Seizures In The Elderly

Frank O’ Brien
Definition

• Seizure
  – Abnormal electrical activity in the brain manifesting as; convulsion, sensory disturbance, loss of consciousness etc

• Epilepsy
  – Recurrent tendency to spontaneous,
Differential Diagnoses

• Neurological
  – Stroke
  – TIA
  – Epilepsy
  – Migraine
  – Space occupying lesion

• Drug causes
  – Withdrawal
  – Toxicity

• Infectious Causes
  – Pneumonia
  – Urosepsis
  – Meningitis
  – Encephalitis

• Cardiovascular
  – Vasovagal syncope
  – Orthostatic Hypotension
  – Arrhythmia
  – Carotid Sinus Syndrome
  – Aortic stenosis

• Alcohol
  – An Irish epidemic

• Metabolic abnormalities
Cerebrovascular Disease

- Responsible for 40% of seizures in the elderly

- Risk factors
  - Haemorrhagic stroke
  - Cortical involvement
  - Larger infarct/haemorrhages

- Embolic Stroke
  - 5% develop seizures

- Haemorrhagic Stroke
  - 8% develop seizures post stroke
Alcohol Withdrawal

- Prevalence of alcoholism in Ireland
  - 13.5L alcohol per head population 2006
  - Highest in OECD

- Seizures
  - Generalised tonic-clonic
  - Occur 48-72 hours post last drink
  - Chronic alcohol abuse

- Treatment
  - IV Pabrinex
  - Oral benzodiazepines
    - Chlordiazepoxide
    - Diazepam
  - Glasgow criteria
    - Use of diazepam
Epidemiology

• 4,400 people >65 with primary epilepsy in Ireland

• 1.1 million people > 65 in UK

• Incidence of epilepsy increases with age
Epilepsy

• Partial
  – Simple
  – Complex

• Partial in up to 70%
  – Memory lapse
  – Confusion
  – Inattention
  – Syncopal like episode

• 30% of acute seizures

• Generalised
  – Tonic-clonic
  – Absence
  – Myoclonic jerk
  – Atonic

• Atypical aura
  – Localised paraesthesia
  – Dizziness
  – Muscle spasms
  – Clumsiness
Diagnosis

• History
  – Reliable witness
  – Full past medical hx
  – Drug hx

• Examination
  – Temperature
  – Focal neurology
  – Cardiovascular abnormalities

• Investigations
  – FBC
  – Bioprofile
    • Renal/Liver/Bone/Mg²
    • TFT’s
    • Glucose/ESR
  – ECG
  – Chest X-Ray
Neuroimaging

• CT Brain
  – First seizure
  – Focal neurology
  – Partial seizure

• MRI
  – Gold standard
  – Less widely available

• Electro-encephalography
  – Poorly sensitive/specific in elderly
  – 40% of patients with epilepsy will have normal EEG
  – Useful in diagnosing non convulsive status
Treatment

- Treat underlying cause
  - Metabolic
  - Drug induced/withdrawal
  - Sepsis

- Cardiovascular risk factors
  - Lipids
  - BP
  - Glucose

- Commencement of drug therapy
  - First or second seizure?
  - Controversial

- Little data available
  - Presumption of up to 80% risk of recurrence post 1st seizure
  - Treatment generally initiated
Emergency Management

• Status Epilepticus
  – Seizure lasting >30 mins
  – Repeated seizures without intervening consciousness

• Usually occurs in known epileptics
  – If 1st seizure >50% chance of underlying lesion

• Airway Breathing Circulation

• Oxygen 100%
  – Suction if required

• IV access / bloods
  – Glucose
  – Alcohol
  – FBC/Renal Profile
Drug Therapy

• IV fluids
  – 50% Dextrose
  – 0.9% Saline

• Paracetamol

• Lorazepam
  – 4mg
  – Slow push
  – Need iv access

• Diazepam

• If seizures persist
  – Phenytoin infusion
  – Diazepam infusion

• Phenytoin
  – 15mg/kg at rate <50mg/min
  – Caution re: hypotension, bradycardia, heart block, prolonged QTc

• Diazepam
  – 100mg in 500mls dextrose 5% at 40ml/hour
  – Caution re: respiratory depression
Anti Epileptic Drugs

• Generally successfully induce seizure remission
  – 80% will remain seizure free if onset is in old age

• Little data available on anti epileptic drug choice in elderly patients

• Cautious introduction of medication in the elderly
  – Drug Interactions
    • Phenytoin, carbamazepine
  – Pharmacokinetics
    • ↓ hepatic metabolism
    • ↓ GFR
    • ↓ albumin/plasma proteins
  – Side effects
Traditional Drugs

• Partial Seizures
  – Carbamazepine
  – Sodium Valproate

• Carbamazepine
  – Blocks voltage dependent Na channels at the neuron
  – Side Effects
    • Nausea/vomiting, Hyponatraemia
    • Leucopaenia/pancytopaenia

• Generalised Seizures
  – Sodium Valproate
  – Lamotrigine

• Sodium Valproate
  – Blocks Na channels, increases GABA concentration and synthesis, acts against Ca² currents
  – Side Effects
    • Sedation, weight gain
    • Thrombocytopenia, hepatic failure
Newer Anti Epileptic Drugs

• Lamotrigine
  – Inactivates voltage dependent Na channels
  – Levels reduced by enzyme inducing drugs
  – Side Effects
    • Rash, nausea, Stevens Johnson’s Syndrome

• Levetiracetam
  – Unknown mechanism of action
  – Acts independent of CYP450 system
  – Side Effects
    • Sedation

• Vigabatrin
  – Irreversible inhibitor of GABA transaminase
  – Side Effects
    • Irreversible visual field loss
  – No FDA approval

• Topiramate
  – Blocks Na channels, enhances GABA, antagonises NMDA glutamate receptor
  – Side Effects
    • Cognitive impairment
    • Poorly studied in elderly
Role of Phenytoin

• >60 years old

• Remains widely used

• 2nd line drug for partial and generalised seizures

• Useful in treatment of status epilepticus

• Significant side effects
  – Cerebellar signs
  – Depression
  – Gingival hypertrophy
  – Heart block

• Gradually being replaced with valproate/carbamazepine
Drug Choice

• Tailored to individual patients
  – Partial seizures
    • Carbamazepine
    • Valproate
    • Lamotrogine
  – Generalised seizures
    • Valproate
    • Lamotrogine
Complications of Epilepsy

• Falls
  – Complicated by
    • Fractures- NOF
    • Subdural Haematomata

• Psychosocial Implications
  – Driving
  – Independence

Todd’s Paresis
  – Transient neurological deficit that lasts for hours-days

• Classical Features
  – Hemiplegia
  – Amaurosis
Surgical Treatment

• Vagal Nerve Stimulation
  – Intractable epilepsy

• Space occupying lesions
  – Neurosurgical resection

• Evacuation of haemorrhage
  – Subdural
  – Extradural
  – Intracerebral
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