General Principle on Elderly Health Care

Ageing

- Ageing can be defined as a progressive accumulation through life of random molecular defects that build up within tissues and cells.
- Eventually despite multiple repair and maintenance mechanism, these result in age-related functional impairment of tissues and organs.
- Many genes probably contribute to ageing, with those that determine durability and maintenance of somatic cell lines particularly important.

- However genetic factors only account for around 25% of variance in human lifespan, nutritional and environmental factors determine the rest.

- A major contribution to random molecular damage is made by reactive oxygen species produced during the metabolism of oxygen to produce cellular energy.
- These cause oxidative damage at a number of sites:
  - nuclear chromosomal DNA
  - Telomeres
  - mitochondrial DNA
  - Proteins

Content

- Comprehensive geriatric assessment
- Frailty
- Decision about investigation
- Presenting problems in geriatric medicine
- Rehabilitation

history

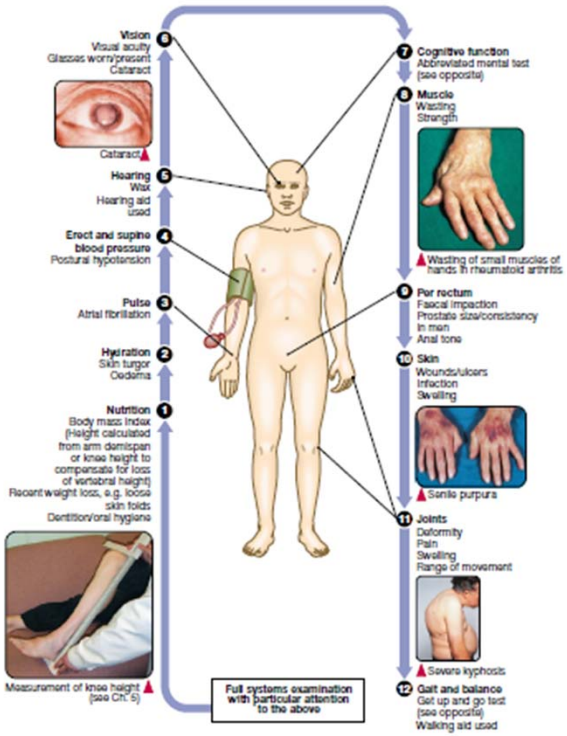
- Slow down the pace
- Hear
- Establish the speed of onset of illness
- If symptoms vague→ systematic enquiry
- Full detail of list of drugs, past medical history
- Confirm information with a relative or carer and the GP particularly if the patient is confused or communication is limited by deafness or speech disturbances

examination

- Thorough to identify all comorbidities:
- Function and ability
- Mental health and cognition
- Support networks and needs

examination

- Nutrition
- Hydration
- Pulse
- Erect and supine BP
- Hearing, eye
- muscle
- Per rectum
- Skin
- Joints
- Gait and balance
- Get up and go test


1 Nutrition
Body mass index
(Height calculated from arm demispan or knee height to compensate for loss of vertebral height)
Recent weight loss, e.g. loose skin folds
Dentition/oral hygiene
Measurement of knee height (see Ch. 5)
2 Hydration
Skin turgor
Oedema
3 Pulse
Atrial fibrillation
4 Erect and supine blood pressure
Postural hypotension
5 Hearing
Wax
Hearing aid used
6 Vision
Visual acuity
Glasses worn/present
Cataract
Cataract
7 Cognitive function
Abbreviated mental test (see opposite)
8 Muscle
Wasting
Strength
Wasting of small muscles of hands in rheumatoid arthritis
9 Per rectum
Faecal impaction
Prostate size/consistency in men
Anal tone
10 Skin
Wounds/ulcers
Infection
Swelling
Senile purpura
11 Joints
Deformity
Pain
Swelling
Range of movement
Severe kyphosis
12 Gait and balance
Get up and go test (see opposite)
Walking aid used
Full systems examination with particular attention to the above

⑫ Get up and go test

To assess balance, ask the patient to stand up from a sitting position, walk 10 m, turn and go back to the chair.

