Neurology

Section 3

Neurological Symptoms

Disease Categories in Neurology

- Myopathy – muscle diseases
- Myelopathy – cord compression diseases
- Neuropathy – nerve diseases
- Radiculopathy – nerve root compression
- Plexopathy – nerve plexus compression
- Encephalopathy – brain diseases

Mental Status Disorders

- Change in level of alertness & consciousness
  - Ask “Where is this patient on the scale from being drowsy to unconscious?”
- Common metabolic causes
  - Low or high glucose
  - Low sodium
  - Acidosis or alkalosis
  - Low oxygen
- Conditions that can cause consciousness change
  - Psychosis
  - Dementia, delirium
  - Drug overdose
  - Aphasia from stroke

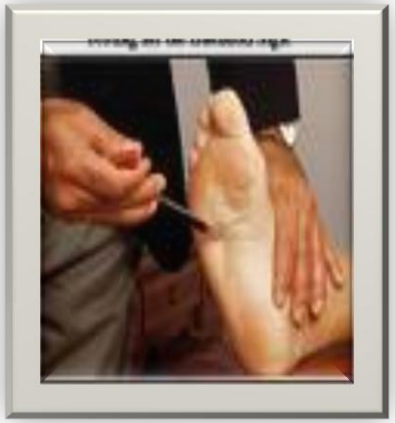
Weakness Disorders

- Can range from mild weakness to total paralysis
  - Ask “Is this specific muscle fatigue or weakness or are all muscles weak?”
    - “If all muscles are weak, is it muscular, exhaustion or neurological?”
    - “Is it only one side of the body?”
    - “Is it upper motor neuron problem or lower motor neuron problem?”

Upper Motor Neuron Problems

- An upper motor neuron lesion is a lesion of the neural pathway above the anterior horn cell or motor nuclei of the cranial nerves
- Spasticity, increase in tone in the extensor muscles (lower limbs) or flexor muscles (upper limbs)
- Weakness in the flexors (lower limbs) or extensors (upper limbs), but no muscle wasting
- Babinski sign is present, where the big toe is raised (extended) rather than curled downwards (flexed) upon appropriate stimulation of the sole of the foot. The presence of the Babinski sign is an abnormal response in adulthood
- Increase Deep tendon reflex (DTR)

Babinski's Reflex



- With an upper motor neuron lesion, such as stroke, the muscles that are normally the weakest are the most affected
- This will cause spasticity and contractures
- Will also cause weakness of leg muscles on the opposite side of the stroke
- Cortical lesions, such as stroke, usually cause a sensory loss and spasticity and weakness

Lower Motor Neuron Lesion

- A lower motor neuron lesion is a lesion which affects nerve fibers traveling from the anterior horn of the spinal cord to the relevant muscle(s) -- the lower motor neuron
- One major characteristic used to identify a lower motor neuron lesion is flaccid paralysis – paralysis accompanied by muscle loss. This is in contrast to a upper motor neuron lesion, which often presents with spastic paralysis– paralysis accompanied by severe hypertonia
- An example of a lower motor neuron lesion is an ulnar nerve neuropathy

UMN Lesion vs LMN Lesion

SIGN	UMN	LMN
Weakness	Yes	Yes
Atrophy	No *	Yes
Faciculations	No	Yes
Reflexes	Increased	Decreased
Tone	Increased	Decreased

