Epilepsy: An Overview of Types

Epilepsy is a neurological disorder **characterised by the propensity for recurrent, unprovoked seizures**, which are transient occurrences of signs and/or symptoms due to abnormal excessive or synchronous neuronal activity in the brain. The disorder encompasses a spectrum of conditions with varying aetiologies, clinical presentations, and seizure types.

Classification Based on Seizure Type

The primary classification of epilepsy is determined by the **type of seizure**, which is categorised into two main groups:

- **Focal Seizures**: Originating within networks limited to one hemisphere. These are subdivided based on the level of consciousness:
  - **With Retained Awareness**: Formerly known as simple partial seizures.
  - **With Impaired Consciousness**: Previously referred to as complex partial seizures.
  - **Evolution to Bilateral Tonic-Clonic Seizures**: Presenting with a progression of muscle rigidity followed by rhythmic muscle contractions.
- **Generalised Seizures**: Engaging networks distributed across both hemispheres simultaneously. Types include:
  - **Absence Seizures**: Manifest as brief lapses in awareness.
  - **Myoclonic Seizures**: Characterised by sudden, brief muscle jerks.
  - **Tonic-Clonic Seizures**: Known for convulsive movements.
  - **Atonic Seizures**: Leading to sudden loss of muscle tone.

Aetiological Classification

Epilepsy can also be categorised based on its **aetiology**, such as:

- **Structural**
- **Genetic**
- **Infectious**
- **Metabolic**
- **Immune**
- **Unknown Causes**

These aetiologies significantly influence the treatment and management of the condition.

Epilepsy Syndromes

In addition to seizure type and aetiology, **epilepsy syndromes** are recognised by a cluster of features that occur together, which can include:

- **Specific Seizure Types**
- **EEG Findings**

- **Age of Onset**

This concept is instrumental in directing specific management strategies.

Focal Seizures

Focal seizures arise from electrical disturbances in one hemisphere of the brain. They are categorised based on the individual's level of consciousness during the event.

With Retained Awareness

These seizures do not impede the individual's awareness. Patients may experience twitching, changes in sensation such as tingling, dizziness, or flashing lights. These seizures are focal in nature and can be associated with motor, sensory, autonomic, or psychological symptoms that reflect the function of the affected area of the brain.

With Impaired Consciousness

In these seizures, the individual's consciousness is affected. The person may appear to be staring blankly and not respond to external stimuli. They may also perform repetitive movements, such as hand rubbing, chewing, swallowing, or walking in circles. These seizures may also be accompanied by automatisms - involuntary, coordinated movements that are purposeless.

Evolution to Bilateral Tonic-Clonic Seizures

Focal seizures can evolve, leading to bilateral tonic-clonic seizures. This progression is characterised by a sequence where muscle rigidity (the tonic phase) is followed by rhythmic muscle contractions (the clonic phase). These seizures can be dangerous and may require emergency medical attention if they persist for an extended period.

Generalised Seizures

Generalised seizures involve both hemispheres of the brain from the onset. They are broadly categorised into several types, each with distinct manifestations.

Absence Seizures

These are brief, lasting seconds, and often manifest as subtle lapses in awareness. Common in children, absence seizures may be mistaken for daydreaming. They are characterised by subtle body movements and can occur hundreds of times per day if not treated.

Myoclonic Seizures

Myoclonic seizures cause sudden, brief jerks of a muscle or a group of muscles. They may occur in a pattern or randomly. The jerks are typically bilateral, meaning they occur in the same parts of the body on both sides simultaneously.

Tonic-Clonic Seizures

Formerly known as 'grand mal' seizures, tonic-clonic seizures are what most people typically recognise as a seizure. They cause a loss of consciousness and violent muscle contractions. The tonic phase leads to muscle stiffness, while the clonic phase results in rhythmic jerking of the muscles.

Atonic Seizures

Also known as 'drop attacks,' atonic seizures lead to a loss of muscle control, which may cause the individual to suddenly collapse or drop down, posing a significant risk of injury.