were included if they had acute symptomatic seizures secondary to autoimmune encephalitis or autoimmune-associated epilepsy as defined by the International League Against Epilepsy (ILAE) and possible, auto-Ab negative but probable, or definite AE using diagnostic criteria from Graus. Patients were excluded if no Ab panel was drawn or the patient was lost to follow-up. Chart review was used to calculate scores.

Results

Fifty-six patients were identified, and 3 were excluded. The APE2 score = 4 to predict positive serum Ab had a sensitivity of 92.7% and specificity of 6.7%. The RITE2 score = 7 to predict seizure responsiveness to immunotherapy had a sensitivity of 92.9% and specificity of 60%.

Conclusions

The APE2 and RITE2 scores were sensitive in our patients, which implies that these scores can likely be used to identify patients within the Stanford cohort who may have seropositive AE and may benefit from early immunotherapy. Our APE2 score and RITE2 scores were less specific than Dubey's, likely due to patient selection. We only included those with suspected AE with seizures, whereas Dubey included a broader, more heterogenous patient population including those with Parkinsonism, stroke, memory disorders, and other neurologic disorders.

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Treatment Outcome of Autoimmune Associated Epilepsy (AAE) vs Acute Symptomatic Seizures in Autoimmune Encephalitis (ASSAE)–A Single Center Experience

Ning Zhong, Mark Waheed

Objective

To assess the seizure treatment outcome in autoimmune encephalitis (AE).

Background

Seizures due to AE etiology are increasingly recognized. Timely confirmation of autoimmune etiology may lead to improved outcomes by allowing for earlier immunotherapy, which is more effective than anti-seizure medication (ASM). Currently, seizures/epilepsy of autoimmune etiology can be subcategorized as autoimmune associated epilepsy or acute symptomatic seizures in autoimmune encephalitis with varied response to immunotherapy.

Design/Methods

This was a retrospective single center study including patients diagnosed with AE, with a minimum follow-up of 12 months after disease onset in alive cases.

Results

28 out of 31 patients were analyzed (3 without seizure were excluded). 12 were found to have autoantibodies (Abs) against cell membrane (CM) protein (3 anti-NMDAR, 4 anti-GABAbR, 4 anti-LGI-1, 1 anti-GABAaR); 4 with non-specific Abs (low titer of anti-GAD, VGCC); 11 with no Abs identified; 3 were with intracellular (IC) Abs (MOG, Hu, GFAP). All patients received immunotherapy and ASM treatment. Among the patients with CM-Abs, 10 of the 12 remained seizure free, 7 were successfully weaned off ASM. Among those with nonspecific/no Abs, only 4 of the 15 patients (26.7%) remained seizure free. All 3 patients with intracellular Abs did poorly, and only one patient with anti-MOG-Abs survived with drug resistant epilepsy (DRE). Within the group of CM-Abs, 2 patients (16.7%) with anti-GABAbR-Abs developed DRE, compared to over 70% of patients in group with nonspecific/no Abs or IC-Abs. Upon further investigation of DRE patients, several features were observed: 1) poor response to immunotherapy, 2) sustained abnormal brain MRI T2/FLAIR signal, 3) persistent focal epileptiform features and frequent ictal patterns in EEGs.

Conclusions

Patients with CM-Abs likely suffer ASSAE with favorable long-term outcome. Patients without identified auto-Abs or IC-Abs likely develop AAE and consequently develop DRE. Further research focusing on biomarkers predicting AAE and DRE is needed for treatment guidance.

Disclosure: Dr. Zhong has nothing to disclose. Dr. Waheed has nothing to disclose.

Spectrum of Brain MRI Features in CASPR2 Associated Autoimmune Encephalitis: A Case Report With Parietal Lobe Involvement

Luis Manrique-Trujillo, Tiffani Franada

Objective

Contactin-associated-protein-like 2 (CASPR2)-antibody-mediated autoimmune encephalitis (AE) is characterized by diverse clinical manifestations with involvement of both central and peripheral nerve systems.

Background

Furthermore, approximately 50-55% of the patients with this condition present with an abnormal brain MRI including bilateral/unilateral T2-hyperintensity in the mesial temporal lobes, thalami, basal ganglia, brainstem, or cerebellum and hippocampal atrophy/sclerosis. To our knowledge this is the first case of CASPR-Ab-related AE reporting concurrent parieto-occipital lobes enhancing and non-enhancing brain lesions.

Design/Methods

A 71-year-old male presented with 3-months of cognitive decline, generalized tonic-clonic seizures, and parasomnias. Initial neurological examination showed diminished attention with neuropsychology evaluation revealed episodic memory deficits and executive dysfunction, otherwise no focal abnormality.

Results

Brain MRI with and without contrast from showed subtle cortical enhancement in the anterior left parietal lobe, additionally T2 FLAIR hyperintensities in the bilateral hippocampi, left centrum semiovale and left dorsal pons. CSF analysis revealed 5 nucleated cells, protein and glucose were normal. Serum and CSF paraneoplastic panel was positive for CASPR-2 auto antibodies. His memory and executive function improved after plasma exchange and long-term steroids. One year later the patient developed ataxia and gait instability. Repeated examination revealed diminished vibration in bilateral lower extremities, prominent left upper extremity ataxia compared to the right and a wide based gait. Updated brain MRI demonstrated progression of T2 FLAIR hyperintensities in the cortical and subcortical areas of the left parieto-occipital fissure. IVIG was started with stabilization of the progression.

