

# **Burden of Arrhythmias in Epilepsy Patients: A Nationwide Inpatient Analysis of 1.4 Million Hospitalizations in the United States**

*Zabeen Mahuwala, MD*<sup>1</sup> • *Rupak Desai, MD*<sup>2</sup> • *Chintan Rupareliya, MD* • *Upenkumar Patel, MD*  
• *Syeda Naqvi, MD* • *Smit Patel, MD*<sup>3</sup> • *Abhishek Lunagariya, MD*<sup>3</sup>

<sup>1</sup>Department of Neurology, University of Kentucky • <sup>2</sup>Atlanta Veterans Affairs Medical Center • <sup>3</sup>Department of Neurology

## **Background:**

In epilepsy, 10-40% patients suffer intractable seizures, which might lead to sudden death due to cardiorespiratory failure. The arrhythmia occurs because of the disorder of bioelectrical activity due to the molecular mechanism or as an adverse effect of treatment with antiepileptic drugs (AED) itself. Therefore, an importance of the treatment induced arrhythmia in epilepsy should be kept in mind. Many drugs like carbamazepine, levetiracetam, etc. are notorious for causing cardiac arrhythmias in epilepsy patients

## **Introduction:**

Arrhythmias have been one of the common complications in epilepsy patients and have also been the cause of death. However, very limited data exist about the burden and outcomes of arrhythmias by subtypes in epilepsy. Our study aims at evaluating the burden and differences in outcomes of various subtypes of arrhythmias in epilepsy patient population.

## **Methods:**

The Nationwide Inpatient Sample (NIS) database from 2014 was examined for epilepsy and arrhythmias related discharges using appropriate International Classification of Disease, Ninth Revision Clinical Modification (ICD-9-CM) codes. The frequency of arrhythmias, gender differences in arrhythmia by subtypes, in-hospital outcomes and mortality predictors was analyzed.

## **Results:**

A total of 1,424,320 weighted epilepsy patients was determined and included in this study. Around 23.9% (n =277,230) patients had cardiac arrhythmias. The most frequent arrhythmias in the descending frequency were: atrial fibrillation (AFib) 9.7%, other unspecified causes 7.3%, sudden cardiac arrest (SCA) 1.4%, bundle branch block (BBB) 1.2%, ventricular tachycardia (VT) 1%. Males were more predisposed to cardiac arrhythmias compared to females (OR [odds ratio]: 1.1, p <0.001). The prevalence of most subtypes arrhythmias was higher in males. Arrhythmias were present in nearly a quarter of patients with epilepsy.

## **Conclusion:**

Life threatening arrhythmias were more common in male patients. The length of stay (LOS) and mortality were significantly higher in epilepsy patients with arrhythmia. It is imperative to develop early diagnosis and prompt therapeutic measures to reduce this burden and poor outcomes due to concomitant arrhythmias in epilepsy patients. This study signifies the importance of electrophysiological monitoring in epilepsy patients.