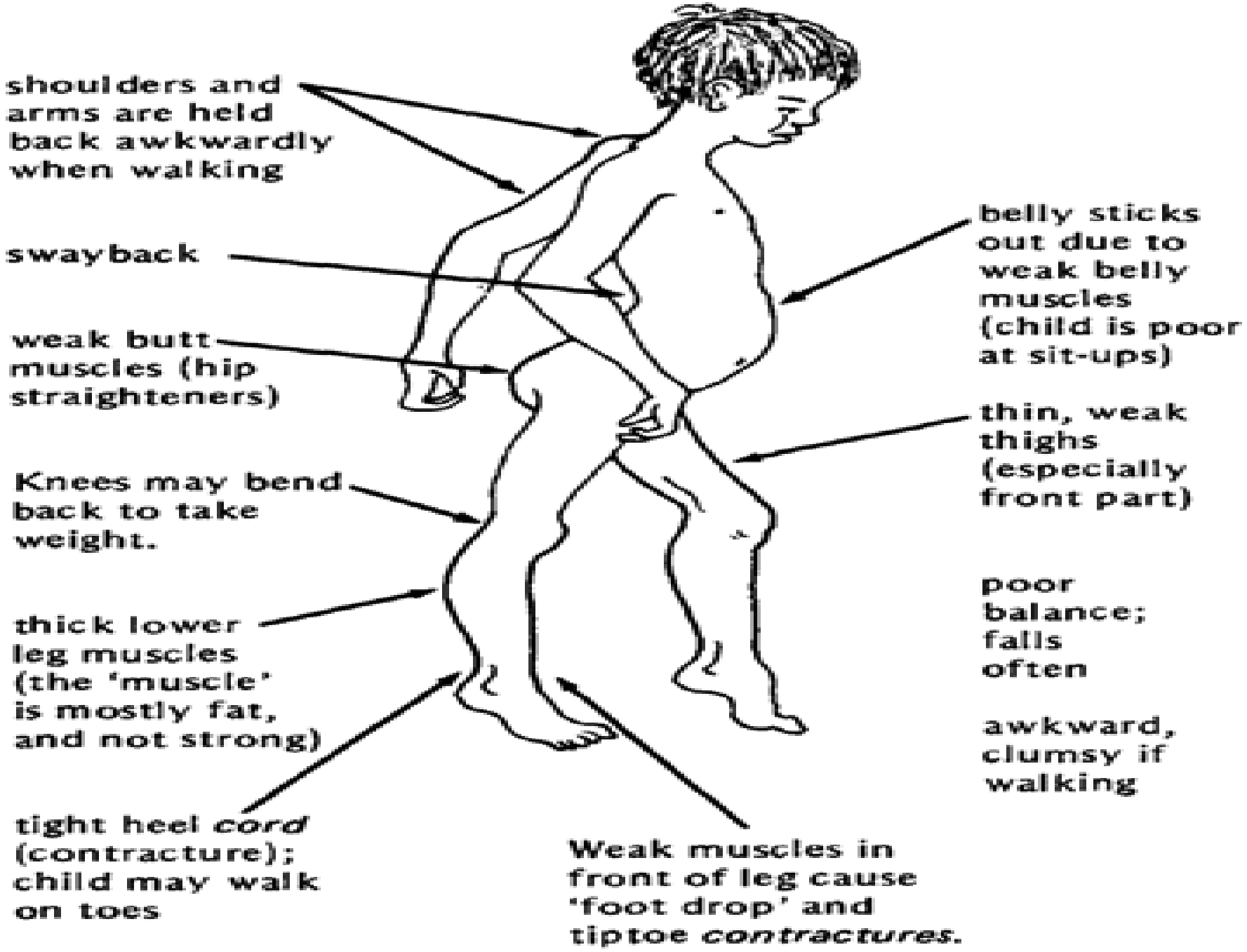
* May have mild atrophy due to disuse

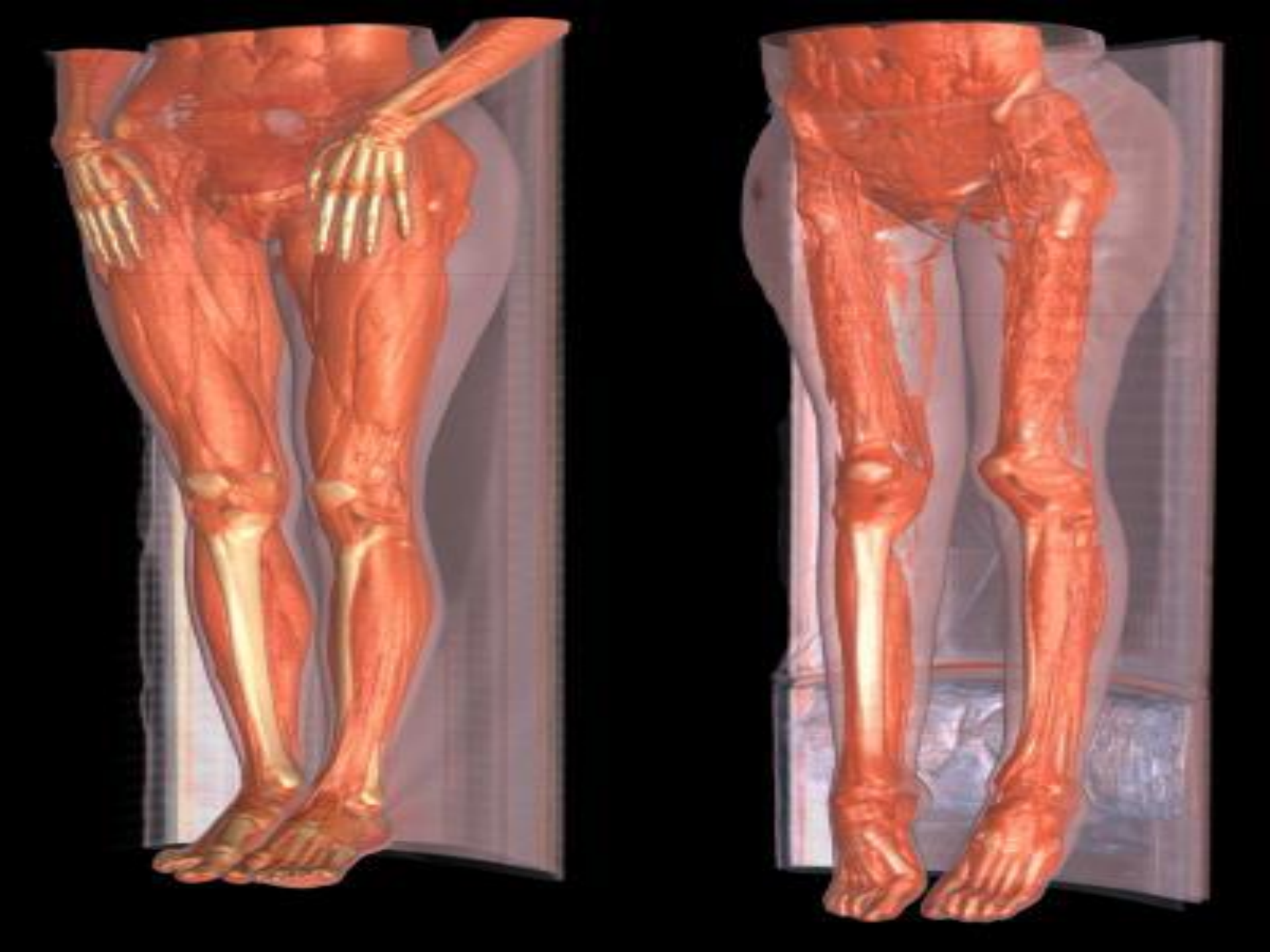
Neuropathy

- Affects distal nerves in a glove like pattern
- Paresthesias, weakness, sensory loss
- Common in diabetes, RA, alcoholic abuse and B12 deficiency

Disease of muscle – myopathy

- These diseases cause proximal muscle weakness
- Classic disease is muscular dystrophy
  - Usually affects young boys with weakness of pelvic and shoulder muscles
  - The affected muscles are large and bulky, but very weak because the muscle cells do not contract properly
  - Muscular dystrohy – mysterious disease
  - Muscular Dystrophy Walking


shoulders and arms are held back awkwardly when walking
swayback
weak butt muscles (hip straighteners)
Knees may bend back to take weight.
thick lower leg muscles (the 'muscle' is mostly fat, and not strong)
tight heel *cord* (contracture); child may walk on toes
Weak muscles in front of leg cause 'foot drop' and tiptoe *contractures*.
belly sticks out due to weak belly muscles (child is poor at sit-ups)
thin, weak thighs (especially front part)
poor balance; falls often
awkward, clumsy if walking



Pain & Sensory Loss Syndromes

- Pain syndromes
  - Neuritis or neuritic pain – pain due to nerve dysfunction can be very severe pain
  - Example is causalgia which comes on months after a crushing extremity injury
  - The resulting pain is so severe that patient's will often request amputation to relieve the pain
- Sensory loss – can cause four things:
  - Anesthesia – loss of sensation
  - Hypoesthesia – decreased sensation
  - Paresthesia –numbness, tingling, prickly
  - Dysesthesia – uncomfortable burning sensation

"You can have general anesthesia or just be numbed from the wallet down."

"OK, Bernice. He no longer seems to feel your punches. The Novocain seems to have kicked in."

