

European Manual of Internal Medicine

GERIATRIC MEDICINE

This chapter was written by:

dr R. G. Smith, United Kingdom
dr Görel Wachtmeister, Sweden
dr P. Schwed, Switzerland

and edited by:

prof. dr S.A. Duursma, the Netherlands

on behalf of the:

Geriatric Medicine Section of the
European Union of Medical Specialists

INDEX

1. introduction
2. atypical presentation of disease
3. drugs and the elderly patient
4. breathlessness
5. cardiac failure
6. atrial fibrillation
7. swollen legs
8. postural hypotension
9. hypertension
10. thromboembolic disease
11. abdominal pain
12. thyroid disorders
13. anorexia and loss of weight
14. dehydration and hyponatraemia
15. malnutrition
16. pressure sores
17. urinary incontinence
18. constipation
19. faecal incontinence
20. diarrhoea
21. depression
22. acute and chronic brain failure:
 - delirium
 - dementia
23. tremor and Parkinson's disease
24. joint pain and stiffness
 - osteoarthritis
 - rheumatoid arthritis
 - polymyalgia
25. falls and instability
26. headache
27. visual problems
28. hearing problems
29. common skin conditions
30. pyrexia
31. osteoporosis
32. references

1. INTRODUCTION

- * Caring for older people has developed as a separate specialty over the years. This has tended to occur because of ageism and inequality in provision of services for the older person compared with younger people, e.g. upper age limit on coronary care units. Older people are entitled to the full services of the health service and in some cases have better outcomes e.g. thrombolysis in myocardial infarction.
- * History taking from the older person can be difficult especially if there is cognitive impairment. Substantiating the history from a relative or carer is often helpful if not mandatory in some instances.
- * For the older person it is important to look at the whole person with care being given to address the medical, social *and* psychological needs of the person. The use of simple assessments for cognitive state and premorbid function is important. The older person will almost certainly have more than one diagnosis and care should be taken not to make the mistake of fitting all signs and symptoms into the one diagnosis.
- * Quality of life may be more important for an older person than quantity. Overtreatment and inappropriate treatment and investigation should be avoided.

2. ATYPICAL PRESENTATION OF DISEASE

- * Disease in old age often presents in a different way, not following the description in medical textbooks e.g. the 'silent' myocardial infarction with no precordial pain or symptoms are dismissed as indigestion by the patient. Ageing changes and multiple drug consumption may also contribute to this altered presentation.
- * Almost any illness in an elderly person may present in a non-specific way with mental confusion, falls, reduced mobility and / or incontinence [12]. It is also common for patients with cognitive impairment to present in a different way.
- * Multiple pathology causes differences in the pattern of illness in older people. Many studies have shown that multiple pathology is the norm rather than the exception. Therefore when dealing with older people illness may present with non-specific symptoms and there may be more than one diagnosis.
- * Hence this chapter covers many of the non-specific presentations which will complement the more system/disease orientated approach of the other chapters.

3. DRUGS AND THE ELDERLY PATIENT

- * Elderly persons are the largest consumers of prescribed drugs. More than three quarters of the over 75 year olds receive prescribed medications with 66% taking one to three drugs and 34% taking four or more.
- * Due to multiple illnesses and complaints, polypharmacy is common among elderly patients, which increases the risk of adverse effects, drug interactions, and poor compliance.
- * Many patients are on long term drugs for heart disease, depression or arthritic complaints, tend to receive repeated prescriptions and may not see their family practitioner for lengthy periods.

pharmacokinetics : the way in which a drug is handled by the body

pharmacodynamics: the effect of a drug on physiological or pathological process, the response to a drug

- * both are significantly affected by ageing

pharmacokinetics : absorption, distribution, metabolism, excretion

- * *absorption* is rarely significantly altered with age, however, drug interaction may lead to alteration in absorption e.g. metoclopramide reduces absorption and anticholinergics increase absorption
- * *distribution* age changes are reduction in body water and increase in body fat; there is a tendency for higher plasma levels and longer plasma half lives for many commonly used drugs; protein binding of drugs is affected in ill patients where there is an reduction in proteins, leading to an increased bio-availability
- * *metabolism* the liver is the key organ; drug interactions and power of induction of liver enzymes are important in elderly patients; with age there is a reduction in hepatocytes, blood flow and enzyme activity, leading to increased bio-availability and reduced first-pass metabolism e.g. β -blockers
- * *excretion* the kidney deals with excretion of most drugs; glomerular filtration rate (GFR) falls by 50% between ages of 20 and 90, as does renal blood flow and a loss of nephrons occurs; serum creatinine is *not* a good indicator of renal function. Creatinine clearance should be calculated; this all leads to a marked reduction in the capacity to excrete drugs

guidance reduce dosage in line with renal and hepatic function or extend interval between doses; monitor plasma concentrations for certain drugs

pharmacodynamics: with age, changes are related to altered receptor or tissue sensitivity; there is increased drug effect on several homeostatic mechanisms such as baroreceptor function e.g. nitrates and antihypertensive drugs

adverse drug reactions (ADR): Studies have shown 16% of elderly patients admitted to hospital are suffering from adverse reactions to drugs at that time. Diuretics, antihypertensive agents, digoxin and psychotropics are commonly associated with ADR. ADR increase significantly with increasing numbers of drugs being taken.