Social assessment

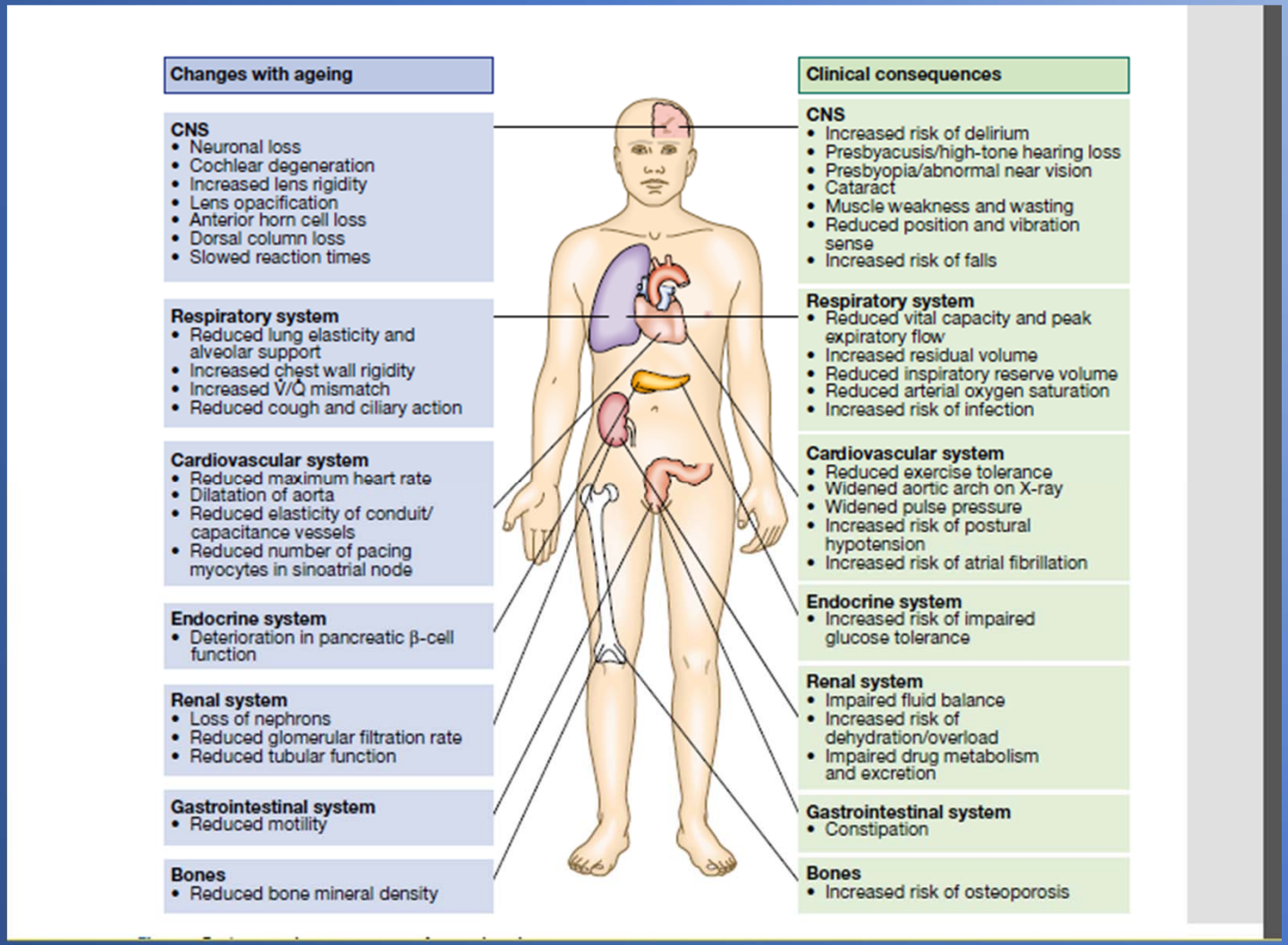
- Home circumstances
- Activities of daily living (ADL)

tasks for which help is needed:

domestic ADL: shopping, cooking, housework

personal ADL: bathing,dressing,walking

Informal and formal help(social service)


