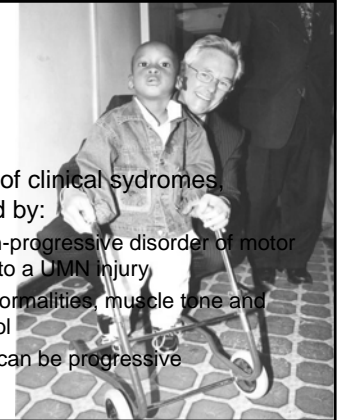


Cerebral Palsy (CP)

Cerebral Palsy

- Broad group of clinical syndromes characterised by:
 - chronic, non-progressive disorder of motor control due to a UMN injury
 - posture abnormalities, muscle tone and motor control
 - deformities can be progressive



Increased risk CP:

- Respiratory distress syndrome
- Foetal malformations
- Birth weight < 2.1kg
- Maternal intellectual development
- Delayed first cry
- neonatal seizures

Early diagnosis of mild cases can be difficult

Types of CP

- 1. Spastic
 - hemiplegic (upper/lower limb same side), diplegic (both lower limbs > upper limbs), monoplegic (single limb), quadriplegic (all four limbs equally involved)
 - most common type
 - pyramidal system injury
 - hypertonia, rigidity, increased tendon reflexes, persistence of primitive reflexes

Types of CP

- 2. Dyskinetic
 - dystonic (bizarre positions and movements of limb); choreoathetotic (irregular writhing movements), hypotonic (lack or reduced muscle tone)
 - Impaired voluntary muscle control (slow writhing movements of flexion/extension and pronation/supination of feet/hands)
 - Lesion in basal ganglia

Types of CP

- 3. Ataxic
 - complete/partial lack of muscle coordination and decrease in proprioception - balance problems
 - Cerebellum injury
- 4. Mixed - combination of types - variety of movement disorders

Associated disabilities

- Common to have intellectual impairments and learning difficulties
- Increased frequency of seizures (epilepsy)
- Up to one third have visual problems
- Up to 10% have hearing defects
- 50% have speech/language problems

The foot in cerebral palsy



- Mild cases may present with a severely pronated/supinated foot
- Spastic equinus common (Triceps spastic/overactive)
- Torsional limb problems common

Management

- Multidisciplinary: especially PT, OT, Speech
- Equinus: mild = stretching/orthoses; severe = botulinum toxin injection, surgery
- Orthoses: improve function, inhibit reflex activity (case study later in lecture series), prevention of deformity



Dementia

Dementia: definition

- An acquired loss of multiple domains of higher mental function
- A progressive decline in mental function



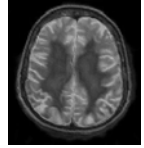
Incidence

- 50 per 100 000 population
- Strongly age related: rare under 60 years
- Common causes: Alzheimer's disease, Lewy body disease, diffuse cerebrovascular disease
- Diagnosed by neurological examination
- Slow progression of dementia
- Social burden of condition very high

Diagnosis

- History-taking important: especially from family/friend
- What higher function impaired? Memory, concentration, reading, daily activities, getting lost
- History seeks evidence of progressive nature of problem
- Differential diagnoses: numerous, but include Parkinson's disease, depression, hypothyroidism, vitamin B12 deficiency, thiamine deficiency (especially alcoholics)

Alzheimer's disease (AD)



- 70% of dementia cases
- 20% of persons over 85 years
- 5% of AD is familial (presents in 40s-50s)
- Cerebral atrophy: especially temporal lobes, senile plaques, neurotransmitter defects (especially acetylcholine in basal forebrain)
- Clinical features: memory disturbance, global cognitive decline (personality intact), severe global decline (social behaviour problems, failure of self-care, incontinence and dependence, apathy)

AD: Clinical features

- Forgetfulness --> Depression, Personality change -->Apathy
- Behavioural change: verbal and physical aggression, inappropriate sexual behaviour, eating disorders
- Less common: hallucinations, psychotic disturbance
- Increased muscle tone

Treatment of dementia

- No medication influences the pathological changes
 - central cholinesterase inhibitors (eg. donepezil [Aricept®], galantamine) may improve cognitive function in AD
 - excluding/treating other causes of dementia
 - Mood disturbance: antidepressants, neuroleptic drugs for hallucinations/psychotic symptoms
 - Social support and help for patient and carers

Peripheral Neuropathy



References

- Gilron et al. (2006) Neuropathic pain: a practical guide for the clinician. Canadian Medical Journal 175(3): 265
- Francis, Christopher & Beasley (2006) Conservative treatment of peripheral neuropathy and neuropathic pain (2006) 23:509.

Prevalence

- Up to 3% of the population may have symptomatic neuropathy (Carter & Galer, 2001)
- Generally chronic, severe & resistant to S2/3 analgesics & further aggravated by touch
- Descriptors: 'punishing-cruel' and 'tiring-exhausting', burning/electric, shooting/stabbing pain
- Impairs mood, quality of life, sleep & work performance
- Estimated US\$40 billion /yr cost of neuropathic pain in the US

Aetiology

- Most common cause: diabetes mellitus
- Other causes include:
 - Traumatic/entrapment neuropathies
 - Spinal cord/nerve root trauma
 - Charcot-Marie-Tooth disease
 - Infectious disease (eg. leprosy, AIDS)
 - Neoplastic causes (eg. carcinomas, leukaemia)

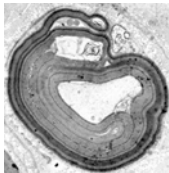
Aetiology...

