Geriatrics & Gerontology
Section 12

Geriatrics & Gerontology

- Geriatrics – branch of medicine that treats health problems associated with ageing
- Gerontology – study of ageing from several viewpoints, including biology, genetics, psychology, sociology, anthropology, philosophy, history and religion
- Gerontophilia – the attraction to older people and the desire to work with them
- Gerontophobia – being repelled by older people and trying to avoid them
- The Fourteen I's of Geriatrics
- Instability and falls
    - Degenerative changes in the balance centers of the brain with increased weakness of muscles and stiffness of joints leads to ambulatory instability
    - 1/3 of those over 65 living at home have at least one major fall a year (they are injured)
    - 50% who are hospitalized will die within one year after a bad fall

- Instability – continued
    - Types of injuries sustained in falls
        - Painful soft tissue injuries, fractures, subdural hematomas
    - Causes of falls in the elderly
        - Accidents, fainting, drop attacks, dizziness, orthostatic hypotension, drug-induced, acute illness, cardiac arrhythmias, idiopathic

- Immobility
    - Weakness and stiffness may lead to decreasing activity, which is a cycle leading to more weakness and stiffness
    - Causes of immobility
        - Orthopedic causes, neurological disorders, cardiovascular disorders, pulmonary disease, deconditioning after prolonged best rest, malnutrition, severe illness, depression and drugs

- Immobility – continued
    - Complications of immobility
        - Treatment goal is to reverse immobility and ambulate the person
        - Pressure sores, muscle weakness and atrophy, joint contractions, cardiovascular de-conditioning, deep vein thrombosis, respiratory problems, constipation

- Intellectual impairment
    - Alzheimer's disease, multi-infarct dementia, and mental problems of Parkinson's lead to this

- Impairment of vision & hearing
    - Decreases visual acuity
        - More near-sightedness, macular degeneration, diabetic retinopathy and glaucoma
    - Presbycusis
        - Decreased ability to hear background noises (presbyascusis)

- Incontinence
    - 33% of women over 65 and 20% of men over 65 have some urinary incontinence
    - 15% wear protective pads
    - 60-80% in LTCF have incontinence
    - Types of urinary incontinence
        - SUI – Stress urinary incontinence
            - "I laughed so hard I peed my pants."
            - Due to stretching and weakness of pelvic floor muscles
            - Treated with Kegal exercises

    - Urge incontinence
        - Leakage of urine due to inability to delay voiding after bladder fullness sensation
        - Seen in UTI and CNS disorders
        - Treatment with bladder relaxants, anti-cholinergics, and sometimes estrogen
    - Overflow incontinence
        - Mechanical forces due to overextended bladder that does not void properly
        - Bladder fills up and overflows without sensation and then spills
        - Due to fluid overload from diuretics or CNS
        - Treat with surgery removal of obstruction

    - Functional incontinence
        - Often due to impairment of cognitive function
        - Can be the result of certain drugs
        - Treat with environmental improvements and behavioral interventions
    - Drugs that cause incontinence
        - Diuretics
        - Anticholinergics
        - Narcotics
        - Psychotropic drugs
        - Alpha and beta blockers and adrenergics
        - Calcium channel blockers
        - Caffeine and alcohol

    - Fecal incontinence
        - Rare, but still commonly occurs
        - Fecal impaction is the most common cause
        - May also be due to laxative overuse, stroke, neurological disorders, dementia, delirium, colorectal disorders, diabetic neuropathy, rectal sphincter damage
        - Treated with stool softeners, lubricants, bulk forming agents, osmotic cathartics, stimulants, suppositories, enemaa

- Irritable bowel syndrome
    - Cramping, flatulence, diarrhea and constipation
- Isolation, with possible depression
    - Isolation of the elderly is common in the western culture
- Inanition
    - Malnutrition due to improper eating
- Impecunity – lack of financial resources
    - Being financially strapped as a retired person living only on social security
- Iatrogenesis
    - Elderly are vulnerable target for treating errors

