

usually 2 or 3 times higher than the general population. The prevalence of 1/45 quoted by the present Turkish group was not statistically significant [1]. In one large-scale study, the frequency of CD confirmed by the antiendomysial antibody IgA scan and small intestine biopsy was 1/127 in epileptic patients (n=255) and 1/293 in a control group (n=3,400)[2].

#### References.

1. Dai AI, et al. Childs Nerv Syst. 2014 Jun;30(6):1091-8.
2. Pratesi R, et al. Arq Neuropsiquiatr. 2003 Jun;61(2B):330-4.

## EPILEPSY AS AN AUTOIMMUNE DISEASE

Investigators at University of New South Wales, Sydney, Australia, and Boston Children's Hospital, Harvard Medical School, conducted a retrospective population-level study of the relationship between epilepsy and 12 common autoimmune diseases: type 1 diabetes mellitus, psoriasis, rheumatoid arthritis, Graves disease, Hashimoto thyroiditis, Crohn disease, ulcerative colitis, systemic lupus erythematosus, antiphospholipid syndrome, Sjogren syndrome, myasthenia gravis, and celiac disease. The risk of epilepsy was significantly heightened among patients with all autoimmune diseases ( $P < 0.001$ ), and especially in children. Children with autoimmune diseases had a 5-fold increased risk of epilepsy. (Ong M-S, Kohane IS, Cai T, Gorman MP, Mandl KD. Population-level evidence for an autoimmune etiology of epilepsy. *JAMA Neurol* 2014 May;71(5):569-74).

COMMENTARY. The authors theorize that the occurrence of epilepsy in patients with autoimmune disease (AD) might be attributable to the inflammatory component of AD [1]. Also, certain anticonvulsant drugs, such as valproate and carbamazepine, are anti-inflammatory, and some anti-inflammatory drugs have anticonvulsant properties [2].

Investigators at the Lurie Children's Hospital of Chicago have provided several reports of the role of brain inflammation in epileptogenesis. Cortical tissue collected from children with intractable epilepsy at time of surgery showed active neuroinflammation and marked cellular injury [3]. In a review of brain inflammation in the pathogenesis of epilepsy, common pediatric autoimmune diseases are implicated, and the effective use of anti-inflammatory treatments of intractable epilepsy, such as steroids, is documented [4].

#### References.

1. Ong M-S, et al. *JAMA Neurol*. 2014 May;71(5):569-74.
2. Marchi N, et al. *PLoS One*. 2011 Mar 28;6(3):e18200.
3. Choi J, Nordli DR Jr, Alden TD, et al. *J Neuroinflammation*. 2009 Dec 19;6:38.
4. Choi J, Koh S. *Yonsei Med J*. 2008 Feb 29;49(1):1-18.

## MAINTENANCE THERAPY FOR MYASTHENIA GRAVIS

Investigators at Boston Children's Hospital and at University of Florida, Gainesville, studied the comparative efficacy of plasmapheresis (PLEX) vs immunoglobulin (IVIG) as maintenance therapy in juvenile myasthenia gravis (MG). A retrospective analysis over a 33-year period involved 54 children and adolescents with

juvenile MG. Seven of 7 treated with PLEX alone responded, 5 of 10 treated with IVIG alone responded, and 9 of 10 patients who received both responded. Response rate to PLEX was significantly higher and more consistent than that of IVIG. Of 17 patients treated by thymectomy, 11 were significantly benefited. (Liew WKM, Powell CA, Sloan SR, et al. Comparison of plasmapheresis and intravenous immunoglobulin as maintenance therapies for juvenile myasthenia gravis. **JAMA Neurol** 2014 May;71(5):575-80).

COMMENTARY. PLEX and IVIG both have high response rates as maintenance therapies for juvenile MG, but PLEX response is superior. Nine of 11 patients with response graded as “B”-good improvement [1][2], had early thymectomies.

#### References.

1. Millichap, JG, Dodge PR. *Neurology*. 1960 Nov;10(11):1007-14.
2. Tracy MM, et al. *J Child Neurol*. 2009 Apr;24(4):454-9.

## INFECTIOUS DISEASES

### DIAGNOSIS OF NEUROLEPTOSPIROSIS

Investigators at University of California, San Francisco, and other centers, report a case of leptospirosis in a 14-year-old boy with severe combined immunodeficiency. He presented with headache and fever that lasted 6 days. In the previous 8 months he swam in a river in Puerto Rico and in a pool frequented by feral cats. A previous episode of fever and headache was complicated by conjunctivitis and followed by uveitis and thrombocytopenia. A recurrence of headache and fever was associated with increased CSF white cells (125/cmm) and protein (97 mg/dL), lowered glucose (24 mg/dL) and negative cultures, compatible with meningoencephalitis. He was readmitted with fever, headache, weakness, myalgias, nausea and vomiting. MRI showed T2-weighted hyperintensities in the basal ganglia and granulomatous leptomeningitis. A worsening hydrocephalus was treated with an extraventricular drain, and new-onset status epilepticus was controlled by a medically induced coma. CSF and serum samples sent for unbiased next-generation sequencing was positive for leptospira infection in the CSF but not in serum. Clinical assays for leptospirosis were negative. Treatment with high-dose intravenous penicillin G was followed by a gradual recovery over 7 days, resolution of status epilepticus, normal CSF, and resolution of leptomeningitis on serial MRI scans. PCR and serological testing at the CDC subsequently confirmed evidence of *Leptospira santarosai* infection. (Wilson MR, Naccache SN, Samayoa E, et al. Actionable diagnosis of neuroleptospirosis by next-generation sequencing. **N Engl J Med** 2014 Jun 19;370(25):2408-17).

COMMENTARY. Leptospirosis is caused by spirochetes contracted from the urine of infected wild or domestic animals, usually while swimming in contaminated water. The incubation period is 5 to 14 days (range, 2 to 30 days). The most characteristic clinical findings are conjunctival suffusion, uveitis, and myalgias of the calf and lumbar regions [1]. An initial septicemic phase is followed by an immune-mediated phase,