Changes with ageing
CNS
• Neuronal loss
• Cochlear degeneration
• Increased lens rigidity
• Lens opacification
• Anterior horn cell loss
• Dorsal column loss
• Slowed reaction times
Respiratory system
• Reduced lung elasticity and alveolar support
• Increased chest wall rigidity
• Increased V̇/Q̇ mismatch
• Reduced cough and ciliary action
Cardiovascular system
• Reduced maximum heart rate
• Dilatation of aorta
• Reduced elasticity of conduit/capacitance vessels
• Reduced number of pacing myocytes in sinoatrial node
Endocrine system
• Deterioration in pancreatic β-cell function
Renal system
• Loss of nephrons
• Reduced glomerular filtration rate
• Reduced tubular function
Gastrointestinal system
• Reduced motility
Bones
• Reduced bone mineral density
Clinical consequences
CNS
• Increased risk of delirium
• Presbyacusis/high-tone hearing loss
• Presbyopia/abnormal near vision
• Cataract
• Muscle weakness and wasting
• Reduced position and vibration sense
• Increased risk of falls
Respiratory system
• Reduced vital capacity and peak expiratory flow
• Increased residual volume
• Reduced inspiratory reserve volume
• Reduced arterial oxygen saturation
• Increased risk of infection
Cardiovascular system
• Reduced exercise tolerance
• Widened aortic arch on X-ray
• Widened pulse pressure
• Increased risk of postural hypotension
• Increased risk of atrial fibrillation
Endocrine system
• Increased risk of impaired glucose tolerance
Renal system
• Impaired fluid balance
• Increased risk of dehydration/overload
• Impaired drug metabolism and excretion
Gastrointestinal system
• Constipation
Bones
• Increased risk of osteoporosis

Frailty

- Defined as the loss of an individual's ability to withstand minor stresses because the reserves in function of several organ systems are so severely reduced
- How to assess?

How to assess a fried Frailty score

- Handgrip strength in bottom 20% of healthy elderly distribution
- Walking speed in bottom 20% of healthy elderly distribution
- Self-reported exhaustion
- Physically inactive
- At least 6Kg weight loss within 1 yr

(Patient is defined as frail if 3 or more factors are present)

Grip cutoff is 30kg for men and 18Kg for women, walk speed 5m time walk 7 sec for both sexes. May vary between population.

Decision about investigation

Ask the question!

- Does the patient have the physical and mental capacity to tolerate the proposed investigation?
- Does he have the aerobic capacity to undergo bronchoscopy?
- Will confusion prevent her from remaining still in the magnetic resonance imaging(MRI) scan? (story about MRI)

Factors influencing to do investigation?

- Would the patient be fit for or benefit from the treatment that would be indicated if investigation proved positive? The presence of comorbidity is more important than age itself in determining this: will the investigation alter the management?
- The views of the patient and family
- Advance directives: living wills

Presenting problems in Geriatric Medicine

- Problem based practice is central
- Most problems are multifactorial and there is rarely a single unifying diagnosis
- All contributing factors have to be taken into account and attention to detail is paramount
- A wide knowledge of adult medicine is required

Features of problems

- May be late
- May be atypical : infection may present with delirium, stroke may present with falls rather tha symptoms of focal weakness
- Myocardial infarction may present as weakness and fatigue, without chest pain or dyspnea
- Perception of pain is altered in old age

- The pyretic response is blunted in old age so that infection may not be obvious at first
- Cognitive impairment may limit the patient's ability to give a history of classical symptoms
- Failure to cope, found on floor, confusion
- May be multiple pathology

Screening investigation for acute illness

- Full blood count
- Urea and electrolytes liver function tests, calcium and glucose
- CXR
- ECG
- CRP: useful marker for occult infection or inflammatory disease
- Blood culture if pyrexial