- Insomnia
    - Elderly sleep less and do not get enough restorative sleep
- Immune deficiency
    - Leads to increased infections and cancer rates
- Impotence
    - Due to falling testosterone levels
- Improperly labeling of the elderly
    - Disoriented older patients in a hospital or nursing home cane be mislabeled as demented when they are mentally competent but are confused as to their environment
- Biological aging
- Throughout the body
    - Decreased height, weight, water content and increased fat to lean-body ration
- Skin
    - Increased wrinkling, atrophy of sweat glands
- Cardiovascular system
    - Tortuosity , thickening & fibrosis of arteries
    - Sclerosis of heart valve
    - Decreased cardiac output, heart rate, elasticity and compliance of arteries and veins

- Kidneys

    - Interstitial fibrosis, decreased renal blood flow, creatinine clearance, urine output
- Lungs
    - Decreased lung elasticity and activity of mucociliary escaltor of bronchial passages
- Gastrointestinal tract
    - Slower intestinal motility, decreased taste buds and hydrochloric acid secretions
- Skeleton
    - Osteoarthritis and osteoporosis

- Eyes
    - Decreased pupil widening, visual acuity, depth perception and color perception
    - Arcus senilis, growth and thickening of lens, less accommodation, myopia, hyperopia
- Ears
    - Ear ossicle hardening, atrophy of auditory meatus, decreased perception of high frequencies, decreased pitch discrimination
- Immune system
    - Decreased T cell activity

- Endocrine system
    - Decreased T3 and testosterone
    - Increased insulin, norepinephrine, vasopressin, parathormone
- Nervous system
    - Decreased brain weight, cortical cell count, short-term memory, fluid intelligence activity, selective attention, sleep time per night, REM sleep
    - Increased motor response time
    - No change in long-term memory, sustained attention or implicit memory
- Geriatrics demography
- Why are there increased elderly today?
    - Improvements in social living conditions
    - Advances in medical science and improved survival rates
    - The birth rate
        - Current lower birth rates combined with the baby boomers entering retirement

- Cost of caring for the elderly
    - Annual per capita cost of medical treatment over 65 is $5947, 45-64 years is $3226, 18-44 years is $1666
    - The out-of-pocket medical expenses of the elderly is about 25% of their total cash income
    - 80% of those over 65 have one chronic condition that could lead to early death

- Cost for caring for those over 65 is 5X what it costs to care for those under 65
- Only 25% of the elderly considered their health as good

- Causes of death in the elderly
  - More people died in 1900 as a result of infections
  - More died in 2000 as a result of lifestyle and behavior changes
    - Smoking, alcohol abuse, high-fat diet, obesity, lack of exercise, street drugs, misuse of prescription drugs, high-risk sexual behavior
  - 60% of those over 65 die of heart, cancer, stroke
    - 80% of all death from heart disease of the entire population are over 65
  - The potential from death from strokes triple every decade after 60 years of age

- Percentage of the elderly who are disabled
  - 6.4 million disabled over 65 in 1982
  - 7.0 million disabled over 65 in 1999
    - This figure was projected to rise to 9.3 million by this time, but did not
  - Reasons for lowered statistics than expected
    - Coronary artery stents and bypass, increased hip and knee replacements and increased usage of CAM
  - 2004 survey of those over 85 found that 55-60% still lived independently and took care of themselves

- How is disability evaluated in the elderly?
  - ADL
    - Activities of daily living
    - Ability to perform their own basic care
      - Eating, restroom, bathing, dressing, transferring, walking
  - IADL
    - Instrumental activities of daily living
    - Ability to live independently
      - Shop, manage finances, use phone, cooking, get around the community alone

- End of Life Issues
- Ethical dilemmas
  - There are numerous ethical dilemmas with the elderly and end of life situations
  - Withdrawing or withholding treatment
  - Treatment more disruptive than the disease
  - Ability to die with dignity
  - When to resuscitate?
    - After choking?

        - After cardiac or respiratory arrest?
    - What about tube feeding

- Management dilemmas
    - When should they be admitted?
    - Should they be allowed to stay at home?
    - If admitted, when are they discharged?
    - What about nursing homes or LTCF?
    - When should they be sent home, knowing they will not get the same level of care?
    - What about lethal cancer treatment more dangerous then the disease?
    - What about risky surgeries?