poor compliance: Studies have shown that 75% of elderly people make errors in taking their medication, especially the very elderly, and those with confusion. The more drugs being taken, the more complex the regimen, the greater the chance of poor compliance. Other factors are failing vision, impaired hearing, dementia, failure to understand instructions and unsuitable packaging e.g. blister packs.

guidance:

- * is drug treatment really indicated?
- * make the regimen simple
- * limit if possible to a maximum of 3 drugs, to improve compliance
- * use slow release once daily preparations; excepting diabetes mellitus due to the risk of hypoglycaemia or hypnotics
- * give medication card to patient
- * start with low dose and increase slowly; 'start low, go slow'
- * normally use of liquid and suppository preparations are not always appropriate in the older person
- * withdrawal of drugs, especially psychotropics, should be gradual
- * enquire into the use of 'over the counter' preparations

4. BREATHLESSNESS

Breathlessness in the elderly is seen in a number of medical conditions, not only in cardiac failure. Persistent breathlessness is often explained by the following causes:

cardiac failure: breathlessness may not be a prominent symptom in the elderly; non-specific signs are common: somnolence, confusion, weakness etc.; peripheral oedema is not a reliable sign of heart failure in the elderly; diagnosis is made by physical examination, ECG, chest x-ray, echocardiography

chronic obstructive pulmonary disease: breathlessness is accompanied by cough, increased sputum production and wheezing; hypoxemia occurs eventually; diagnosis is made by spirometric values, changes in FEV1/FVC being the first warning sign

anxiety: generalized anxiety disorder is a common psychiatric problem in later life; it is accompanied by motor tension, autonomic hyperactivity, vigilance and scanning or apprehensive expectation; breathlessness and palpitations are often present

physical inactivity: poor physical activity can cause breathlessness on little exertion

obesity: breathlessness can occur in obesity

5. CARDIAC FAILURE

cardiac failure remains the single most common cause of death in persons over 65 years of age and its incidence continues to increase also beyond that age. Cardiac failure occurs when cardiac output is unable to meet metabolic demands.

age-related changes:

- * increased interstitial fibrosis
- * prolonged myocardial relaxation
- * increased collagen cross-linking

These changes all make the older patient's cardiovascular system more vulnerable to a number of systemic illnesses. Distinguish between systolic and diastolic cardiac failure. Diastolic failure is more common with increasing age and does not always present with cardiomegaly.

exacerbating factors: They include non-compliance with medication regimen, use of NSAID, infection, thyroid diseases, anaemia, hypoxia and hypo- or hypertension.

primary causes of heart disease:

- * ischaemic heart disease, the most common in the elderly
- * diseases of the cardiac valves, degenerative more common than rheumatic
- * arrhythmias, due to degeneration in the conductive tissue

Symptoms and signs are similar in all patients, although the older patient may present with non-specific signs e.g. confusion, fatigue, failure to thrive. Elderly patients may have no history of dyspnoea and the presence of peripheral oedema is not a reliable sign of heart failure.

Acute cardiac failure, resulting from a sudden deterioration of left ventricular function, causes pronounced breathlessness, pulmonary oedema, cyanosis, and peripheral vasoconstriction.

appropriate clinical and laboratory examinations should be performed on all patients, including echocardiography.

treatment: Treatment of cardiac failure should be no different from younger patients (see cardiology). The aim of treatment is to control symptoms and improve quality of life. The condition is managed by correction of aggravating factors such as arrhythmias and hypertension. Patients are advised to maintain an optimal weight, to avoid excessive intake of salt and water and to stop smoking.

- * *diuretics and ACE-inhibitors* are the drugs of choice

- * *digoxin* is particularly useful in patients with tachycardic atrial fibrillation; serum digoxin, renal function and serum potassium have to be monitored carefully.
- * *combination* of newer and more traditional agents will likely have synergistic effects.
- * *ACE-inhibitors, nitrates, hydralazine and diuretics* all appear to be quite effective in the elderly at doses that cause relatively few adverse effects.
- * *β -blockers and angiotensin II receptor antagonists* have recently proved safe in the elderly

6. ATRIAL FIBRILLATION

Atrial fibrillation should never be considered benign. It is the most common and persistent arrhythmia in the elderly and indicates heart disease, particularly ischaemic, hypertensive, valvular or thyrotoxic heart disease. It often occurs with infections.

treatment: treatment is required when atrial fibrillation has a high ventricular response. Consideration of cardioversion is warranted in most elderly patients

- * *digoxin, verapamil or a betablocker*, aiming at a ventricular rate of 60-70 beats/ min at rest
- * *anticoagulant therapy* is indicated because of the increased risk of thromboembolism, aiming for an INR of between 2.0 and 3.0. Hypertension, old age (>80years), a history of dyspepsia, falls and forgetfulness are relative contraindications for anticoagulation. In these cases antiplatelet therapy may be sufficient

7. SWOLLEN LEGS

guidance [6]: *unilateral oedema*, the two urgent diagnoses are deep vein thrombosis and erysipelas
bilateral oedema, the most likely diagnosis is *not* heart failure

unilateral oedema

red unilateral oedema

- * erysipelas; acute onset with raised fever, rigors and development of inflammatory and painful skin rash
- * cellulitis upon venous insufficiency; gradual onset, often without fever; insidiously evolving skin rash
- * painful swollen foot; posttraumatic, postoperative, posthemiplegia, barbiturates use; localised severe pain; no fever

white unilateral oedema

- * lymphoedema; after inguinal lymphatic clearance or radiotherapy with hypertrophic skin sclerosis
- * postphlebotic syndrome; with hypotrophic skin sclerosis and skin discoloration
- * deep vein thrombosis
 - pelvic compression of veins
 - rupture of a popliteal cyst, Baker's cyst

bilateral oedema

- * venous insufficiency is the most common cause
- * drugs may also play an important role particularly:
 - vasodilators, calcium inhibitors and nitrates
 - NSAIDs
 - alpha and beta blockers
 - hormones; oestrogens, progestogens, glucocorticoids, mineralocorticoids
 - lithium and amantadine