Falls

- Risk factors for fall:
- Muscle weakness,
- Past h/o fall
- Gait or balance abn
- Use of a walking aid
- Visual impairment
- arthritis

- Impaired activities of daily living
- Depression
- Cognitive impairment
- Age over 80 yrs
- Psychotropic medication

Delirium :predisposing factors

- Old age
- Dementia
- Frailty
- Sensory impairment
- Polypharmacy
- Renal impairment

with an Abbreviated Mental Test (AMT; see p. 165) is performed. Delirium often occurs in patients with are shown in Box 7.10. More than one of the precipitating causes of delirium (Fig. 7.3) is often present.

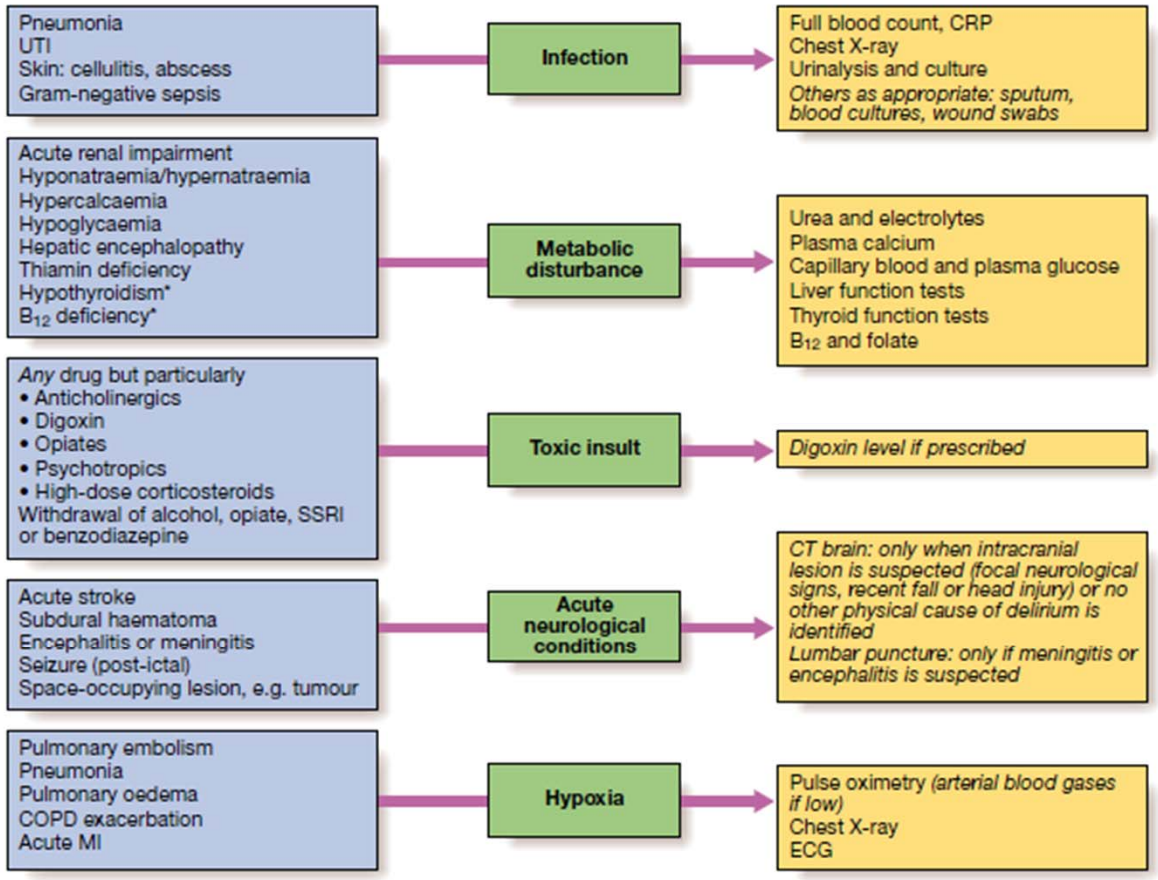


Fig. 7.3 Common causes and investigation of delirium. All investigations are performed routinely, except those in italics.* Tend to present over weeks to months rather than hours to days. (COPD = chronic obstructive pulmonary disease; CRP = C-reactive protein; MI = myocardial infarction; SSRI = selective serotonin re-uptake inhibitor; UTI = urinary tract infection)