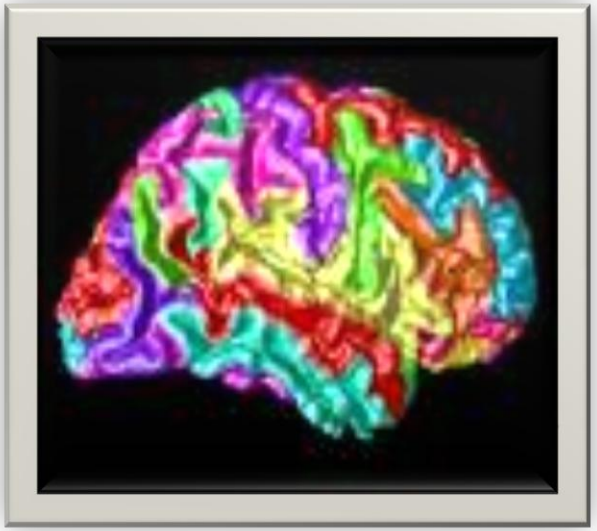

Z Z Z Z
GEN. ANESTHESIA
Reynolds

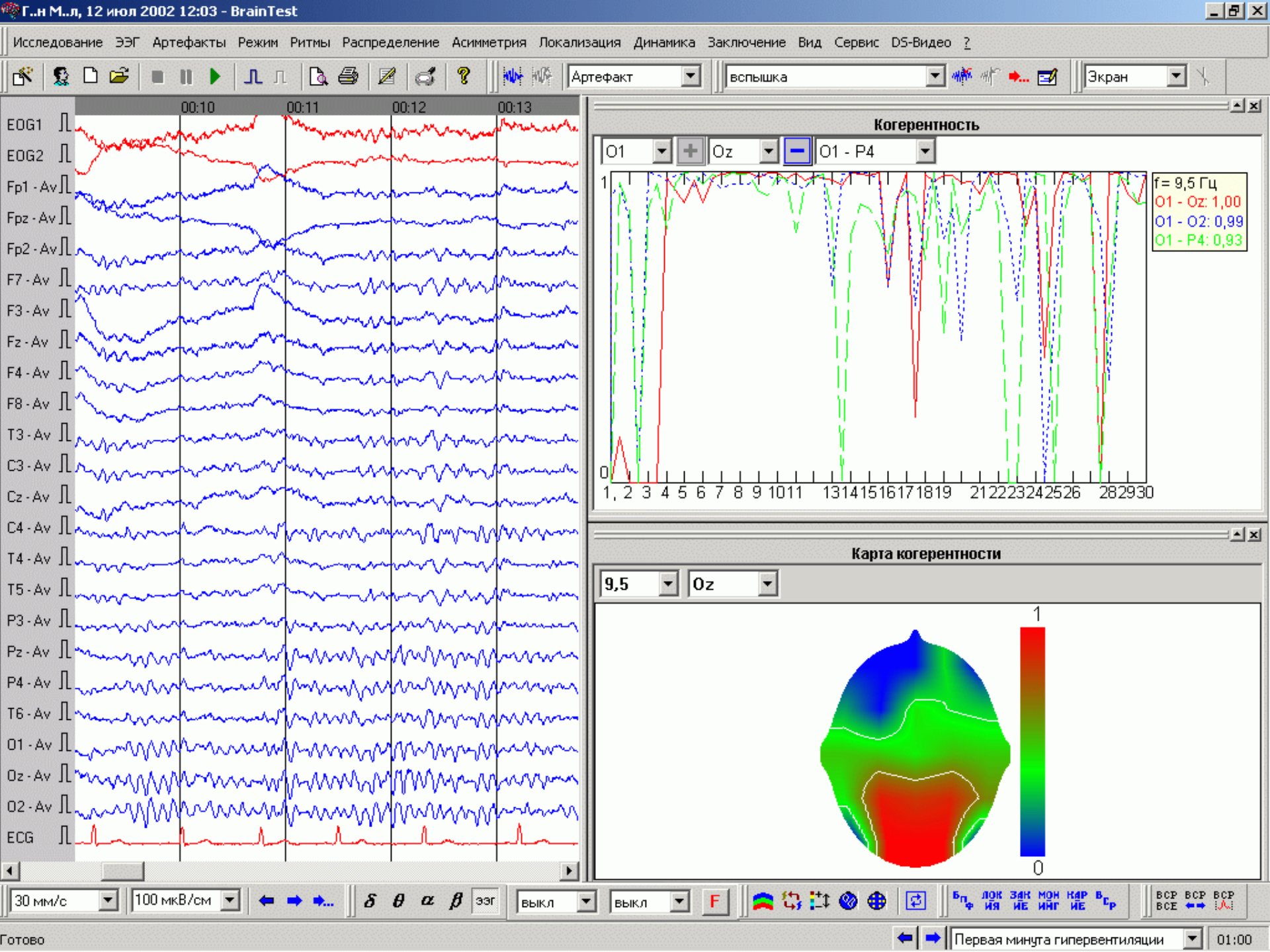
Gait and Balance Disorders

- Both are common in elderly
- Gait disorders can be due to lower extremity problems or neurological problems
- Balance problems may be caused by orthopedic dysfunction, low back problems, cerebellar dysfunction or inner ear problems

Diagnostic Tests in Neurology

- Lumbar puncture
  - Has been used for over 100 years
  - Tests CSF for infections, pressure, and lab data such as glucose, proteins and WBC
- EEG – electroencephalography
  - Measure sequential EEGs to look for change in brain function
  - Evoked potentials show brain activity
  - A new approach is brain mapping in color




Г..н М..л, 12 июл 2002 12:03 - BrainTest
Исследование ЭЭГ Артефакты Режим Ритмы Распределение Асимметрия Локализация Динамика Заключение Вид Сервис DS-Видео ?
Артефакт
вспышка
Экран
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EOG1
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F4 - Av
F8 - Av
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Готово
Первая минута гипервентиляции
01:00

- EMG – elctromyelography
  - Valuable in diagnosing peripheral and muscular disorders
    - ALS, Nerve root compression, thoracic outlet syndrome, neuropathy
    - Painful tests
- Nerve conduction velocity studies
  - Measure the transmission velocity in peripheral nerves
  - CTS, thoracic outlet syndrome, nerve entrapment syndromes

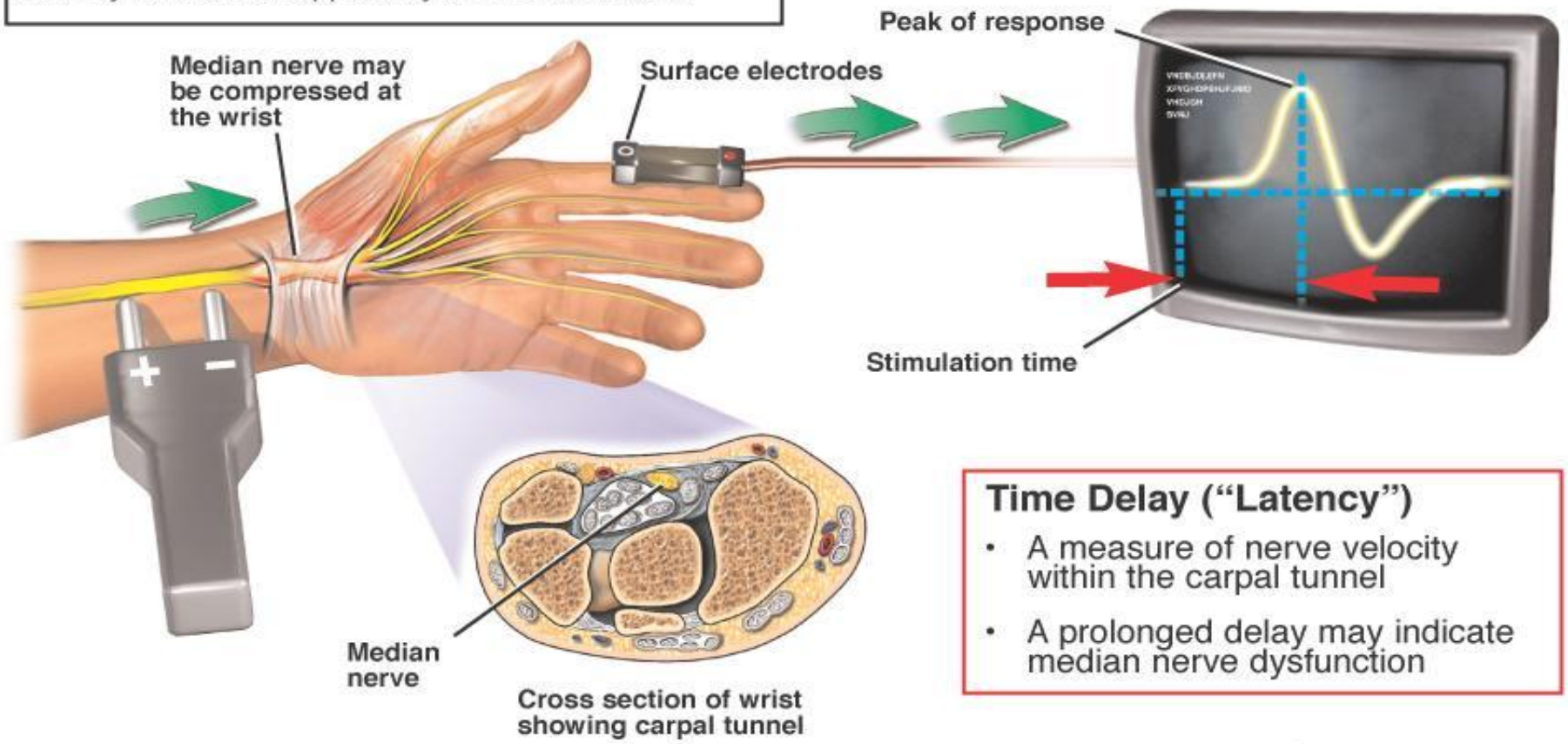
EMG

NCVS

Sensory Nerve Conduction Studies (Electrodiagnosis) of the Median Nerve Across the Carpal Tunnel

Surface stimulation of the median nerve at the wrist. This sends a nerve impulse through the carpal tunnel into the hand and activates the specific muscles and sensory structures supplied by the median nerve.