- Definitions around end of life
    - Autonomy – inherent right to control your own destiny and exercise your own will
    - Beneficence – inherent obligation to do good
    - Non-maleficence – obligation that we have at all times to avoid harming others
        - "first do no harm"
    - Justice – duty to treat everyone fairly
    - Fidelity – duty to keep our promises
    - Competence – ability to act reasonably and thoughtfully

- Issues concerning autonomy
    - Is the patient capable of understanding the issues involved?
    - Has the patient received all the information?
    - Have they received other options?
    - What if the family wants something different then the patient?
    - How much right does the competent elderly have to choose their treatment choices?
    - How do you deal with a demented patient?
    - Can you assume they are capable of understanding what they are being told?

- Advanced directives
    - They address how someone would wish to be cared for in a hypothetical situation
    - Two forms
        - Living will
            - A detailed list of "dos" and "do not's"
            - DNR
        - Durable power of attorney
            - A person has been chosen to act as a proxy in the event the patient cannot communicate

- End of life care
  - Always name one person who will be the decision maker
  - Keep patient groomed and clean
  - Listen to patient and family
  - Control the patient's pain and shortness of breath
  - Preserve the patient's dignity
  - Touch and talk to the patient often
  - Have the patient's financial affairs in order
  - Try to maintain a good sense of humor
  - Let the patient say goodbye to everyone

- End of life care – continued
  - Have the presence of close family members and friends
  - Only have caregivers who are experienced in matters of death and dying
  - Remember the patient's life and accomplishments
  - Prepare the family in advance for what will happen when the patient dies
  - Calmly prepare the patient
  - DO NOT LET THE PATIENT DIE ALONE

- Disorientation in the elderly
- Disorientation – the patient is confused, perplexed, bewildered and unable to fit into the environment
- Usually resolves when they person is returned to a familiar environment
- Confusion is a common problem
- It is easy to mislabel an elderly patient as delirious or demented, when they are only confused
- Delirium in the elderly
- A disturbance of consciousness, person is less alert and less well-oriented
  - In dementia, the patient is alert
- Precipitating factors for delirium
  - Old age (common over 80), more in males,
  - Infections, malnutrition, use of restraints, bladder catheters
  - Taking > 3 medications, use of neuroleptic drugs (induces mental changes) or narcotics

- Common causes of delirium
  - Metabolic disorders, infections, decreased cardiac output, stokes, drugs, intoxications, hypothermia or hyperthermia, acute psychosis, fecal impaction or urinary retention
- Western treatment of delirium
  - Make correct diagnosis always being alert of the big three – low or high glucose, low oxygen, low sodium
  - Ask " Is this patient a diabetic or a respiratory disease patient?"

    - Ask “Is this patient on any drugs that could cause this?”
- Dementia
- Sustained loss of intellectual function and memory sufficient to cause a change of daily living
- Over 47% over 85 have some form of dementia
- Over 80% in nursing homes have some form of dementia
- 20% are potentially reversible
- 80% are nonreversible

- Causes of potentially reversible dementia
    - Neoplasms, metabolic disorders, trauma, toxins, infections, drugs, depression, hydrocephalus, autoimmune disorders
- Causes of nonreversible dementia
    - Alzheimer’s, multi-infract dementia, strokes, Parkinson’s, extensive head trauma, AIDS, dementia pugilistica (boxer’s dementia)

- S & S of dementia
    - Difficulty learning and retaining new information
    - Difficulty handling complex tasks
    - Loss of reasoning ability
    - Cannot solve problems
    - Loss of spatial orientations
        - Trouble driving, gets lost easily
    - Loss of language skills
    - Change of behavior

- Diagnosis
    - History from patient and family
    - Neuropsychological testing
    - Lab testing, brain CT or MRI
- Western treatment of dementia
    - Treat any underlying medical condition
    - Improve the environment
    - Caregivers must watch for the onset of depression
- Ten Factors Associated with Longevity
    - Exercise
    - Nonsmoker
    - No alcohol abuse
    - In a long term stable environment
    - Have at least one good friend a week
    - Good oral hygiene
    - Manage stress well
    - Both parents lived to over 70
    - Controlled blood pressure
    - Have a dog
- Geriatrics Red Flags

- Acute red flags
    - Delirium and history of recent falls or instability
- Sub-acute red flags
    - Pressure sores, postural hypertension, joint contraction, sensory impairment, neurological symptoms, infections, anemia, depression, dementia, urinary incontinence, atelectasis, thrombophlebitis, hypostatic pneumonia