Delirium : precipitating factors

- Surgery
- Change of environment of ward
- Sensory deprivation eg darkness or overload eg noise
- Medications eg opioids, psychotropics
- Dehydration
- Pain
- Constipation
- Urinary catherterisation
- Acute urinary retention
- Hypoxia

Adverse drug reaction: poly pharmacy

- Factors leading to polypharmacy in elder age
- Multiple pathology
- Poor patient education
- Lack of routine review of all medication
- Overuse of drug interventions by doc
- Attendance at multiple specialist clinics
- Poor communication between specialists

Other problems

- Undernutrition
- Dementia
- Infection
- Fluid balance problems
- Heart failure
- Hypertension
- Dazziness and blackouts
- AF
- DM
- PU
- Anaemia
- Painful joints
- Bone disease and fracture
- stroke

Rehabilitation

- Assessment: Modified Barthel Index (mobility,stairs, transfers, bladder, bowels, etc)
- Multidisplanary team working

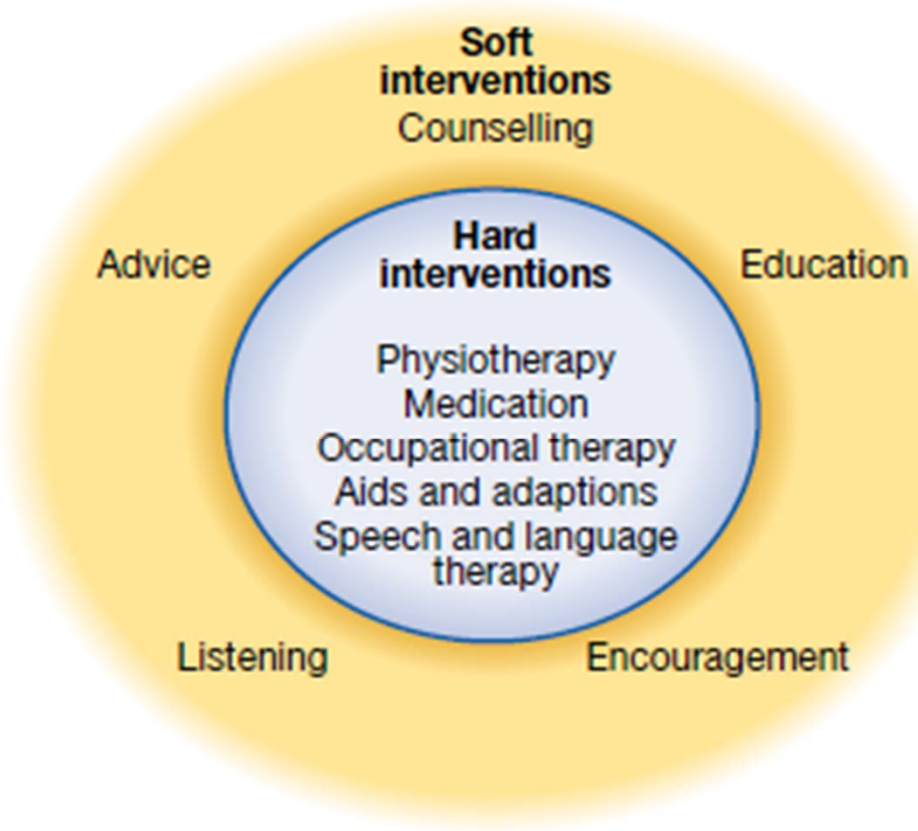


Fig. 7.5 Rehabilitation techniques.