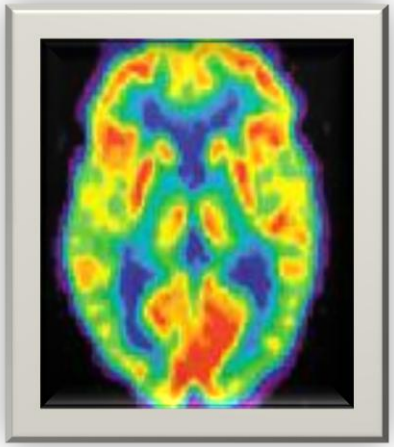
Recorded sensory nerve response at the index finger from the median nerve stimulation at the wrist



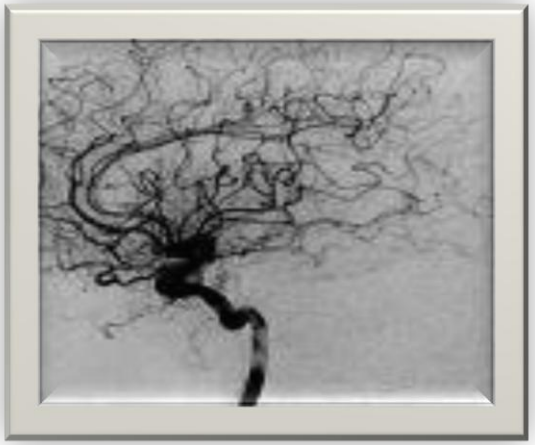
Time Delay ("Latency")

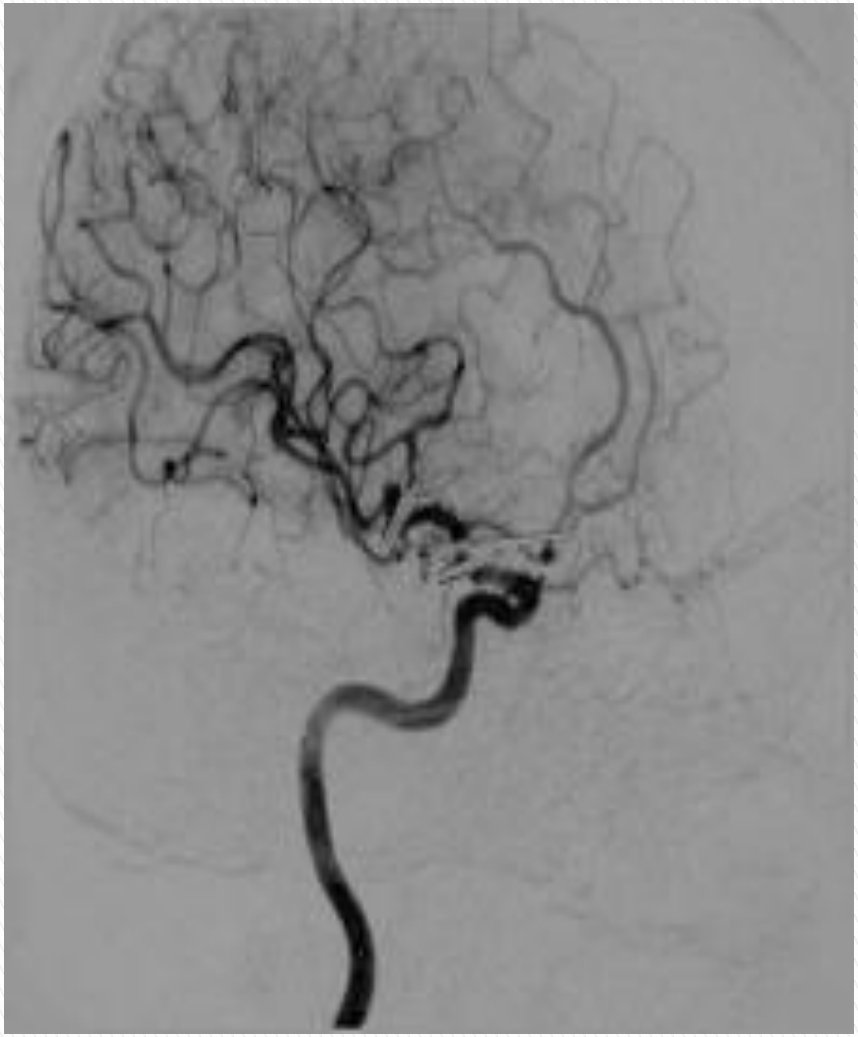
- A measure of nerve velocity within the carpal tunnel
- A prolonged delay may indicate median nerve dysfunction

- Neuroradiology
  - CT scans
  - MRI scans
  - PET scans
  - CT angiography



- Angiography
  - Injection of contrast dye
  - The gold standard of brain vascular diagnosis
  - Ruptured Brain Aneurysm





Cerebral Angiography

Cardiac Angiography

Headaches

Primary Headaches

- Due to intrinsic dysfunction in the CNS
- Migraine with aura
- Migraine without aura
- Cluster headaches
- Tension headaches
- Depression headaches

Secondary Headaches

- The result of problems outside the NS
- Cerebrovascular ischemia
- Embolism to a cerebral vessel
- Metabolic disorders
- Renal and liver failure
- Infectious processes
- TMJ problems
- Mass lesions
- Eye disorders
- CSF leak or increased pressure
- Endocrine dysfunction
- PMS
- Autoimmune disorders
- Fibromyalgia
- Hypertension

Migraines

- 3:1 Female to male ratio
- 90% have a family history
- Pathophysiology
  - Trigeminal nerve mediated process of inflammation which releases vasoactive neuropeptides that causes the extreme vasodilation of the cerebral vessels
  - Headache results from the vasodilation
  - The throbbing quality is similar to the vascular inflammation experienced anywhere in the body

Signs and Symptoms

- Classic migraine with aura – 20%
  - Aura occurs 30-60 minutes before headache
  - Auras are usually visual followed by nausea, numbness and tingling
  - May last 4-6 hours
- Migraine without aura – 80%
  - Throbbing bilateral or unilateral pain without warning
  - Chronic sufferers average 15 days per month, or in some cases every day
- Diagnosis are by location, family history, pain characteristics, and age of the first attack

Migraine Treatment

- Rest in a dark room
- NSAID
- Cafergot
  - Oral or rectal
- Vasoconstrictive drugs
  - Midrin
  - DHE – dihydroergotamine
- Triptan drugs
  - Blocks the serotonin receptors for severe sufferers
  - Imitrex, Zomig, Relpax, Axert
- Preventive drugs
  - Beta-blockers, calcium channel blockers, serotonin blockers, antidepressants

Cluster Headaches

- Unknown etiology, but thought to be related to melatonin and cerebral biorhythms
  - Causes clusters of headaches lasting for several days to weeks occurring several times per year
- S & S
  - Occurs behind one eye or over temple usually with pupil constriction, unilateral nasal discharge, and conjunctiva redness
  - One pupil can appear smaller with drooping eyelid
  - Classically starts at night
- Treatment
  - Most care ineffective
  - Imitrex and DHE often used

