STM JOURNALS

Research & Reviews: A Journal of
Medical Science and Technology

https://journals.stmjournals.com/rrjomst/

ISSN: 2319-3417 (Online)
ISSN: 2349-1272 (Print)
Volume 14, Issue 1, 2025
January–April
DOI (Journal): 10.37591/RRJoMST

Review RRJoMST

Comprehensive Approaches to Seizure Control: Home Care & Hospital Care

Arshpreet Kaur*

Abstract

Seizures show up as sudden, uncontrollable brain electrical abnormalities. Those afflicted by this health issue can suffer greatly and usually call for quick and thorough treatment. Examining several facets of seizure control, including disease epidemiology, etiology, clinical presentation, categorization, as well as acute and long-term therapy techniques, this review. Furthermore, emphasized in the review are several new trends that might help with seizure control. Factors including CNS infections, metabolic abnormalities, trauma, and drug withdrawal cause seizures in patients both in home and hospital environments. Management must be therefore customized for underlying reasons. More importantly, to be able to properly diagnose seizures, a thorough history of the illness should be done. This can so support focused interventions. Different diagnostic techniques must be evaluated and applied to guarantee exact diagnosis of etiologies and types of seizures. Studies suggest acute control of seizures together with pharmacological treatments like benzodiazepines and antiepileptic medications (AEDs). Other severe states like status epilepticus could call for a more all-encompassing strategy including ICU admission and continuous EEG monitoring. To prevent recurrence, doctors should also take care of triggering elements including infections. More importantly, long-term issues must be considered to guarantee better treatment and raise the quality of life for individuals with seizures. Said another way, seizures have major consequences for the affected individuals. Therefore, academics and healthcare professionals must dig thoroughly to investigate developing patterns in seizure control. This can thereby improve the standard of treatment given to patients.

Keywords: Acute symptomatic seizures, antiepileptic drugs (AEDs), management of seizures in home and hospitalized settings, status epilepticus, seizure management, seizure recurrence, seizure recurrence prevention

INTRODUCTION

Often causing a spectrum of symptoms, seizures might be considered as sudden, aberrant electrical discharges in the brain. These covers changed motions, perceptions, and consciousness. While some seizures, such as status epilepticus are perceived to be life-threatening and usually call for quick medical care, others show them as transient and self-limiting. Seizures provide a special difficulty for hospitalized patients since these people show a range of underlying causes, including infections, metabolic abnormalities, and the difficulty of controlling these diseases in severely sick patients (Resor & Kutt, 2020) [1]. Therefore, a patient who shows a seizure must be addressed very away. Ignoring seizures could cause death, extended hospital stays, and expensive medical bills. Having stated that, this paper investigates the origin and frequency of seizures in hospitalized patients. It also looks at current management strategies, classification and diagnosis of seizures, and new approaches in therapy. This work presents an integrated, evidence-based strategy to improve the

***Author for Correspondence**
Arshpreet Kaur
E-mail: arshpreetkaur0320@gmail.com

Researcher, Department of Nursing, Fresno Pacific University, Fresno, California, United States

Received Date: January 18, 2025
Accepted Date: January 25, 2025
Published Date: February 03, 2025

Citation: Arshpreet Kaur. Comprehensive Approaches to Seizure Control: Home Care & Hospital Care. Research & Reviews: A Journal of Medical Science and Technology. 2025; 14(1): 30–34p.

knowledge and control of seizures in home and hospital environments.

EPIDEMIOLOGY AND ETIOLOGY OF SEIZURES IN HOSPITALIZED PATIENTS

Seizures occurring in both home and hospital settings can be triggered by both acute and chronic conditions, with the underlying causes often varying between each individual patient. For instance, a study reveals that in intensive care units (ICUs), seizures occur in 10 to 20 percent of patients and are often linked to metabolic disturbances, central nervous system (CNS) infections, or trauma issues (Cascino et al., 2021) [2]. More so, it is seen that patients within the postoperative phase are also at high risk of seizures which are often provoked by anesthetic effects, electrolyte imbalances, or surgical trauma.

The causes of seizures can be categorized into provoked and unprovoked categories. Provoked seizures, also known as acute symptomatic seizures, are mostly triggered by factors, such as electrolyte disturbances, acute toxins including antidepressants and sympathomimetics, drug withdrawal, such as with alcohol, infections, and brain injuries. Seizures may also occur without a triggering factor, or more than a week after an acute occurrence, which may indicate epilepsy. The incidence of epilepsy is highest in younger and older populations. The incidence is also said to increase steadily after 50 years of age (Milligan, 2021) [3]. More so, the most common cause of seizures and epilepsy in the elderly population is cerebrovascular disease.

