

ADHD-hyperactive-Impulsive subtype (ADHD-C) comorbidity, when compared to non-ADHD/epilepsy patients. Methylphenidate with AEDs may be beneficial in treatment of ADHD and AED refractory epilepsy [2][3].

**References.**

1. Gross-Tsur V, et al. *J Pediatr.* 1997 Apr;130(4):670-4.
2. Fosi T, et al. *Epilepsia.* 2013 Dec;54(12):2071-81.
3. Millichap JG. *Pediatr Neurol Briefs.* 2014 Feb;28(2):10-11.

## **TOBACCO SMOKE, NICOTINE AND EPILEPSY**

Investigators at University of South Florida, Tampa, FL, review the literature on the differences between tobacco smoke and nicotine, and their roles in causing or protecting against seizures in animal studies and in humans with epilepsy. In addition to nicotine, tobacco smoke contains many harmful constituents, including carbon monoxide, associated with increasing levels of carboxyhemoglobin (CO-Hb) in the blood, a potential cause of seizures. The level of CO-Hb in non-smokers is 1-2%, in heavy smokers 5-6%, while in patients with seizures it can be as high as 10%. Other chemicals in tobacco smoke that can trigger seizures include ammonia, lead, hexane, toluene, cresol, arsenic, and acetone. Some constituents of tobacco smoke, such as carbon dioxide, have anticonvulsant effects. Even nicotine is reported to control seizures in patients with autosomal dominant nocturnal frontal lobe epilepsy (ADNFLE), the first partial epilepsy syndrome in humans caused by a single gene mutation in the nicotinic acetylcholine receptor (nAChR) gene subunits. For people with a past history of smoking, there is no association between epilepsy risk and the number of cigarettes smoked daily. The etiologies of seizures in chronic smokers are numerous, and include noncompliance with taking AEDs, and multisystem disorders such as COPD. Seizure risks are higher in acute secondhand smokers, chronic active smokers, and babies whose mothers smoke. Tobacco smoking agents can be inactive, proconvulsant, or in some cases, anticonvulsant. (Rong L, Frontera AT Jr, Benbadis SR. Tobacco smoking, epilepsy, and seizures. *Epilepsy Behav* 2014 Feb;31:210-8).

COMMENTARY. The use of a nicotine patch, gum or inhaler in the treatment of drug refractory ADNFLE is of interest, but the risk of nicotine addiction may be a contraindication. The efficacy and safety of nicotine as an anticonvulsant for severe pharmacoresistant frontal lobe epilepsy requires further study [1][2][3].

**References.**

1. Brodtkorb E, Picard F. *Epilepsy Behav.* 2006 Nov;9(3):515-20.
2. Willoughby JO, et al. *Epilepsia.* 2003 Sep;44(9):1238-40.
3. Zerem A, et al. *Epilepsia.* 2013 Jan;54(1):e13-5.

## **INTRACRANIAL EEG SEIZURE-ONSET PATTERNS**

Investigators at Montreal Neurological Institute and Hospital, Canada, studied intracranial electroencephalographic seizure-onset patterns associated with different epileptogenic lesions, and defined high-frequency oscillation correlates of each pattern.