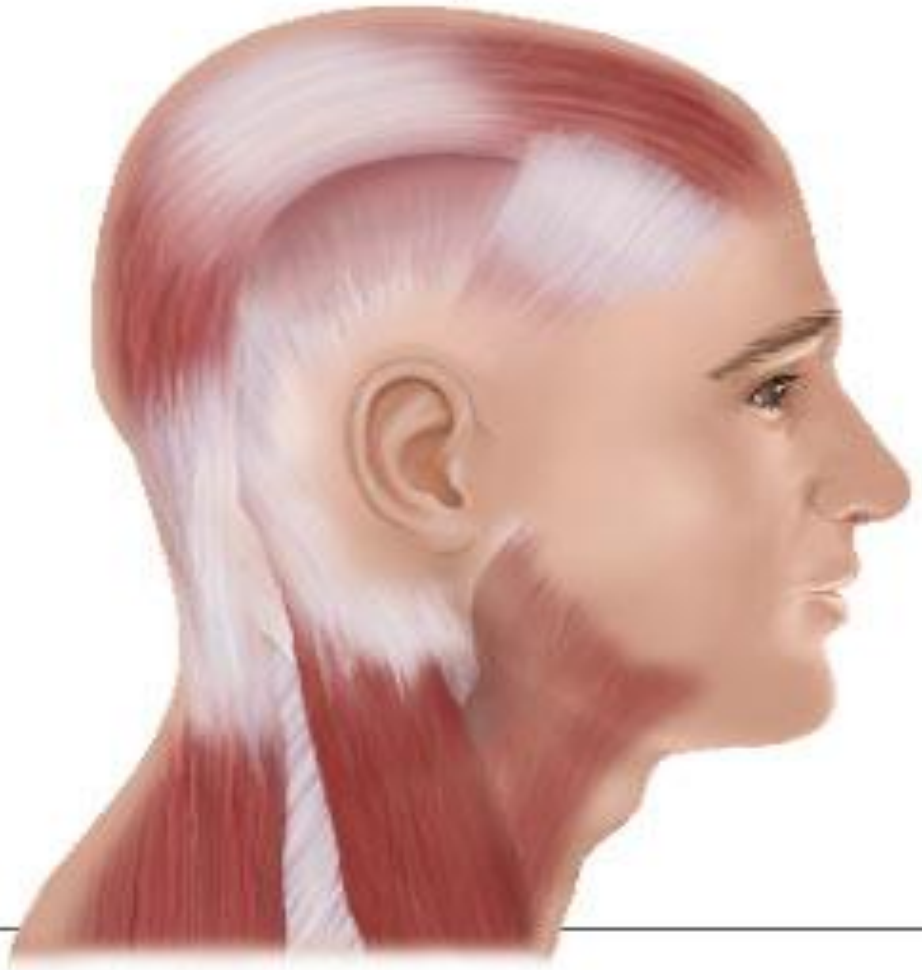
Tension Headaches

- The most common headache
  - AKA benign headache or muscle contraction headache
- S & S
  - Typically starts mid-afternoon
  - Associated with tightness of head and neck muscles
  - Band-like or vise-like pain
- Treatment
  - Efforts to reduce tension and manage stress
  - Develop coping and relaxation strategies
  - Migraine drugs are used
  - Botulism toxin injections are used
    - Must be repeated every three months

Tension Headache Symptoms and Triggers

Tension headaches are most commonly caused by muscle contractions around the neck, scalp and jaw, but many different conditions can trigger tension headache symptoms. Tension headache pain, which is mild to moderate, is generalized, meaning it's not specific to one area and may feel like a tight band is strapped around the head.

Tension Headache Triggers



- Stress
- Depression
- Sexual Activity
- Overexertion
- Muscle Tension
- Poor Posture
- Colds and Flu
- Eye Strain
- Nasal Congestion
- Sinusitis
- Caffeine
- Smoking

Depression Headaches

- S & S
  - Depressed patient often awakens with headache
  - Has other symptoms of depression, such as sleep problems, loss of appetite, feelings of worthlessness
  - Loss of ability to feel pleasure & enjoyment in life
    - Anhedonia
  - Headache symptoms similar to tension headaches
- Treatment
  - Simple analgesics, NSAIDs, depression treatment

Headaches

Sinus:
pain is usually behind the forehead and/or cheekbones

Cluster:
pain is in and around one eye

Tension:
pain is like a band squeezing the head

Migraine:
pain, nausea and visual changes are typical of classic form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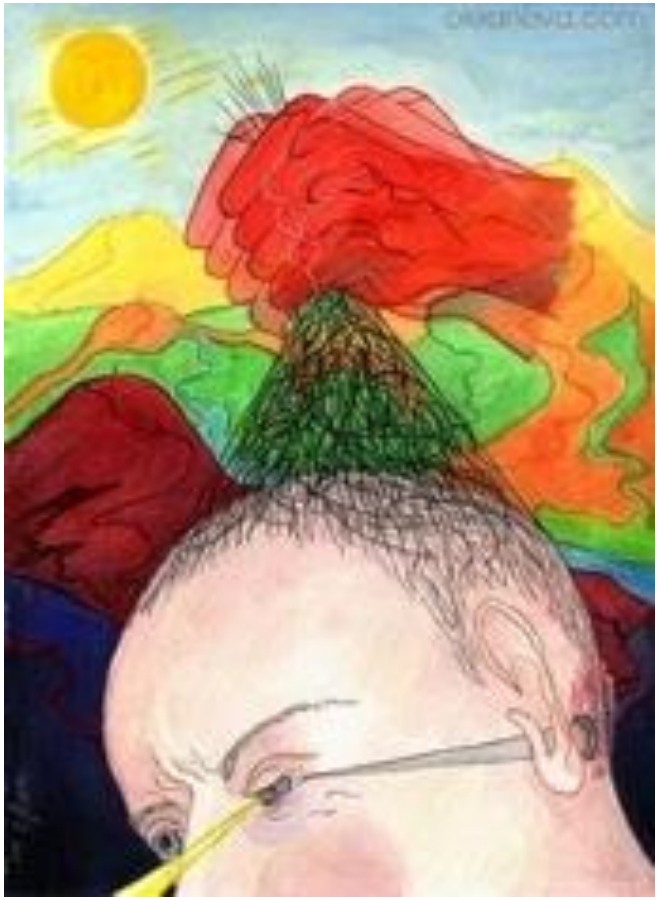