- * *right or congestive heart failure*; relatively frequent but more rare than venous insufficiency; as a single symptom bilateral oedema is unlikely to be heart failure. Other symptoms and signs of heart failure have to be present:
 - breathlessness on exertion or even at rest
 - raised jugular venous pressure, accentuated through liver palpation
 - painful hepatomegaly
 - tachycardia and gallop rhythm, additional heart sound
 - lung crepitations
 - radiological signs of cardiomegaly and congestion
- * *hypoalbuminemia*
 - renal
 - hepatic, dysproteinemia
 - nutritional
- * *endocrine pathology*
 - hypothyroidism
 - hypercorticism
- * *chronic urinary retention*
- * *oedematous acute arthritis*

8. POSTURAL HYPOTENSION

Change in posture from lying supine to standing produces large volume shifts and about 700 ml of blood leaves the chest and is rapidly pooled in the venous reservoirs of the abdomen and leg. Pressure in the right atrium falls to or below the intrathoracic pressure and the return of the blood to the right side of the heart is reduced. Stroke volume is decreased and consequently blood pressure falls.

Elderly patients may develop cerebral ischaemia even from a fairly small drop in blood pressure. Cerebral blood flow declines with age and there are several co-existing risk factors e.g. diabetes mellitus, chronic ischaemic heart disease etc.

orthostatic hypotension is defined as a reduction of 20 mm Hg in systolic pressure upon standing upright. It occurs in 15-20% of non-institutionalised elderly persons and is a significant risk factor not only for syncope and falls but also for mortality.

causes:

- * *age-related factors*; a decline in the function of the autonomic nervous system, impairment of the baro-reflex activity, often due to prolonged bed rest, hypovolaemia and hyponatraemia
- * *drugs* with hypotensive actions
- * *central nervous system disorders*; Shy-Drager syndrome, brain stem lesions, Parkinson's disease, Multiple Sclerosis etc
- * *peripheral autonomic neuropathies*; diabetes mellitus, vitamin deficiencies etc

chronic orthostatic hypotension is usually associated with symptoms of autonomic nervous system dysfunction such as fixed heart rate, incontinence, constipation, inability to sweat, heat intolerance, nocturnal polyuria, impotence and fatiguability. As long as the cerebral autoregulation is able to compensate for the fall in arterial pressure, the patient shows no symptoms. When compensatory systems fail the patient complains of weakness, faintness, dizziness and loss of balance.

diagnosis: Blood pressure and pulse rate should be measured after the patient has been recumbent for at least five minutes and after the patient has been standing for one minute and then 3 minutes and 5 minutes.

treatment:

- * correct hypovolaemia
- * head-up tilt at night
- * small frequent meals
- * high salt intake, if hypertension is not present
- * moderate physical exercise
- * avoid: alcohol, sudden head-up postural changes, standing during micturition
- * withdrawal or dose reduction of drugs with hypotensive action.
- * avoidance of pooling of blood by using elastic stockings
- * fludrocortisone acetate, alpha stimulators
- * caffeine: reduces splanchnic blood pooling during digestion, particularly in postprandial hypotension

8. HYPERTENSION

blood pressure in old age:

- * *BP increases with age* - diastolic pressure peaks age 45-50
- systolic pressure peaks age 70-75
- * *BP decreases in the very old* - due to changes in body composition
- altered water and electrolyte balance
- impaired LV function during last years of life

WHO definition for hypertension for the over 65 year old: for a BP greater than 140/90 mm Hg there is no difference between young and old.

- * risk of cardiovascular disease increases with BP at all ages
- * risk of stroke and heart failure is increased in elderly
- * treatment is not without risk; weigh the advantages against the disadvantages
- * first lower the blood pressure by at least 10 to 20 mm Hg for the systolic pressure or a diastolic pressure below 95 mm Hg; the final goal, to reach the WHO limits, should be reached perhaps after some months but not within few days!

The haemodynamic characteristics of elderly hypertensive patients are similar to younger patients, but the total resistance may be higher and the compliance of the large arteries lower.

- * uncomplicated hypertension is a silent disease
- * onset of essential hypertension and malignant hypertension are uncommon in the elderly
- * symptoms suggesting target organ involvement should be specifically sought
- * a detailed drug history is mandatory
- * the diagnosis requires elevated blood pressure readings on at least three measurements
- * consider 24 hour BP monitoring
- * blood pressure must be measured in both arms
- * an auscultatory gap is common in the elderly and may underestimate systolic pressure; avoid this by inflating the blood pressure cuff until the radial pulse is no longer palpable
- * there is often no point of disappearance of the Korotkov sounds, with the point of muffling often the best approximation of diastolic pressure in the elderly
- * blood pressure varies with posture, intake of food and medication

isolated systolic hypertension: systolic blood pressure >160mm Hg is more prevalent than diastolic hypertension in people over 70 years of age and is a sensitive predictor of cardiovascular complications; antihypertensive therapy is recommended to reduce the risk of stroke, renal failure, coronary heart disease or peripheral vascular disease

treatment: antihypertensive treatment is generally well tolerated, especially if it is administered in small dosages and management kept simple: the aim is for systolic pressure between 140 and 160 mm HG; for diastolic pressure not lower than 60 mm Hg; lower blood pressure gradually, in order to maintain cerebral blood flow; drug treatment:

- * *thiazide diuretics, β -blockers, ACE inhibitors, calcium channel blockers and ATI receptor agonists* are the common groups of drugs used. Precaution needed with comorbidity
- * *investigations for damage to target organs and the selection of laboratory tests are performed as in younger patients*
- * *the immediate aim* is to lower the systolic blood pressure by 10 to 20 mm Hg. The long term aim is to reduce the blood pressure gradually over months to reach the WHO limits, except in malignant hypertension.

10. THROMBOEMBOLIC DISEASE

Thromboembolic disease is common in elderly patients. Factors include increasing age, obesity, immobility and a previous history of deep venous thrombosis or pulmonary embolism. Risk can be divided into:

- * low
- * moderate
- * high

low risk is present in patients presenting with minor trauma or minor medical illness or undergoing minor surgery, less than 30 minutes duration. These patients should be encouraged to mobilise early, but do not merit specific prophylaxis with antithrombotic drugs or mechanical devices.

moderate risk is present in patients with major trauma or major surgery, over 30 minutes duration; particularly those who are obese, immobile and medically ill - myocardial infarction, cardiac failure, pneumonia - and those with previous deep venous thrombosis or pulmonary embolism or known thrombophilia. In addition to early mobilisation, these patients should be given specific prophylaxis with subcutaneous heparin or thromboembolic disease (TED) stockings. Contra-indications to TED stockings are disorders of arterial blood flow, massive oedema of the legs, pulmonary oedema, right ventricular heart failure, local infections of the leg and leg ulceration [14].

high risk is present in patients who are undergoing orthopaedic surgery, major pelvic or abdominal surgery for cancer, vascular surgery or suffer acute stroke or other illness causing lower limb paralysis. Also patients suffering major trauma, surgery or medical illness with previous deep venous thrombosis or pulmonary embolism and known thrombophilia. This group of patients should have specific prophylaxis with *warfarin*, IV or subcutaneous *heparin*, TED stockings and early mobilisation.

11. ABDOMINAL PAIN

Abdominal pain is not age specific but is a frequent complaint by older people. At any age abdominal pain may be functional or organic, though the latter is more common in the elderly. Functional pain may be present in depression with fixation on the gastro-intestinal tract, either by somatisation or by delirious ideas.

- * inquiry should be made of any change in bowel habit, of vomiting, as well as pain.
- * abdominal examination should include the cough test for hernias and for pain secondary to peritonitis.

- * abdominal auscultation is routine because an ileus may develop without any pain.
- * abdominal muscles may be contracted by a demented patient without any internal lesions.
- * Presentation of an acute abdomen is atypical in 20% of cases.

causes: [13]

- * gallstones; 2.5% at 20 years and 25% at 60 years
- * diverticulosis; 30% >50 years and 50% >70 years; 20% of diverticulosis cases develop diverticulitis
- * acute intestinal obstruction:
 - 10% are functional
 - 65% are obstructive
 - 25% are secondary to strangulation
 - adhesions of the colon
 - strangulated hernias
 - sigmoid volvulus; particularly in psychiatric institutions
 - stricture during Crohn's disease, which is more frequent after 60 years
 - ischaemic colitis
 - gall stones and cholecystitis
 - colonic pseudo-obstruction
 - iatrogenic functional ileus

differential diagnosis: [8]

- * exclude and treat medical or non -abdominal causes:
 - rib fracture
 - pelvic fracture
 - faecal impaction
 - myocardial infarction
 - liver congestion
 - pneumonia or pleural effusion
 - ketoacidosis
 - peptic ulcer
- * surgical disease with *immediate intervention*:
 - ruptured abdominal aneurysm
 - acute generalised peritonitis
 - acute cholecystitis and / or cholangitis
 - mesenteric infarction
 - strangulated hernia
- * surgical diseases with less urgent intervention:
 - complicated diverticulitis
 - pancreatitis
 - ischaemic colitis
 - perforated but closed ulcer

12. THYROID DISORDERS

age related changes: [10]

- * a reduction in the size of follicles in thyroid gland with an increase in connective tissue within the gland
- * a fall in iodine clearance and reduced turnover of thyroxine, leading to an increased half-life of thyroxine
- * no significant change in T4, T3 and TSH levels in serum
- * presentation is often atypical and abnormal blood thyroid function tests are commonly caused by:

- thyroid disease
- non-endocrine disease
- drugs, e.g. NSAID, salicylates, phenytoin
- 'sick euthyroid' - T3 production, impaired in acute illness, can lead to low T3 and T4 levels but normal TSH level

* the two conditions relevant to the elderly are:

- hyperthyroidism
- hypothyroidism

hyperthyroidism: In the elderly the main causes are:

- * Grave's disease
- * multinodular goitre
- * thyroiditis
- * less commonly ectopic hormone production by tumour

