilify for maintenance.

Post-Treatment Autoimmune Brain Panel™ Results: Calcium / calmodulin-dependent protein kinase II (CaMKII) returned to borderline (123)

Status: Symptom improvement.

PRE-TREATMENT TEST RESULTS

Anti-Dopamine D1 Receptor Autoantibodies	Borderline 2000
Anti-Dopamine D2L Receptor Autoantibodies	Normal 4000
Anti-Lysoganglioside GM1 Autoantibodies	Normal 40
Anti-Tubulin Autoantibodies	Borderline 1000
CaM Kinase II	Elevated 167

POST-TREATMENT TEST RESULTS

Anti-Dopamine D1 Receptor Autoantibodies	Normal 1000
Anti-Dopamine D2L Receptor Autoantibodies	Normal 4000
Anti-Lysoganglioside GM1 Autoantibodies	Normal 80
Anti-Tubulin Autoantibodies	Borderline 1000
CaM Kinase II	Borderline 123

SUMMARY

A 16-year-old female with severe food restriction, OCD, tics, choreiform movements, poor concentration, cognitive and academic decline, sensory abnormalities, mood dysregulation, urinary urgency and frequency, and dysgraphia exhibited clinical and laboratory response to plasmapheresis and IVIg.

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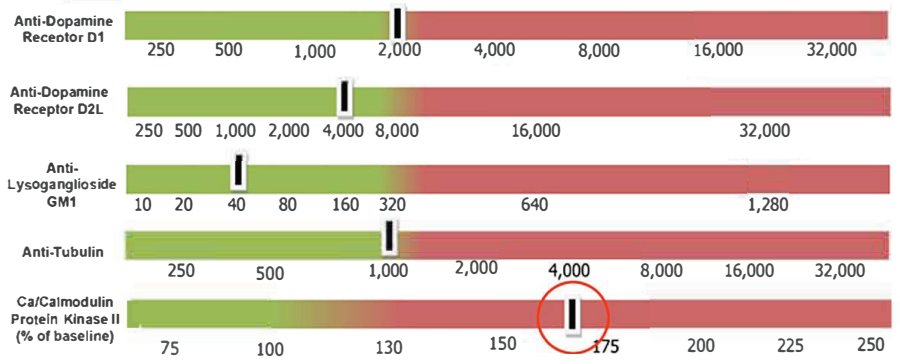
PRE-TREATMENT:
Patient Symptomatic

Patient symptoms likely due to CaMKII activation and subsequent increase in dopamine, epinephrine, and norepinephrine neurotransmitters resulting in adrenergic stimulation. Elevation in CaMKII associated with likely active infection.

LABORATORY TEST RESULTS COMPARED TO NORMAL RANGES

	Anti-Dopamine Receptor D1 (titer)	Anti-Dopamine Receptor D2L (titer)	Anti-Lysoganglioside GM1 (titer)	Anti-Tubulin (titer)	CaM Kinase II (% of baseline)
Patient Result	**1:2,000**	**1:4,000**	**1:40**	**1:1,000**	**167**
Normal Ranges	500 to 2,000	2,000 to 8,000	80 to 320	250 to 1,000	53-130
Normal Mean	1,056	6,000	147	609	95
INTERPRETATION*	**BORDERLINE**	**NORMAL**	**NORMAL**	**BORDERLINE**	**ELEVATED**

LABORATORY TEST RESULTS



POST-TREATMENT:
Symptom Resolution

Symptom resolution after multiple plasma exchanges to mechanically remove antibodies followed by IVIg to replenish healthy antibodies.

LABORATORY TEST RESULTS COMPARED TO NORMAL RANGES

	Anti-Dopamine Receptor D1 (titer)	Anti-Dopamine Receptor D2L (titer)	Anti-Lysoganglioside GM1 (titer)	Anti-Tubulin (titer)	CaM Kinase II (% of baseline)
Patient Result	**1:1,000**	**1:4,000**	**1:80**	**1:1,000**	**123**
Normal Ranges	500 to 2,000	2,000 to 8,000	80 to 320	250 to 1,000	53-130
Normal Mean	1,056	6,000	147	609	95
INTERPRETATION*	**NORMAL**	**NORMAL**	**NORMAL**	**BORDERLINE**	**BORDERLINE**

LABORATORY TEST RESULTS