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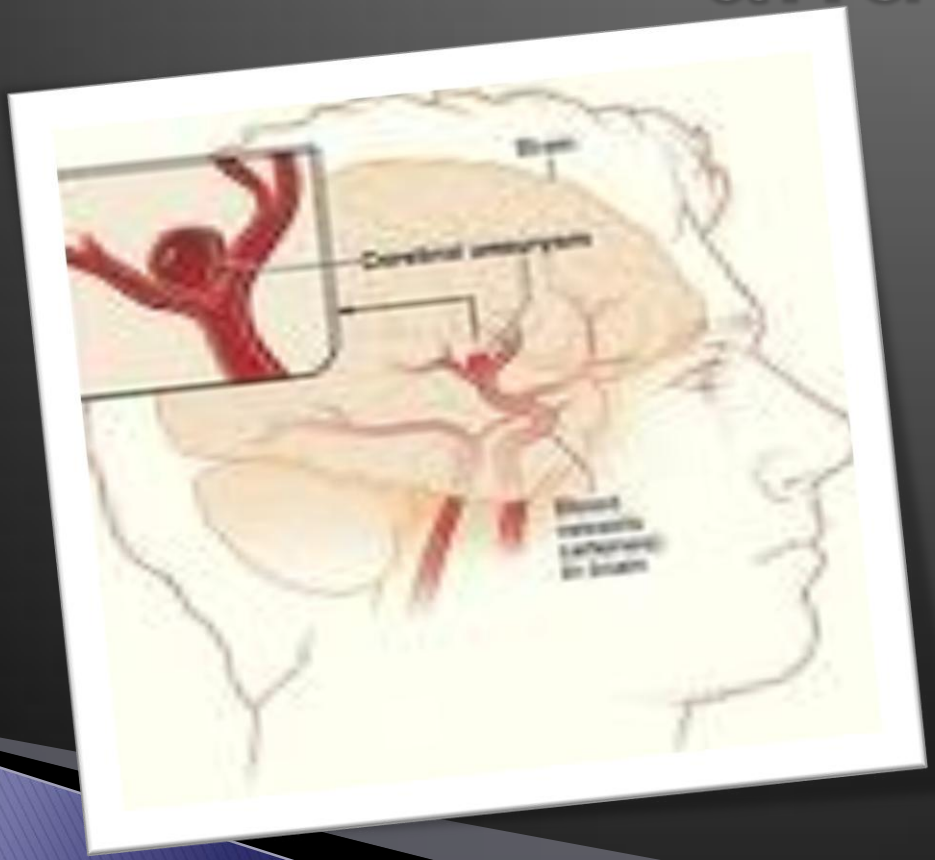
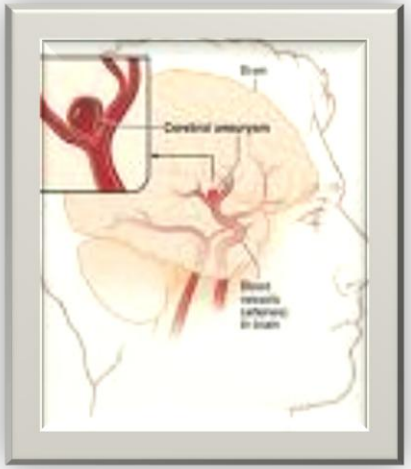
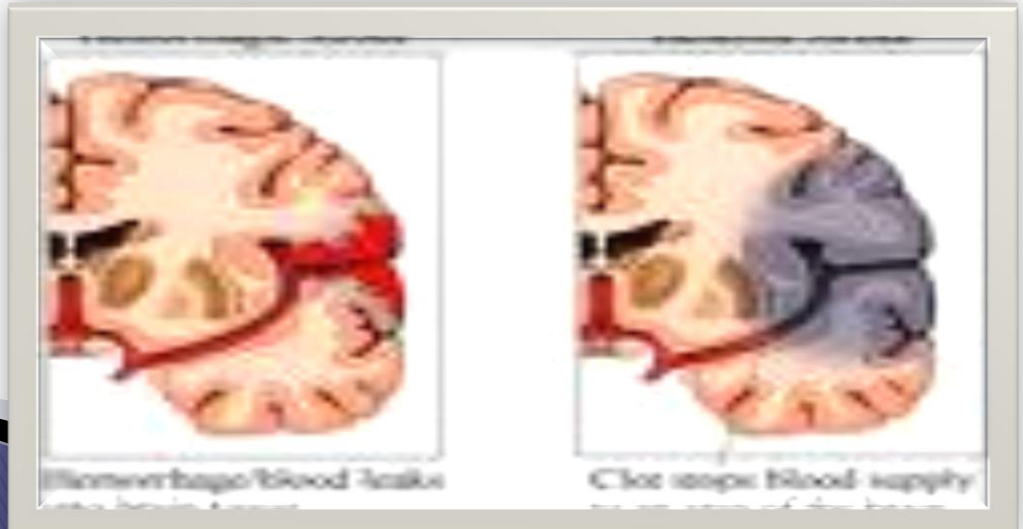
Cerebrovascular Disease and Strokes



Strokes

- 3rd most common cause of death in the USA
- Over 600,000 strokes per year
- 160,000 deaths per year
  - 30% die in acute stage
  - 30% – 40% severely disabled
- Ischemic stroke – 80%
- Hemorrhagic stroke – 20%





Who is at risk?

- Increases with age
- Men more than women
- Oral contraceptive use
- Cigarette smoking
- Obesity
- Genetic predisposition
- Hypertension
- Diabetes mellitus
- Heart disease

Ischemic Strokes

- 80% of strokes
- Occlusion of an artery supplying blood to the brain
- Ischemic CVA will be localized to the area of occlusion
- Two types of ischemic stroke:
  - Thrombus
    - Athersclerosis with occlusion of the carotid artery, vertebral artery or within the brain
  - Embolism from outside the brain
  - Understanding Stroke

Possible Sources of Emboli

- Blood clot from heart
- Platelets & fibrous debri from carotid artery
- Clumps of myoglobin can break from over exerted muscle in extreme sports
- Fat can break off from a large bone fracture
- Nitrogen bubbles may build up in bloodstream from scuba divers who decompress to fast
- Amniotic fluid can get into the blood during childbirth

Hemorrhagic Stroke

- 20% of strokes
- Caused by a rupture in a cerebral artery
- Ruptured artery causes inflammation of brain tissue = increased intracranial pressure = damage to both cerebral hemispheres
- Because of wide spread damage often fatal
- This type of CVA occurs suddenly
- Results from arteriosclerosis or severe hypertension

Varieties of Hemorrhagic Stroke

- Intracerebral bleeding
  - Seen in elderly with high blood pressure and fragile vessels, or in patients with bleeding disorders and those on anticoagulants
- Subarachnoid bleeding
  - Seen in 30-40 year olds and are mostly due to congenital ateriovenous malformations
- Subdural bleeding
  - Often occurs in elderly who fall and strike their head
- Epidural bleeding
  - Usually from a ruptured temporal artery and is usually caused by major head trauma

S & S of Strokes

- The actual precise symptoms depend on *where* the CVA was and *how large* it is
- Sudden weakness, numbness or paralysis of one side of the body
- Loss of consciousness
- Seizure may sometimes occur
- Sudden change in mental status, confusion
- Slurred speech, dysarthria, aphasia
- Prognosis is more guarded if:
  - loss of consciousness
  - if a large part of the left side of the brain is affected
    - This is the dominant side for 95% of people

What to do if you suspect a stroke

- Ask the person to say a complete sentence
- Ask the person to raise both hands above their heads
- Ask the person to walk across the room
  - Walk behind them to catch of unsteady
- If any of the above are present – CALL 911

Preventing Stroke

- Controlling hypertension
- Manage and control diabetes
- Lower blood pressure
- Proper diet and exercise
- Stop smoking
- Anticholesterol drugs if lipids levels high
- 83mg ASA per day
- Any history of TIA
  - Mini-stroke lasting 1-3 minutes with involvement of face and speech
  - Referral to vascular surgeon for carotid arteriography

Mini Strokes (TIAs): Don't Ignore Symptoms, Act FAST

Diagnosis of Strokes

- History is most important
- CT scans present with 95% accuracy
- Lumbar puncture if CT normal
- CT with LP is 100% accurate diagnostically
- MRI are used only if the diagnosis is still uncertain
  - Open MRI is preferred
  - Many patients have died in and older style MRI scanner which is enclosed and takes a long time for the test

Treatment of Strokes

- Ischemic strokes
  - Thrombolytic therapy – rtPA – recombinant tissue plasma activator has revolutionized CVA tx
    - Must be administered within 3 hours
  - Cerebral edema often follows post-stroke
    - Treated with IV steroids
  - Heparin used after the initial three hours
- Hemorrhagic strokes
  - IV sodium nitroprusside to control blood pressure
  - IV Vitamin K and fresh plasma if patient on Coumadin
  - If ruptured aneurysm, then high risk brain stent is used (50/50 chance of surgical)

Dizziness and Vertigo

Three Types of Dizziness

- Vertigo
- Presyncope
- Disequilibrium

Vertigo

- Dysfunction of the inner ear
- False sensation of movement
  - “I feel like the room is spinning.”
- Causes
  - Motion sickness
  - Viral labyrhinthitis
  - Benign positional vertigo
    - Calcified calcium crystals in the semicircular canals
    - Common in the elderly
  - Meniere’s disease
    - Vertigo, tinnitus and hearing loss
  - Rule out auditory nerve tumor
  - TIA

- Vertigo Treatment
  - Depends on identifying the etiology
  - VRT – Vestibular Rehabilitation Therapy
    - PT and OT specialty that minimizes dizziness, improves balance and prevents falls
    - Exercises designed to allow the brain to adapt and compensate for the cause of the vertigo
    - Success dependent on age, cognitive function, motor skills, overall health and physical strength
  - Ear infections treated with antibiotics and myringotomy
  - Antivert, benzodiazepines, clonazepam, antihistamines