Classification of Seizures

Seizures are categorized according to their genesis and manifestation to facilitate comprehension of their underlying mechanisms and to inform treatment strategies. The three classes comprise focal seizures (Sarmast et al., 2020) [4]. These originate from a particular region of the brain and can either maintain or diminish awareness. Symptoms frequently indicate the functions of the impacted brain region, including sensory, motor, or autonomic disturbances. The additional category includes generalized seizures. These may entail extensive cortical activation from the outset and frequently result in bilateral symptoms, including tonic-clonic movements, absence seizures, or other non-motor signs. The final primary category of seizures is seizures of unclear onset. The etiology of these seizures is typically unknown at the time of occurrence; hence, additional diagnostic assessment is required.

It is essential for healthcare personnel to distinguish between acute symptomatic seizures, which are triggered by identified reasons, such as metabolic abnormalities, infections, trauma, and epilepsy, which are defined by recurrent and unprovoked episodes. This will consequently guarantee that the appropriate treatment follows.

CLINICAL PRESENTATION AND DIAGNOSIS

Usually, the nature and underlying causes of seizures help doctors decide how they show clinically. For example, it is seen that focal seizures could show up as changed awareness, tingling, and localized motor activity like twitching. Conversely, practitioners can identify generalized seizures when they show up as non-motor symptoms like absence episodes, loss of consciousness, or bilateral tonic-clonic movements (Resor & Kutt, 2020) [1].

One must have a clinical evaluation if one is to be able to identify seizures. Usually, doctors will do a careful physical examination and history. People or family members can compile their seizure history to assist in determining the type of seizure, set it apart from prior episodes, and assess any possible triggers. Diagnostic testing includes laboratory studies comprising an examination of glucose, electrolytes, renal, and hepatic function that allows one other means to ascertain the type of seizure. To help them find metabolic or toxic causes, doctors could also use toxicology screenings. Neuroimaging may thus be chosen. This could include MRI or CT scans to find structural anomalies including either acute damage or persistent lesions. Not least among other crucial tests is electroencephalography (EEG), which is necessary for correct diagnosis and therapy planning.

Acute Management of Seizures

Managing seizures is crucial to ensure rapid stabilization and minimal complications (Kazl & LaJoie, 2020) [5]. One, supportive care is highly recommended to ensure airway patency, breathing, and circulation (ABC approach). Usually, if at home, the patient can be positioned laterally to prevent aspiration and protect them from injury during convulsions. This should be ensued by continuous monitoring of vital signs and oxygen saturation. If the decision to begin drug therapy has been reached, some first-like treatments may include intravenous benzodiazepines like lorazepam to halt ongoing seizures. Second-line medications can be administered if seizures persist and to achieve sustained control. These entail antiepileptic drugs (AEDs) like levetiracetam (Cascino et al., 2021) [2]. Non-pharmacological options may be put in place. These may include providing supplemental oxygen to address hypoxia. Potential triggers, such as fever, electrolyte imbalances, or metabolic disturbances can be managed concurrently.

Management of Status Epilepticus (SE)

Status Epilepticus (SE) is a life-threatening neurologic emergency that usually manifests with seizures lasting more than five minutes or seizures that are recurrent without regaining consciousness. SE can also be classified into convulsive SE which often manifests with tonic-clonic movements and loss of consciousness and non-convulsive SE which often present with altered mental status with no visible motor activity.

The management of SE should follow a comprehensive approach. Firstly, there should be immediate administration of benzodiazepines, such as lorazepam to terminate seizures promptly. If the seizure is noted to have persisted, second-line AED drugs, such as levetiracetam may follow (Morales et al., 2020) [6]. Consequently, if a patient fails to respond to initial treatments, then (s) he may require ICU admission. Anesthetic agents, such as propofol, may be administered alongside continuous EEG monitoring to assess seizure activity and guide appropriate treatment. It should be noted that effective management of SE is essential to prevent deterioration of health, such as neurological damage, and death, and improve patient outcomes.

Addressing Underlying Causes

Providers must identify and manage any underlying causes of seizures to prevent recurrence, enhance quality of life, and improve health outcomes. Underlying reasons may include the correction of electrolyte imbalances, such as hyponatremia, and hypoglycemia. Ultimately, resolving this issue will stabilize the patient and avert future seizures. Therefore, if a CNS infection is suspected, it is prudent to commence empiric antibiotic or antiviral therapy informed by clinical signs and diagnostic results to address the underlying infection. Seizures resulting from substance withdrawal, such as alcohol, require meticulous management. A patient can typically commence gradual detoxification measures to reduce the likelihood of withdrawal seizures. Seizures may also be induced by brain tumors, hemorrhages, or other structural abnormalities. In this instance, suitable interventions, encompassing surgical or medicinal alternatives, would be essential to address the underlying cause and avert recurrence. Prompt care of seizures is essential to reduce related consequences (Smith, 2021) [7].

