LGS FOUNDATION
LENNOX-GASTAUT SYNDROME

GET THE FACTS

DEFINITION & NATURAL HISTORY

- Lennox-Gastaut Syndrome (LGS) is a rare and severe form of childhood-onset epilepsy. [1]
- LGS is commonly characterized by a triad of features including multiple seizure types, intellectual disability or regression, and an abnormal EEG with general slow spike-and-wave discharges. [2,3]
- However, the definition of LGS has varied over time resulting in misclassification and over-diagnosis in the past.[4]
- LGS typically occurs between two and eight years of age with peak onset at 3-5 years.[5]
- Lennox-Gastaut Syndrome is named after Drs. William Lennox and Henri Gastaut. Lennox (1945) along with his colleague Davis (1950) described the triad of cognitive impairment, multiple seizures and slow spike and wave discharges in the EEG; Dr. Gastaut described the syndrome in 1966.
- Margaret Buchtal-Lennox proposed the name LGS in tribute to the work of Lennox and the Marseille School headed by Dr. Gastaut.[6]

EPIDEMIOLOGY

- The prevalence of LGS has been estimated at 1-4 percent of all epilepsies[7]
- Incidence = 2 / 100,000 or .6% of all new onset epilepsies
- Lennox-Gastaut Syndrome affects between 14,500 – 18,500 children under the age of 18 in the United States and over 30,000 children and adults in the U.S.[8]

ETIOLOGIES

- Etiologies can include meningitis/encephalitis, encephalopathy, structural abnormalities, pre/perinatal, genetic, metabolic disorders, and other.
- Infantile Spasms precede LGS in about 30% of cases[9], although figures as high as 54% have been reported.[10]
- LGS does not usually run in families but genetic factors may play a role in the etiology. [11] [12]

COGNITIVE DYSFUNCTION / INTELLECTUAL IMPAIRMENT

- LGS has a profound deleterious effect on intellectual and psychosocial function.[13]
- Cognitive impairments are clinically apparent in 20 – 60% of patients at time of diagnosis[14]
- The cognitive impairment becomes more apparent over time, and within 5 years of onset, serious intellectual problems are noted in 75 – 95% of patients[15]
- Those with an unknown cause have a better cognitive outcome than symptomatic; those with a known cause have higher percentage of moderate to severe intellectual disability.
- The progression of LGS after seizure onset is often associated with slowing and/or arrest of cognitive development, and, in 50 percent of cases, behavioral problems including hyperactivity and aggressiveness. [16]

BEHAVIORAL DISTURBANCES

- Many patients with LGS develop behavioral and psychiatric disorders[17]
- Attention problems, aggression and autistic features can be very prominent in LGS and represent enormous challenges for the family[18]
- Cognitive problems are greatest with earlier onset suggesting a profound effect on brain maturation at a critical stage of development
- Older children with LGS experience behavioral disturbances, acute or chronic psychosis with aggressiveness, irritability or social isolation. [19]

DIFFERENTIAL DIAGNOSIS

- One study reported misdiagnosis in 38/103 patients referred with a diagnosis of LGS [20]
- Distinguishing LGS from other epilepsy syndromes has been challenging as it is characterized by plethora of underlying causes, multiple types of seizures, and cognitive impairment. Seizures are classified according to the International League Against Epilepsy (ILAE) classification, and specific epilepsy syndromes of childhood are recorded when their essential diagnostic elements are fulfilled. It is now agreed that a number of individual syndromes, including LGS, form a spectrum of childhood epilepsies, each with differentiating criteria.

PROGNOSIS

- The long-term prognosis for LGS is generally poor due to uncontrolled seizures with only 10 percent of cases (mostly those with an unknown cause) experiencing full seizure remission. [21]
- Due to the refractory nature of LGS and multiple seizure types, only a minority achieve satisfactory control of seizures. [22]

ADULTHOOD

- 80% of children with LGS continue to experience seizures, psychiatric, and behavioral deficits in adulthood. [23]
- A defined strategy for transitioning patients from pediatric to adult care should be an essential component of the long-term management plan [24]
- Because EEG readings and seizure types may evolve and change as the patient grows older, it may be difficult to identify a history of LGS in adult patients.[25]

MORTALITY

- The early mortality rate associated with Lennox-Gastaut Syndrome ranges from 3 to 7%, with many deaths related to accidents.[26]
- People with Lennox-Gastaut Syndrome have an increased risk of death compared to their peers of the same age. Although the risk is not fully understood, it is partly due to poorly controlled seizures and injuries from falls.[27]

- 25% of deaths are due to underlying neurological conditions. [28]
- SUDEP is defined as a sudden and unexpected non-traumatic or non-drowning-related death in a patient with epilepsy that may or may not be due to a recent seizure.[29]
- Risk factors most consistently associated with SUDEP are: seizures that can't be controlled, treatment with multiple anticonvulsant drugs, having long standing chronic epilepsy. Other factors include generalized tonic-clonic seizures, nocturnal seizures, developmental delays, stopping the use of anticonvulsant medicine abruptly, and onset of epilepsy at a young age.[30]
- The incidence of SUDEP is higher in patients with LGS than those with controlled epilepsy.[31]
- People with epilepsy have a two-to-threefold increased mortality[32] and are 24 times more likely to die of sudden death compared with the general population.[33]

OTHER

- LGS has a devastating impact on patients' quality of life and inflicts a considerable burden on their caregivers [34]
- There is no cure for LGS.[35] Management options include antiepileptic drugs (AEDs), ketogenic diet, brain surgery (e.g. corpus callosotomy) and vagus nerve stimulation (VNS)[36]
- Only 7 randomized double blind controlled trials have been conducted
- The LGS Foundation was the first patient advocacy / non-profit organization formed dedicated to this syndrome in 2008 by Christina SanInocencio, the sibling of an adult man with LGS.
- Lennox- Gastaut Syndrome awareness day is November 1st, annually.
- The awareness color for LGS is sage green.

FOR MORE INFORMATION

Visit our website at www.lgsfoundation.org

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