- Vertigo S & S
  - Subjective vertigo – “I am moving.”
  - Objective vertigo – “Things around me are moving.”
- Vertigo Diagnosis
  - DD asap to r/o CVA, tumor, hemorrhage, etc
  - Questions:
    - What triggers the vertigo?
    - What other symptoms occur?
    - How long does the dizziness last?
    - What improves and worsens the dizziness?
  - Physical exam and neurological exam
  - CT & MRI
  - ENG – electronystagmography – evaluates vestibular system

Presyncope

- Feeling of lightheadedness
  - “I feel like I am going to faint.”
- Causes
  - PAT – Paroxysmal atrial tachycardia (160-200bpm)
  - Coronary artery insufficiency
  - Cardiac valve disease
  - Blood pressure medications
  - Vertebrobasilar artery insufficiency
  - Hyperventilation syndrome
- S & S
  - Lightheadedness or giddiness
  - Pallor, visual blurring, sweating, dyspnea
  - Possible bitten tongue (associated with seizure)

Diagnosis by History

- History of any predisposing conditions
  - Family history of sudden cardiac death
  - Diabetes mellitus or hypoglycemia
  - Parkinson's disease
  - Seizure disorder
- Preceding or provocative events
  - Prolonged standing (vasovagal syncope)
  - Immediately on standing (orthostatic HTN)
  - With exertion (CAD, cardiomyopathy, valve stenosis)
  - After athletic exertion (vasovagal syncope)
  - After Valsalva manuever
  - Neck rotation or pressure
  - Stressful event (vasovagal syncope)
  - Use of arms (subclavian steal syndrome)

- History and symptoms during an event:
  - Nausea, chills & sweats (vasovagal syncope)
  - Aura (migraine, seizure disorder)
  - Slumping (CAD, arrthymia)
  - Kneeling (orthostatic HTN)
  - Loss of consciousness
    - Brief (arrhythmia)
    - > 5 minutes (neurological, metabolic, infectious)
  - Chest pain (CAD, PE, aortic dissection)
  - Incontinence urine or stool (seizure)
  - Tonic-clonic movements
    - Movements occur before the fall (seizure disorder)
    - Movement occur after the fall (vasovagal syncope)

Labs & Diagnostic Testing

- Serum electrolytes and glucose
- Hemoglobin or hematocrit
- ECG and chest x-ray
- BNP – brain natriuretic peptide
- Other tests to consider
  - Cardiac stress testing
  - Holter monitor
  - Echocardiogram
  - Inpatient telemetry monitoring

Treatment of Presyncope

- Treat cause
- Treatment may only be education & support
- Instruct regarding postural hypertension and dehydration
- Anticholinergic medication
- Alpha-adrenergic agents
- Always consider these three re: presyncope
  - Frequency – alters the quality of life
  - Recurrent & unpredictable and exposes patients to high risk of trauma
  - Can occur during high risk activity (driving, flying, athletics, machine operation)

Disequilibruim

- Due to dysfunction of balance processing
  - “I feel I am going to fall over and hit my head.”
- AKA ataxia
  - 65% of over 60 have on a daily basis
- Causes
  - Inner ear problems
  - Sensory disorders
  - Joint and muscle problems
  - Medications

Vertigo

- S & S
  - Loss of balance or feelings of unsteadiness
- Diagnosis
  - Careful history, physical and neurological exam
  - This is the most serious form of vertigo and should be immediately referred to a neurologist
- Treatment
  - Balance therapy
  - Stress management
  - Relaxation
  - Rehabilitation

Parkinson's Disease

- Degenerative disorder of the basal ganglia
  - Usually in men over 50
  - One million cases in USA
- S & S
  - Four classic symptoms:
    - Resting muscle tremor
    - Slowness of voluntary movement – bradykinesia
    - Impaired postural reflexes – simian posture
    - Inability to maintain balance when being shoved or bumped
  - Other symptoms:
    - Increased muscle tone or rigidity
    - Small “steppage” gaits
    - Frozen facial expression – “masked face”
    - Handwriting changes – micrographia

- Diagnosis
  - No classic diagnostic tests or lab studies
- Treatment
  - Dopamine is used for the first five years
  - Anticholinergic drugs, MAO inhibitors, Symmetryl
  - The meds do not stop the progression, they only provide symptomatic relief
  - Surgical treatment is currently experimental
    - Implanting cadaver or fetal basal ganglion cells
    - Progress and Promise in Parkinson's Disease

Dementia

Dementia – 4 "A's"

- Diagnosis of Alzheimer's with DSM IV Criteria
  - Memory impairment – Amnesia
  - One or more of the following
    - Aphasia (loss of word-finding)
    - Apraxia (problems dressing)
    - Agnosia (can't recognize faces)
    - Disturbance in executive functioning
      - Ability to see the big picture
      - Ability to "see the forest for the trees"
      - They get lost and cannot get unlost

Delirium

- #1 Psychiatric condition in hospitals
- Commonly caused by medications and UTI
- Acute confused state
- Changing level of consciousness / poor attention
- Can be very subtle
- Waxing and waning throughout the day
- Disturbed sleep and awake cycle
- Labile mood (tearful to giddy)
- Frequent hallucination (visual) and dulusions
- Urination in trash can

3 Most Common Deliriums in AD

- “My spouse is having and affair”
- “Someone is stealing from me”
- “I don’t know who this person is”

Diagnosis

- Must rule out other conditions
- History based diagnosis
- MRI
- EEG
- LP
- Blood tests
- The only final diagnosis of Alzheimer's is made postmortem at autopsy

5 Areas of Treatment

- Family and community resources
- Advocacy
  - Advance directives, living wills, trusts, power of attorney, and guardianship issue
- Meds
- Behavior management
  - Agitation syndromes often occur
- Rehabilitation
  - Generally not effective

Myasthenia Gravis
ALS and MS

MG – Myasthenia Gravis

- Progressive weakness, an autoimmune disease leading to dysfunction of neuromuscular junction
- Antibodies attack the acetylcholine receptors of the motor end plate of the muscles
- Results in LMN dysfunction with progressive weakness
- More common in women
- S & S
  - Early symptoms related to the eyes, eyelids and eye muscles
  - Weak hand grip
  - Arm and leg weakness
  - Difficulty speaking and swallowing
- Diagnosis
  - History and exam, EMG, blood tests
- Treatment
  - Prednisone, acetylcholine meds

MS – Multiple Sclerosis

- Inflammatory disease of the CNS
- 400,000 cases in the USA
- S & S
  - Early signs
    - Disturbance of balance and gait
    - Visual loss and double vision
  - Latter signs
    - Shaking and worsening balance problems
    - Inability to concentrate
    - Emotional lability (weeping, laughing), depression
    - Severe fatigue, muscle weakness, spasticity, hyper-reflexia
    - Intention tremor
    - Urinary urgency/incontinence
    - Loss of eye muscle coordination
    - Short term memory loss
    - Facial pain

- Diagnosis of MS
  - Suggestive history with onset of numbness, imbalance and visual problems
  - MRI is accurate 95%
  - LP only with uncertain MRI findings
- Treatment
  - Symptom management
    - Deal with muscle spasticity with water therapy, stretching exercises, yoga
    - Antispasmodic agents
    - Antiepileptic agents – Dilantin
    - Narcotics for pain
    - Anti-depressants
  - Modify the course of the disease
    - Beta-inteferon injections, steroids
      - Multiple Sclerosis Breakthrough

ALS – Amyotrophic Lateral Sclerosis

- Degenerative disease of UMN & LMN lesions
- Unknown cause autoimmune disorder
- Usually fatal in 1-2 years
- S & S
  - Weakness of hands, loss of grip, tripping, falling
  - Disease begins distally and works proximally
  - No sensation loss, no pain, no mental loss
  - Difficulty speaking and swallowing, drooling
  - Death in 1-3 years from respiratory failure
- Diagnosis
  - History and muscle biopsy

