There's a whole lot of Shakin' going on

Division of Child Neurology, Developmental Pediatrics and Genetics

Technology in Neurology

- EEG
- Video EEG
- Ambulatory EEG
- Vagus Nerve Stimulators
- Intrathecal Baclofen Pumps

Technology in Neurology

- EEG – first used in medical applications in 1924 by Hans Berger in Germany.
- Main use is to help manage epilepsy
- Also helpful in understanding and managing coma

What does an EEG show?

What does an EEG show?

Normal Baby
Normal Baby

Abnormal EEG

Abnormal EEG

Normal EEG

Another abnormal EEG

Video EEG
Ambulatory EEG

Technology in Neurology
- Cooling protocols – daily EEG’s are required in our neonatal protocols, our adult colleagues use continuous EEG on the MICU cooling patients

Technology in Neurology

Technology in Neurology

Spasticity Management
- What is the need
- What the concerns
- What are the possible solutions
- What are the best options
Spasticity Management

- Objectives
- Be familiar with treatment of spasticity
- Know the cascade of therapies
- Understand the limitations of therapy

Definitions:

- The Taskforce on Childhood Motor Disorders defines spasticity as "hypertonia in which one or both of the following signs are present:
  - resistance to externally imposed movement increases with increasing speed of stretch and varies with the direction of joint movement
  - resistance to externally imposed movement rises rapidly above a threshold speed of joint angle"

From AAN/CNS Practice Parameter

Spasticity Management

Definitions: Mayo Clinic (from their website)

- Cerebral palsy is a disorder of movement, muscle tone or posture that is caused by injury or abnormal development in the immature brain, most often before birth.
- Signs and symptoms appear during infancy or preschool years. In general, cerebral palsy causes impaired movement associated with exaggerated reflexes or rigidity of the limbs and trunk, abnormal posture, involuntary movements, unsteadiness of walking, or some combination of these. The effect of cerebral palsy on functional abilities varies greatly.
- People with cerebral palsy often have other conditions related to developmental brain abnormalities, such as intellectual disabilities, vision and hearing problems, or seizures. A broad spectrum of treatments may help minimize the effect of cerebral palsy and improve a person’s functional abilities.

Intrauterine Periventricular Leukomalacia

Spasticity Management

Definitions: Wikipedia (from their website)

- Cerebral palsy is an umbrella term encompassing a group of non-progressive, non-contagious motor conditions that cause physical disability in human development, chiefly in the various areas of body movement.
- Cerebral palsy is caused by damage to the motor control centers of the developing brain and can occur during pregnancy, during childbirth or after birth....

Periventricular Leukomalacia
Spasticity Management

Definitions:

- CP prevalence was recently reported to be 3.6 cases per 1000 in 8-year-old children, with very little variation among Western nations.
- CP is the most common cause of spasticity in children, and the majority of children with CP are affected by spasticity.

From AAN/CNS Practice Parameter

Spasticity Management

Management Issues:

- Alleviation of spasticity may not always be desirable; some patients may experience a decline in function with spasticity reduction.
- Over the last 20 years, several pharmacological antispasticity treatments (benzodiazepines, dantrolene, baclofen, and tizanidine; neuromuscular blocking agents such as botulinum toxins A and B [BoNT-A and BoNT-B, respectively]; chemical denervation using phenol and alcohol; intrathecal baclofen [ITB]) have been adapted for use in patients with CP.

Spasticity Management

Management Issues:

- Oral medications and ITB are used when a generalized antispasticity effect is desired. Chemical denervation agents are used to treat localized (one extremity) or segmental (lower body, hemibody) spasticity.