

Head injuries caused by seizures: A narrative review

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SUMMARY

Seizures are neurological events characterized by abnormal electrical activity in the brain. While seizures themselves can be challenging to manage, one often-overlooked consequence is head injuries sustained during the seizure episode. These injuries can range from mild concussions to severe Traumatic Brain Injuries (TBIs) and can have significant short- and long-term consequences for affected individuals. This narrative review aims to explore the relationship between seizures and head injuries, shedding light on their mechanisms, risk factors, clinical presentation, and management strategies.

Keywords: Seizures; Neurological; Head; Concussions; Stress; Shedding; Clinical

INTRODUCTION

Seizures can lead to head injuries through various mechanisms. During a seizure, individuals may lose consciousness, resulting in falls and subsequent head trauma. Additionally, the convulsive movements associated with some seizure types can increase the risk of head injuries, especially if protective measures are not in place. Moreover, seizures can occur unexpectedly, catching individuals off guard and increasing the likelihood of sustaining a head injury due to lack of preparedness. Understanding these mechanisms is crucial for developing effective preventive strategies. Head injuries caused by seizures can vary in severity and presentation. Mild injuries may include superficial lacerations and bruises, whereas more severe cases can result in skull fractures, intracranial hemorrhage, and brain contusions. Furthermore, repeated head traumas from recurrent seizures can exacerbate existing neurological deficits and increase the risk of long-term cognitive impairment. Recognizing the spectrum of head injuries associated with seizures is essential for timely diagnosis and appropriate management [1,2].

Several factors contribute to the risk of sustaining head injuries during seizures. These include the type and frequency of seizures, age of onset, presence of comorbidities such as epilepsy or cognitive impairment, and environmental factors. Individuals with uncontrolled seizures or those experiencing generalized tonic-clonic seizures are particularly vulnerable to head injuries due to the violent nature of the convulsions. Moreover, certain activities, such as swimming or driving, can pose additional risks during a seizure episode. Identifying these risk factors can help clinicians tailor preventive strategies to mitigate the risk of head injuries. The clinical presentation of head injuries caused by seizures can vary depending on the severity of the trauma. In mild cases, individuals may experience headache, dizziness, and minor cuts or bruises. However, more severe injuries can manifest as loss of consciousness, confusion, vomiting, and focal neurological deficits. Prompt diagnosis is essential to differentiate seizure-related head injuries from other causes of head trauma, as management strategies may differ. Imaging studies, such as Computed Tomography (CT) and Magnetic Resonance Imaging (MRI), play a crucial role in evaluating the extent of the injury and guiding treatment decisions.

LITERATURE REVIEW

Management of head injuries caused by seizures involves a multidisciplinary approach aimed at preventing further injury, controlling seizures, and addressing

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associated complications. Immediate management focuses on stabilizing the patient and assessing the severity of the head injury. In cases of mild trauma, conservative measures such as observation and symptomatic treatment may be sufficient. However, moderate to severe injuries may require surgical intervention to relieve intracranial pressure or repair skull fractures. Additionally, optimizing seizure control through antiepileptic medications and lifestyle modifications is essential for reducing the risk of recurrent injuries. Rehabilitation programs aimed at addressing cognitive and motor deficits can also promote recovery and improve long-term outcomes [3].

DISCUSSION

Preventing head injuries in individuals with seizures requires a comprehensive approach targeting modifiable risk factors and promoting safety measures. Education plays a central role in raising awareness among patients, caregivers, and healthcare providers about the risks associated with seizures and the importance of injury prevention. Implementing safety precautions at home, such as padding sharp corners and installing handrails, can reduce the risk of falls during seizures. Moreover, individuals with epilepsy should be advised to avoid high-risk activities, such as swimming alone or operating heavy machinery, without supervision. In cases of refractory epilepsy, consideration may be given to alternative treatment modalities, such as epilepsy surgery or neuromodulation devices, to improve seizure control and minimize the risk of injuries.

Head injuries caused by seizures represent a significant yet often underestimated complication of epilepsy. Understanding the mechanisms, risk factors, clinical

presentation, and management strategies is essential for optimizing patient care and minimizing the burden of injury. By adopting a proactive approach that integrates preventive measures with effective seizure management, healthcare providers can improve outcomes and enhance the quality of life for individuals living with epilepsy [4-6].

CONCLUSION

During a seizure, the brain's electrical activity becomes disrupted, leading to various manifestations depending on the type and severity of the seizure. In some cases, tonic-clonic seizures, formerly known as grand mal seizures, involve violent muscle contractions and loss of consciousness, which can result in falls and subsequent head trauma. Even in absence seizures, where individuals may briefly lose awareness and stare blankly, there's a risk of falling and hitting the head due to sudden loss of muscle tone. Additionally, some seizures may involve automatisms, repetitive, purposeless movements that can occur during altered consciousness. These movements, such as flailing of the arms or banging of the head, can inadvertently lead to head injuries. Moreover, seizures occurring in hazardous environments, such as near stairs or sharp objects, further increase the risk of trauma.

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CONFLICT OF INTEREST

None.

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