The classical signs of tremor, exophthalmos, anxiety and goitre may be absent in the elderly patient. Unexplained atrial fibrillation and cardiac failure are more common presentations. Diarrhoea, weight loss and a proximal muscle weakness are other non-specific features. Atypically the elderly patient may present with lethargy, depression and weight loss in the appropriately named 'apathetic thyrotoxicosis'. Diagnosis is made with an elevated serum T4, but in early stages T4 may be normal and only T3 is raised. The TRH test is questionable in the elderly as an impaired response may occur in euthyroid patients.

treatment: the main goal is to bring the T4 level down to within the normal range, using drugs such as *carbimazole*, β -blockers are not recommended in this age group. Treatment thereafter consists of either radioactive iodine I^{131} or surgery. Surgery is most appropriate where there is a goitre, but for most other elderly patient I^{131} is the treatment of choice. It is likely that the patient will become hypothyroid and follow up with appropriate replacement therapy is important.

hypothyroidism: Auto-immune thyroiditis is the commonest cause with increasing age and is more commonly in women.

As it has a very insidious onset, the classical symptoms of slowing up and tiredness are often put down to the ageing process. The symptoms of myxoedema, hair change, loss of eyebrows are often not present. Signs of auto-immune disease, such as vitiligo, rheumatoid arthritis and diabetes mellitus may be present. Bradycardia, slowing of relaxation of tendon jerks and constipation may be features. Effusions may be present.

The diagnosis is made on a low T4 and raised TSH. A macrocytic anaemia may be found. A raised TSH with a normal or low T4 can be found in patients having had I^{131} treatment or after thyroidectomy. The presence of thyroid antibodies, with low normal T4 and a slightly elevated or normal TSH, is likely to progress to hypothyroidism with time. Repeat blood tests in 3 months.

treatment: replacement therapy with *thyroxine*. Extreme care must be taken on initiating treatment: start with 25 micrograms daily increasing by 25 micrograms per month until T4 and TSH are within the normal range. Caution is required especially if there is any evidence of ischaemic heart disease. Interaction with drugs such as amiodarone may give falsely low thyroid function tests.

13. ANOREXIA AND LOSS OF WEIGHT

general remarks:

- * depression is a frequent cause
- * two diagnoses can't be missed: decompensated diabetes mellitus and hyperthyroidism
- * a history of cancer should not rule out the need to seek for a curable aetiology, such as:
 - tuberculosis
 - Horton disease, polymyalgia rheumatica [6]

major illnesses:

- * advanced respiratory failure
- * aggravated chronic heart failure - cardiac cachexia
- * hepatic cirrhosis
- * advanced chronic renal disease

psychiatric conditions:

- * apathetic depression
- * manic state
- * dementia
- * suicidal behaviour
- * refusal to eat

oral conditions:

- * very bad dental state
- * functional or organic swallowing disturbances
- * oral candidiasis

drugs:

- * excessive thyroid hormone replacement
- * biguanides or digitalis, leading to digestive disturbances
- * amiodarone or lithium, inducing hyperthyroidism
- * corticosteroids, leading to amyotrophy
- * polypharmacy

alimentary indiscretions and too restrictive diets

non-malignant causes:

- * decompensated diabetes mellitus
- * hyperthyroidism
- * oesophagitis or gastro-duodenal ulcer
- * pulmonary or extrapulmonary tuberculosis
- * deep abscess
- * polymyalgia rheumatica
- * malabsorption or bad digestion:
 - pancreatic insufficiency
 - bacterial overgrowth in the small intestine
 - coeliac disease

three causes in geriatric patients:

- * hidden poverty
- * dependence and loss of pleasure of eating
- * psychiatric problems with or without alcoholism

remember:

- * some chronic neurological diseases may be responsible for weight loss
- * undetected cancer is less likely in the absence of: clinical signs, iron deficiency anaemia and chest radiological abnormalities and when gastroscopy and abdominal ultrasonography are normal

investigations:

- * clinical examination
- * appropriate laboratory investigations are:
 - full blood count and erythrocyte sedimentation rate
 - blood sugar
 - TSH and free T4
 - creatinine
 - calcium
 - alkaline phosphatase and liver transaminases
 - protein electrophoresis
 - chest radiography

- abdominal ultrasound
- upper GI endoscopy and/or lower GI endoscopy
- * if any doubt: search for tubercle bacillus in gastric fluids, AIDS serology, colonic exploration

14. DEHYDRATION and HYPONATRAEMIA

age related changes:

Many diseases in the elderly patient present with water and electrolyte disorders. With increasing age, total body water decreases to about 45% of body weight, because of a proportional increase in body fat and decrease in lean body mass. Impaired water conservation and sodium balance maintenance are the two primary factors that determine the volume and tonicity of the extracellular fluid (ECF). Impaired thirst perception is commonly seen, and when offered fluid, the elderly patient ingests a strikingly lower amount, placing them at risk for volume depletion and dehydration.