LONG-TERM CONSIDERATIONS IN HOSPITALIZED PATIENTS

Long-term considerations for hospitalized patients with seizures are critical for better management and to prevent recurrence. Some key aspects for consideration can include making long-term treatment decisions that are tailored to the classification of seizures, frequency, and patient-specific factors, such as comorbidities and potential drug interactions. Patients should also be advised to ensure regular monitoring. This way, they can have their medication adjusted as needed and ensure efficacy. Other long-term considerations entail educating patients about the importance of medication adherence, recognizing seizure triggers, and implementing safety measures (Cascino et al., 2021) [2]. This may, in turn, help to prevent future episodes and improve their quality of life.

Consequently, other considerations include planning for proper discharge, including scheduling follow-up appointments with specialists like neurologists or primary care providers, outpatient EEG monitoring to assess seizure activity, and ensuring the patient has access to continued care and sufficient support systems. Indeed, having a coordinated approach will help patients reduce their risk of complications and ensure that they receive holistic care after they have been discharged.

Challenges in Seizure Management

Managing seizures can be complex as these often present several challenges. For one, there may be delayed recognition which may place a patient at risk of complications. For instance, non-convulsive seizures can be overlooked due to subtle symptoms. Polypharmacy is another challenge especially in the elderly and critically ill population, which can further complicate care, increasing the risk of drug interactions and side effects (Resor & Kutt, 2020) [1]. More so, some patients may be faced with the issue of resource constraints as they reside in low-resource settings. This may, in turn, limit them from having access to advanced diagnostics and ICU care. In addition, there may be an issue of ethical dilemmas when deciding on aggressive interventions for elderly patients or terminally ill patients. This often requires sensitive, multidisciplinary discussions to balance patient comfort with the required treatment goals.

Emerging Trends and Research

Acknowledging the complexities of seizure control, interested parties are using some new ideas to transform seizure treatment. Therapeutics and technologies have made notable progress. For example, physicians in ICU environments may now identify subclinical seizures with continuous EEG monitoring, therefore enabling real-time therapy modifications (Ghosh et al., 2023) [8]. Targeting biochemical pathways to provide relief when conventional treatments fail, researchers are investigating new therapies including cannabidiol for the management of intractable epilepsy (Ghosh et al., 2023) [8]. More importantly, the customization of AEDs to the individual is being made possible using personalized medicine via genomic profiling, hence boosting efficacy and lowering side effects. Apart from that, artificial intelligence is becoming more and more important for prediction, early-stage seizure recognition, and the creation of best care plans. By means of such new developments, doctors may now control seizures and enhance patient outcomes [9–10].

CONCLUSIONS

In conclusion, seizures represent a considerable health issue in both domestic and clinical environments. Consequently, there is an urgent need for immediate acknowledgment and the implementation of evidence-based management. This analysis underscores the comprehensive strategy necessary for both acute and long-term care, emphasizing the significance of addressing underlying causes, patient education, and interprofessional teamwork. Consequently, forthcoming initiatives should prioritize enhancing diagnostic precision, broadening access to sophisticated treatment, and incorporating emerging technology. This will enhance results for patients experiencing seizures.

REFERENCES

1. Resor SR, Kutt H, editors. The medical treatment of epilepsy. 4th ed. Boca Raton, FL: CRC Press; 2020.
2. Cascino GD, Sirven JI, Tatum WO, editors. Epilepsy. 5th ed. Hoboken, NJ: John Wiley & Sons; 2021.
3. Milligan TA. Epilepsy: A Clinical Overview. Am J Med. 2021;134(7):840–7.
4. Sarmast ST, Abdullahi AM, Jahan N. Current classification of seizures and epilepsies: Scope, Limitations and Recommendations for Future Action. Cureus. 2020;12(9):e10549. doi:10.7759/cureus.10549.
5. Kazl C, LaJoie J. Emergency seizure management. Curr Probl Pediatr Adolesc Health Care. 2020;50(11):100892. doi: 10.1016/j.cppeds.2020.100892.
6. Morales IG, Alonso CF, Koochani NB, Fernández JS, Rein AGN, Toledo M. Emergency management of epileptic seizures: A consensus statement. Emergencias. 2020;32(5):353–62.

7. Smith PE. Initial management of seizure in adults. N Engl J Med. 2021;385(3):251–63. doi:10.1056/NEJMcp2024526.
8. Ghosh S, Sinha JK, Ghosh S, Sharma H, Bhaskar R, Narayanan KB. A comprehensive review of emerging trends and innovative therapies in epilepsy management. Brain Sci. 2023;13(9):1305. doi:10.3390/brainsci13091305.
9. Reddy DS. Therapeutic and clinical foundations of cannabidiol therapy for difficult-to-treat seizures in children and adults with refractory epilepsies. Exp Neurol. 2023 Jan 1;359:114237.
10. Peeters E. Treatment of epileptic seizures as medical emergencies: A prospective analysis of a decision tree for nonmedically trained staff. Seizure. 2000 Oct 1;9(7):473–9.