- Heavy metal poisoning
- Alcoholism
- Metabolic disorders (eg. B12 deficiency, hypothyroidism)
- Autoimmune dysfunction (eg. motor neuropathy, Guillain-Barre syndrome)
- ** Hyperglycaemia is primary risk factor **

Aetiologies of Peripheral Neuropathy

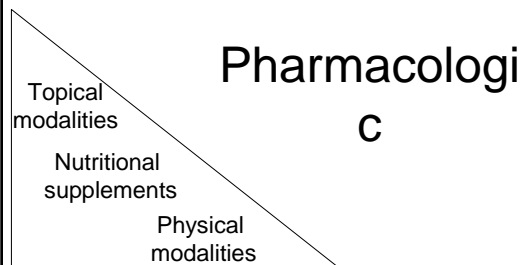
- Mnemonic: "I'M DISTAL"
- I=Idiopathic, Inherited
- M=Metabolic, Mechanical
- D=Drugs
- I=Infections
- S=Sarcoidosis
- T=Tumours
- A=Autoimmune
- L=Lack of vitamins

Pathophysiology

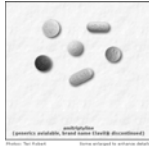


- Peripheral
 - Incomplete regeneration of neurones after trauma (LA can block sodium channels)
 - Demyelination of peripheral nerves
- Central
 - Spinal sensitization after sustained painful stimuli

Treatment options:
no 'magic bullets'



Pharmacologic treatment



- Antidepressants:
 - Tricyclic antidepressants (eg. amitriptyline [Amitrol®], side effects include mental and physical impairment)
 - SSRI's (Selective serotonin reuptake inhibitors) (eg. fluoxetine [Prozac®], Sertraline [Zoloft®] not as effective but better tolerated)

Pharm Tx...

- Anticonvulsants (eg. carbamazepine - used specifically for trigeminal neuralgia)
 - significant side effects - need for blood testing
- Gabapentin [Neurontin®] (analgesia, improvements in mood and sleep - but drowsiness and confusion are common, \$\$\$ expensive)



Pharm Tx...

- Opioid analgesics
 - controversial use - exclude those with a substance abuse history
 - Morphine & oxycodone
 - No long-term studies

- Topical local anaesthetic (eg. EMLA patch®)
- Opsite® Dressings
- Capsaicin
 - obtained from chilli peppers
 - mixed results, increased pain in some, 2-6 weeks onset of action
 - depletes substance P - reduction in pain sensation
 - hard to get hold of in Australia in ointment form

Topical agents



Physical Therapy

- Some therapies include:
 - Exercise for diabetic peripheral neuropathy (Balducci et al, 2006)
 - Infrared light (Harkless et al., 2006)
 - Electrical stimulation
 - Magnet therapy
 - Acupuncture

Surgery

- Nerve compression
- Spinal implantation

Combination therapy?

- Lower doses = Improved results with fewer side effects?
- eg. Gabapentin + Morphine



Approach to pain management

- Most of the drugs listed previously are not on the S4 submission list for podiatrists
- Need to work with GP to suggest pharmacological options where neuropathy has significantly affected the quality of life of the patient (diabetes education/management also)
- Initially: gabapentin; Subsequently: multiple therapies? Other topical/physical therapies?
- Be aware that side effects may be more detrimental than the neuropathy itself!

Epilepsy



Definition

- A seizure is a paroxysmal neurological event caused by the abnormal discharge of neurones
- Epilepsy is where you have two or more seizures
- Epilepsy is not a single disease but a symptom of a congenital/acquired CNS disease

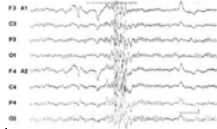
Prevalence

- 5% of the population will experience an epileptic seizure at some point in their life
- Males = Females
- Peaks during childhood/adolescence and in the elderly

Seizures

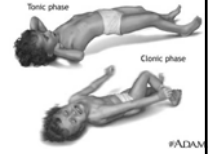
- Cause unpredictable loss of control
- Socially stigmatizing
- Epilepsy is associated with depression and psychiatric illness

Diagnosis



- Based on history/seizures as well as electroencephalogram (EEG)
- There are different sorts of seizures and more than one type of seizure can occur in a patient
- Epilepsy syndromes can be divided into generalised or focal onset disorders

Types of seizures



- Generalised epilepsies: usually start in childhood, tonic-clonic seizures, myoclonic jerks, good prognosis
- Focal epilepsy: occurs at any age, starts in one part of the brain, focal limb jerking, visual hallucination, limb posturing
- Provoked seizures: response to trauma, metabolic abnormalities, drugs/alcohol

Treatment

- Choice of drug depends on the epilepsy syndrome and adverse effects (eg. carbamazepine for focal epilepsy)
- People with epilepsy want to live a normal life - but there are times when they should be accompanied by someone else (eg. swimming)
- Some drugs interfere with the oral contraceptive pill or are teratogenic

Assistance during a seizure



- remove objects on which the person may harm themselves
- put patient into recovery position
- call an ambulance for seizures > 10 min
- do not try to restrain the convulsion or put anything into the person's mouth