In old aged people certain changes can affect water and sodium regulation:

- * impaired renal ability to concentrate urine
- * increased ADH secretion
- * impaired renal ability to conserve sodium
- * increased secretion of atrial natriuretic peptide

volume depletion is loss of body water and sodium resulting in decreased ECF volume

dehydration is a relatively pure depletion of water alone

dehydration, signs and symptoms in: [19]

- * altered mental status
- * decreased skin turgor
- * dry mucous membranes
- * tachycardia and orthostatic hypotension
- * constipation and intestinal ischaemia
- * a history of decreased food or fluid intake
- * febrile illness
- * diabetes mellitus
- * vomiting and diarrhoea
- * chronic renal disease
- * use of diuretics

laboratory analysis: haematocrit, urea, electrolytes and creatinine may all be elevated in dehydration

treatment: When volume depletion is moderate (1-2L) oral fluid intake can correct it. If the patient has a gastro-intestinal loss or impaired mental status or if the deficit is more significant, intravenous fluid therapy is required; isotonic fluid 0.9% sodium chloride if serum sodium level is normal; hypotonic fluid 0.45% sodium chloride if the patient is hypernatraemic. The rate of administration should be such that once orthostatic hypotension and tachycardia resolve, the remaining deficit would be corrected over 2 or 3 days, to avoid precipitating heart failure. Useful clinical indicators of therapeutic effectiveness are increases in skin turgor and urinary production, a decrease in heart rate, resolve of orthostatic hypotension and a decrease in urea and creatinine levels.

hyponatraemia [7]

- * *type 1:* total body sodium is depleted and ECF volume is diminished:
 - usually an excessive loss of sodium via the kidneys; diuretics, mineral corticoid deficiency
 - via the gastro-intestinal tract; vomiting, diarrhoea
 - via the skin; burns and excessive sweating

treatment: isotonic saline, usually given IV

- * *type 2:* serum sodium is low, although total body sodium is increased; ECF volume is increased
 - in conditions with increased circulating aldosterone; heart failure, nephrotic syndromes

treatment: salt and water restriction

- * *type 3*: the syndrome of inappropriate anti-diuretic hormone production, SIADH; when both total body sodium and ECF volume are normal or slightly increased, but ADH secretion is inappropriately increased
 - common causes of SIADH are lung diseases, CNS diseases, myxoedema, alcohol and drugs
- treatment*: therapy for the underlying condition; fluid intake should be restricted; in severely ill patients hypertonic saline infusion can be given

15. MALNUTRITION

age related changes:

- * body mass remains stable up to age 65
- * weight loss then occurs due to both lean and adipose tissue loss
- * intra-abdominal and intra-muscular fat increases with age
- * resting metabolic rate decreases by 20% in men and 13% in women, mainly due to decreased food intake with increasing age [10]

causes:

- * protein undernutrition, the primary nutritional problem in elderly
- * diminished sense of smell and taste, decreased pleasure of eating
- * use of medications
- * depression
- * dementia
- * dysphagia
- * dental problems
- * chronic infection
- * physical disability
- * poverty
- * loneliness

indicators of malnutrition are:

- * body mass index (BMI) below 20 kg/m²
- * serum albumen < 32g/l
- * low serum cholesterol level

protein undernutrition predisposes to increased risk of:

- * decreased muscle strength
- * hip fracture
- * pressure sores
- * postural oedema
- * decreased lymphocyte activity
- * anaemia
- * infection

general remarks:

- * weight loss is the single best factor for prediction of malnutrition
- * undernutrition is poorly recognised and treated in elderly
- * look for treatable causes of weight loss
- * short term aggressive use of food supplementation can save lives

16. PRESSURE SORES

definition: pressure sores are an ischaemic damage and subsequent necrosis, affecting the skin, the subcutaneous tissue and often the muscle covering bony prominences, resulting from direct pressure, friction, shearing or maceration.

- * most pressure sores occur in patients >70 years
- * among nursing home patients the prevalence is often around 20%

aetiology: external pressure exceeds the average capillary blood pressure of 32 mm Hg, and blood supply and lymphatic drainage are reduced [16]. The common pressure points are:

sacrum	34%
heels	26%
ischial tuberosities	13%
malleolus	10%
miscellaneous	10%
hips	7%

shearing: occurs when two layers of skin slide on each other and cause damage to the underlying tissue; this occurs when a patient slides down in a chair or in his bed

friction: occurs when the skin rubs against a rough surface or the patient is pulled in bed without a pull sheet.

maceration: the skin is softened and its resistance is reduced, usually caused by excessive perspiration, urinary or faecal incontinence and grossly exudative wounds

risk factors:

- * age: 80% of patients is > 80 years, prevalence increases with age
- * altered mental state, resulting in inability to move independently
- * immobility, paralysis, locomotor disorders, and fractures
- * urinary and faecal incontinence
- * low blood pressure and impaired peripheral circulation
- * malnutrition
- * impaired general state of health
- * smoking
- * pain
- * collagenosis and diabetes mellitus
- * oedema, compressing the vascular bed
- * drugs, corticosteroids, cytostatics

laboratory findings: low serum albumen; anaemia; deficiency of vitamins, A, B, C, D, E, K or minerals(zinc, manganese, iron)

classification

- stage I* non blanchable erythema of intact skin, lasting for 24 hours; reversible
- stage II* distinct, superficial abrasion, blister or shallow crater, involving epidermis and / or dermis; reversible.
- stage III* deep crater, damage or necrosis of all skin layers and subcutaneous tissue, but not the underlying fascia
- stage IV* full thickness skin loss with extensive destruction to muscle, bone and supporting tissue; undermining and sinus tracts may be associated as well as osteomyelitis and septic arthritis
- in contiguous joints

infection: all pressure sores are colonised with bacteria; local antibiotics should never be used and peroral antibiotics restricted to systemic bacteraemia, sepsis, osteomyelitis or when an anaerobic infection is present in the wound; antibiotics are chosen in accordance to sensitivity tests

local treatment:

- * clean the wound with normal saline solution
- * mechanical, chemical or surgical debridement to attain a clean wound base
- * provide a clean, moist wound bed at body temperature and as few changes of dressings as possible
- * avoid packing the wound with gauze and other material that may prevent discharge and contraction of the cavity with consequent prolongation of healing time and increase in pain
- * the dressings and topical agents most commonly used to treat pressure sores including liquid barriers, film dressings, hydrocolloid dressings, debriding enzymes, absorption dressings, hydrogels and calcium alginate dressings

general measures:

- * use of multidisciplinary team
- * good nutrition
- * treat anaemia
- * control of diabetes mellitus

prevention:

- * relief of pressure is the most important; use of anti-decubitus mattresses do not substitute for regular turning
- * position of the patient; use a turning table, anti-decubitus mattresses, pillows etc
- * prevent shearing forces
- * anti-decubitus mattresses may lead to problems of functional disability and awareness

17. URINARY INCONTINENCE

general remarks: Urinary incontinence is a symptom not a diagnosis [12]. Therefore, it calls for urgent investigation for the establishment of the correct diagnosis, effective treatment and recovery of continence. In the majority of cases an accurate diagnosis can be made by taking a careful history and carrying out a comprehensive clinical examination without resorting to any high technology.

definition: Incontinence has been defined by the International Continence Society as ‘a condition in which the voluntary loss of urine (or faeces) is a social or hygienic problem and is objectively demonstrable’.

normal micturition_ depends on [20]:

- * detrusor muscle
 - contraction causes increased intravesical pressure, opening of bladder outlet and micturition
 - supplied mainly by parasympathetic nerves S₂₋₄
- * trigone muscle
 - ontraction causes funnelling of bladder outlet which opens urethra
- * urethral sphincter
 - proximal smooth muscle supplied by T₁₁-L₂
 - distal striated muscle supplied by S₂₋₄
- * fascial and muscular urethral supports
- * parietal lobes and thalmus receive and co-ordinate detrusor afferent stimuli

- * frontal lobes and basal ganglia provide modulation with inhibitory signals until voiding suitable
- * pontine micturition centre integrates all of these

age related changes:

- * age related changes may predispose to incontinence but do *not* cause detrusor overactivity
- * detrusor overactivity increases with age
- * ability to postpone voiding decreases
- * bladder capacity reduces leading to frequency
- * prostatic hyperplasia in males leads to bladder outlet obstruction
- * reduction of flow rate as result of reduced detrusor contractility
- * increased post-voiding residual volume
- * bladder smooth muscle changes:
 - detrusor overactivity
 - outlet obstruction, due to smooth muscle hypertrophy and increased intracellular collagen
 - diminished contractility with muscular and axonal degeneration
- * low oestrogen levels lead to atrophy of urethral epithelium and urethritis, a reduced urethral mucosal seal and compliance, irritation and consequent stress incontinence and uninhibited contractions
- * diurnal pattern changes causing increased excretion later in day

continence is dependent on:

- * intact micturition physiology
- * lower urinary tract, pelvic and neurological components
- * intact functional ability to toilet oneself e.g. mobility, dexterity
- * cognitive ability to react to bladder filling

prevalence of incontinence:

- * 15 - 30% in community
- * up to 50% in institutional care
- * incontinence is commoner in females under 80 years of age with no sex difference after 80
- * incontinence is often associated in the community with depression, TIA, and strokes, congestive cardiac failure, faecal impaction and constipation, obesity, chronic airways disease with cough, impaired mobility and impairment of activities of daily living.
- * in institutions it is associated with impaired mobility, moderate to severe dementia, depression, stroke, diabetes mellitus and Parkinson's disease

There is a strong epidemiological association with detrusor overactivity and dementia. Cortical and subcortical brain centres, which inhibit micturition, are damaged by Alzheimer's disease and multi-infarct disease causing uninhibited emptying. Detrusor overactivity is the most common lower tract abnormality in dementia sufferers.

detrusor overactivity consists of detrusor hyper-reflexia where there is a lesion in the central nervous system and detrusor instability where there is not

types of urinary incontinence

* *transient incontinence*

- generally precipitated by remediable factors outside of the lower urinary tract
- occurs 1/3 in community 1/2 in hospital
- common causes, **diappers**:
 - delirium/confusional states
 - infection of urine (symptomatic)
 - atrophic urethritis/vaginitis
 - pharmaceutical
 - psychological - depression
 - excessive urine output - CCF, diabetes

restricted mobility

stool impaction

All causes of transient incontinence are treatable.

Untreated transient incontinence can easily become established.

* ***established incontinence***

urge incontinence, due to detrusor overactivity

- leading cause in older people
- moderate/large leakage of urine
- frequency and nocturia
- detrusor overactivity

age associated

impaired central inhibitory mechanism

secondary to local bladder irritation, e.g. infection, stones, tumour

stress incontinence, due to sphincter failure

- second commonest cause in older men
- common after transurethral resection of the prostate or radical prostatectomy
- occurs when increased intra-abdominal pressure in absence of bladder contraction
- in females due to impaired urethral closure, as result of inadequate pelvic fascial and

muscular

support

overflow incontinence, due to impaired detrusor contractility or bladder outlet obstruction

- small volume leakage
- large post-voidal residual
- poor stream, dribbling, hesitancy
- frequency and nocturia
- outlet obstruction in males, due to benign prostatic hyperplasia, prostatic carcinoma and urethral stricture
- obstruction uncommon in female, but occurs with cystocele prolapse and previous surgical damage

* ***functional incontinence***

- inability to reach toilet in time
- inability to remove clothes in time
- environmental factors e.g. stairs

management:

* *history*: - incontinence will be under reported unless care is taken to discuss voiding, in such a way that

the patient is not embarrassed e.g. rather than 'are you incontinent?', ask 'do you ever leak when you cough or sneeze?' or 'do you ever leak before reaching the toilet?'