ALS Lou Gehrig's Disease

Neurological Complications of Alcohol Abuse

»

Two Levels of Severity

- Problem drinking
  - Repetitive use of alcohol to deal with anxiety or problems rather than social engagement
  - 1/3 of adults are problem drinkers
- Alcohol addiction
  - Physiological dependence
  - Withdrawal symptoms if intake is interrupted
  - Addiction includes the development of tolerance
  - Powerful compulsion to drink, even with strong criticism and life disruptions
  - 10% of adults are alcohol abusers
    - This 10% drink half of all the alcohol consumed

Signs & Symptoms

- Drowsiness or lack of alertness
- Altered sense of awareness
- Impaired judgment
- Loss of inhibition
- Psychomotor dysfunction
  - Pulling hair or repetitive movements
- Dysarthria
- Ataxia with nystagmus
- Nausea and vomiting
- Eventual prostration

Health Benefits of Light Alcohol Consumption

- Protection against atherosclerosis
  - Kaiser Permanente study
  - Framingham Study
  - Albany Study
- Protection against cognitive defects
  - Ruitenberg Study
- How much is best for health benefits?
  - 1.5 drinks per day for men
    - 1 serving= 5-6 ounces wine or
      12 ounces beer or 1.5 ounces hard liquor

How much alcohol must be consumed to produce neurological effects?

- Blood level averages for a 155# adult:
  - One ounce = one glass wine, 12 oz beer, 1 shot
  - One ounce causes no problems
  - Two ounces causes slight motor dysfunction and impaired judgment
  - Six ounces causes frank intoxication
  - 12-13 ounces or more can cause death
- For a 110# adult:
  - One half to two third of the above will cause the same effect

Neurological complications

- Auditory hallucinations
- Paranoid psychosis
- Chronic alcohol brain syndrome (Korsakoff's)
  - Emotional instability
  - Erratic behavior
  - Errors in memory recall
- Chronic malabsorption of B vitamin (thiamine)
  - Cerebellar degeneration
  - Peripheral neuropathy
  - Opthmoplegia (paralysis of Cranial Nerve VI)

Dx with CAGE Questionaire

- Have you ever felt you should **Cut** down on your drinking?
- Have people **Annoyed** you by criticizing your drinking?
- Have you ever felt bad or **Guilty** about your drinking?
- Have you ever had a drink first thing in the morning to steady your nerves or to get rid of a hangover **(Eye opener)?**
  - Scoring – Item responses on the CAGE are scored 0 or 1, with a higher score an indication of alcohol problems
  - >2 or greater is considered clinically significant.

Primary vs. Secondary Alcholism

- Primary alcoholism
  - No other major psychiatric diagnosis
- Secondary alcohol abuse
  - Associated with major underlying psychopathology
    - Schizophrenia
    - Depression

Withdrawal

- Begins 8-24 hours after the last drink
- Causes the opposite effects of alcohol
  - Extreme anxiety
  - Sleeplessness
  - Terrifying nightmares & hallucinations
  - Confusion
  - Hypertension & tachycardia
  - Generalized tremor
  - Sweating and fever
  - Seizures
  - Potential death if withdrawal is severe

Treatment

- Overcome the patient's denial
- Family confrontation and intervention
- Psychotherapy
- Antabuse
- There are over 100 approaches to therapy
  - Acceptance of a severity of the problem
  - Self-validation
  - Realization of the need for others
  - Self-control training
  - Building a coping mechanism repertoire

Sleep Disorders

Two Types of Sleep

- Non REM Sleep
  - Stage 1 – easily aroused
  - Stage 2 – slightly deeper sleep
  - Stage 3 – more difficult to arouse
  - Stage 4 – difficult to arouse, low BP, respiration, heart rate
- REM Sleep
  - Rapid eye movement sleep – restorative sleep
- Sleep cycle
  - It takes about 90 minutes to cycle through the above
  - The cycle repeats 5-6 times per evening

Insomnia

- 50% of all adults have occasional insomnia
- 10% have chronic insomnia
- Situational causes of insomnia
  - Irregular schedules – circadian sleep disorder
  - Anxiety and stress
  - Consumption of heavy alcohol or food in evening
  - Food allergies
  - Depression
  - Somatic complaints such as headache, back pain

Intrinsic Causes of Insomnia

- Sleep onset delay
  - A conditioned response
  - Being “wired” – worried about not sleeping
- Idiopathic insomnia
  - No identifiable cause
- Restless leg syndrome
- Psychophysiological insomnia
  - Depression
  - Anxiety
  - Bi-polar

Treatment of Insomnia

- Bright light therapy
- OTC hypnotics
  - Anti-histamines
- Prescription medications
  - Ambien, phenobarbital
- Melatonin
- Sleep hygiene
  - Constitent sleep routine and bedtime rituals

- Hypersomnia
  - An increase by 25% of normal sleeping time
  - Seen in clinical depression, encephalitis, tumor
- Narcolepsy
  - Experiences recurring, uncontrollable sleep episodes in the waking hours
  - Several episodes per day lasting 30-60 minutes

Seizure Disorders

- Incidence of seizures
  - 2% of population have at least once
  - <1% have recurrent seizures
  - Half are idiopathic causes – unknown etiology
  - Half may be caused by
    - Birth trauma
    - Brain infections
    - CNS toxins
    - Brain tumors
    - Head Injuries
    - Strokes
    - Reaction to inoculations
    - Alcoholism
    - Genetic – phenylketonuria

Types of Seizues

- Febrile
  - Occurs under two-years-old
  - Associated with URI and fever > 105degree
- Simple partial seizures
  - Person is aware of what is happening
  - Usually sensory symptoms (auditory, visual, smells)
- Complex partial seizures
  - Called psychomotor epilepsy
  - Begins with an aura (visual, smells)
  - Altered consciousness with staring and stupor
  - Moving arms in purposeless ways

- Absence seizure – petit mal seizure
  - Usually in children aged 5-15
  - Momentary lapse kind of seizure
  - Staring, facial twitching, and loss of consciousness
  - Child is unaware that anything has occurred
- Myoclonic seizures
  - Brief, fast involuntary jerks
  - Patient is aware of it but cannot control
- Atonic seizures
  - Called “drop attacks”
  - In children with temporary loss of consciousness
- Grand mal tonic-clonic seizures
  - Classic full scale epileptic seizures
  - Loss of consciousness with seizures for 1-2 minutes
  - Awakens with no memory of the event
    - 10 Truths About Epilepsy

Diagnosis & Treatment of Seizures

- Diagnosis
  - Diagnosis is obvious from the history
  - Must have a verifiable eye witness account
  - Abnormal EEG shows areas (foci) of discharge

- Treatment
  - Anti-seizure meds for idiopathic seizures
    - Dilatin, phenobarbital, prinidone, carbamazepine
  - Surgery is sometimes used for focal lesion, such as brain tumor, abscess or vascular compression
  - Valium and IV thiamine for alcoholic seizures

Neurology Acute Red Flags

Immediate Referral

- Severe headaches
- S & S of stroke
- Any rapidly progressive neurological symptoms
  - Weakness, numbness, speaking problems, balance troubles, thought problems, altered consciousness
- Loss or change of consciousness
- Acute vertigo or episodes of presyncope
- Signs of alcoholic withdrawal
- Seizures, not previously diagnosed or treated

Neurology Subacute Red Flags

Referral within a few days

- S & S of Dementia or Alzheimer's
- Any patient with neurological symptoms not yet worked up, that is not emergent
- Any new tremor, with or without symptoms of Parkinson's disease
- Tourette's syndrome
- Alcoholic dementia
- Behavioral abnormalities for that person
- Sleep disorders