Conclusions

CASPR2-autoantibody is associated to a wide range of neurological manifestations and diagnosing this condition could be challenging. This case demonstrates the possible involvement of the parietal and occipital cortex as a target of the antibodies directed against this membrane protein. Recognition of this spectrum of symptoms and imaging findings

are important for early diagnosis of this disorder and appropriate treatment.

Disclosure: Dr. Manrique-Trujillo has nothing to disclose. Dr. Franada has nothing to disclose.

Do Anti-Epileptic Drugs Increase High Risk Comorbidity Amongst Patients With Neuro-Autoimmune Disease?

Mohsen Ahmed, Afaaq Ahmed, Ronak Trivedi, Muhammed Ors, Nabeel Ahmed, Kranthi Mandava, Nizar Souayah

Objective

To investigate the effects of anti-epileptic drugs (AED) on the overall burden of disease in patients with neuro-autoimmune disease (NAD).

Background

AEDs have shown to provide benefits against neurological damage in patients with various neurological illnesses. However, the extent of AEDs role in neuroprotection and the prevention of additional comorbidity in patients with NAD has not been completely characterized.

Design/Methods

A retrospective analysis on 34464 patients hospitalized at a tertiary care center in a major metropolitan area was conducted. 3997 patients were on AED medications, while 30467 patients were not taking any AEDs (nAED). 190 patients had a NAD diagnosis. Patients with NAD were classified according to use of AED or nAED (aAED and anAED). The outcomes compared included prevalence of neurological complications defined as either seizure, blurry vision, delirium, or altered mental status, encephalopathy, length of stay, ICU admission, comorbidity, and death.

Results

There was no significant difference in the prevalence of NAD between patients in AED or nAED (0.75%, 0.52%, $p > 0.05$). Among patients with aAED and anAED, there was no significant difference in length of stay (8.7, 7.8, $p > 0.5$), ICU admission (26.7%, 12.5%, $p > 0.05$), prevalence of comorbidities (56.7%, 52.5%, $p > 0.05$), or mortality (6.7%, 3.1%, $p > 0.3$). 36% of aAED and 16.3% of anAED had high risk comorbidity ($p < 0.05$). The prevalence of overall neurological complications was 37% and 10% among aAED and anAED, respectively ($p < 0.001$). Patients in aAED had significantly higher encephalopathy compared to anAED at 23% and 3.8%, respectively ($p < 0.0001$).

Conclusions

These results suggest that AEDs may be associated with an increase in high-risk comorbidities and neurological complications including encephalopathy among patients with NAD. Work is in progress to assess the contribution of the primary diagnoses for which AEDs were prescribed on the burden of NAD.

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Neuroinflammatory Disease Responsive to MEK-Inhibitor

Vicky Chen, Vijayshree Yadav, Ariane Soldatos, Yoon-Jae Cho, Avindra Nath, Desmond Brown, Eli Diamond, David Solit, Randall Woltjer, Christina Sayama, Jesse Winer, Emily Garavatti, McKinnon Garrett, Dhanalakshmi Angappan, Eugene Nicholson

Objective

Illustrate that some neuroinflammatory diseases may respond best to antiproliferative therapies rather than immunomodulatory therapies.

Background

Genomics are increasingly employed in the diagnostic armamentarium of refractory neuro-inflammatory diseases. Metagenomic next-generation sequencing is used to detect pathogens and germline genetic testing is used to detect inborn errors of the immune system. Genetic testing of tissue can identify somatic mutations for targeted treatment. MEK-inhibitors are an emerging treatment for RAS/MAPK pathway mutated diseases which include some neuro-inflammatory mimics like neuro-histiocytoses.

Design/Methods

NA.

Results

Previously healthy 12-year-old girl presented with 1 month of diplopia and headaches. Her brother has clinically diagnosed NF1 (café-au-lait macules, cutaneous neurofibromas). Exam notable for right third nerve palsy. MRI showed T2/FLAIR hyperintense lesions of the right temporal lobe, basal ganglia, and cervical through thoracic cord, nodular leptomeningeal enhancement along the entire spinal cord, and right middle cerebral artery vessel wall enhancement. CSF: WBC 6/mm^3 (62% lymphocytes 37% monocytes), protein 133 mg/dL. She improved with pulse methylprednisolone and maintenance steroids. At 5 months, she developed malignant elevated intracranial pressure with CSF OP >50 cm water, bradycardia, and encephalopathy requiring weekly LPs. Brain biopsy showed astrocytic and microglial activation without significant inflammation. No histiocytes were noted. There was no evidence of neoplasia or infection. She was tried on anakinra. At 6 months, she developed left third nerve palsy and seizures. For weeks, she required daily LPs for intracranial hypertension despite placement of ventriculoperitoneal shunt. Additional treatments included infliximab, steroids, and siltuximab. NGS from brain biopsy identified 2 NF1 mutations (nonsense, splicing). Allele fractions: 6% and 9%. Her mental status and need for frequent LP improved dramatically with trametinib.

Conclusions

This case illustrates the importance of considering somatic genomic testing of neural tissue even when the neuropathology is not suggestive of a malignancy or histiocytosis as this can inform newer molecularly targeted therapeutic options.

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