- some elderly people look upon incontinence as normal part of ageing
- ask specifically about onset, frequency, volume, timing, any precipitants such as drugs or drinks
- ask for a bladder chart recording voiding over minimum of 48 hours
- functional assessment
- social assessment
- environmental assessment

* *physical examination*:

- this should be comprehensive and should include a rectal and vaginal examination
- mental testing
- cough stress test

* *investigations*:

- urinalysis with culture where appropriate
- renal function tests

- bladder ultrasound after micturition to assess residual
- plain abdominal radiograph to exclude calculi and impaction
- urodynamics - only if diagnosis unclear or treatment failed

treatment:

- * correct any exacerbating factors
- * treat and prevent any constipation or impaction
- * encourage adequate fluid intake of over 1.5litres / day
- * explanation to patient and carer

urge incontinence

cognitively intact:

- behavioural therapy with bladder retraining, such as timed voiding while awake; initial frequency is based on smallest interval between voids
- suppress intervening urgency with relaxation techniques
- slowly increase time between scheduled voids
- supplemental biofeedback

cognitively impaired:

- scheduled voiding and prompted voiding
- *oxybutynin*
- *tolterodine*
- *oestrogens*

side effects can be limiting

monitor for retention or urine

stress incontinence

- pelvic floor muscle exercises
- adjuncts: electrical stimulation or vaginal cones
- *oestrogen* in post menopausal female
- *prazosin*, α_1 -adrenergic agonists
- surgery if appropriate

treatment is less successful in males

overflow incontinence

- treat underlying cause e.g. in benign prostatic hypoplasia *prazosin*, an α_1 -adrenergic agonists, - *finasteride*, a 5- α reductase inhibitor
- surgery
- detrusor underactivity: intermittent catheterisation
- double voiding

pads and protective garments

- should be tailored to individual needs

continence adviser

- if one is available this specialist nurse will provide advice and oversee treatment; they are also involved in education and the provision of appropriate appliances

simple guidelines for investigation and management in urinary incontinence

think about and exclude the following

causes	investigation	management
* UTI * diabetes mellitus * constipation * diuretics * poor mobility * overflow (male or female)	urine dipstick blood glucose bowel chart, rectal examination review drugs ask patient; physiotherapy assess rectal examination ? palpable bladder ultra sound, residual volume flow rate, urodynamics	UTI protocol, antibiotics diet, oral hypoglycaemics, insulin look for cause, then laxatives/enemas change times, e.g. after shopping, consider ACE inhibitors improve mobility urology for ? TURP α_1 -adrenergic agonist stop anticholinergics

if none of the above, then further assessment required

* establish bladder pattern	bladder chart
-----------------------------	---------------

is it stress or urge incontinence?

* stress incontinence	perineal examination vaginal examination	pelvic floor exercises referral to gynaecologist
* urge incontinence	bladder scan	residual urine <100ml:oxybutinin
* mixed	as above	residual urine >100ml, consider 2, 3 or 6

18. CONSTIPATION

definition: Constipation is defined as fewer than three bowel movements per week. Many patients consider themselves constipated if they have less than one bowel movement a day, especially if defaecation is associated with extreme straining.

age related changes:

- * colonic transit time is normally not prolonged in the elderly, but there are age related changes, e.g. weakened muscle function and alteration of the autonomic nervous system, that account for an increased incidence of constipation
- * other contributory factors are impaired general health status, use of various medications and decreased mobility and physical inactivity
- * adequate fluid intake is important; low intake of fluid is common in older people
- * large amounts of crude dietary fibre increase stool weight, improves stool consistency, reduces colonic transit time and increases the frequency of defaecation; low intake of fluid is common in older people
- * an increase in fibre intake is not enough to manage constipation in the elderly, which to an important degree is a motility disorder

medical complications of chronic constipation [17]

* ***impaction***

- is seen in the majority of patients with chronic constipation
- masses of hard faeces accumulate in the dilated rectum, which can contain volumes of 500ml without difficulty
- rectal sensation is considerably impaired
- data suggests that the patient is sometimes unable to defecate because they cannot detect the presence of faeces in the rectum before it becomes too large to expel
- bypass diarrhoea may occur
- usually manual disimpaction is required

* ***ulceration***

- stercoral ulcers, are caused by pressure necrosis of the rectal or sigmoid mucosa, due to a faecal mass
- usually asymptomatic, but rectal bleeding and rarely perforation may occur

* ***anal fissure***

- intra-abdominal pressures of up to 300 mm Hg are produced during straining at stool, which may lead to prolapse of the anal mucosa, venous distension and external and internal haemorrhoids.

* ***megacolon***

- is usually idiopathic in the elderly
- chronic use of stimulant laxatives can lead to an acquired degeneration of the colonic myenteric plexus
- diagnosis is by plain abdominal radiography

* ***volvulus***

- occurs mostly in the sigmoid colon in institutionalised, bedridden elderly patients
- the onset is insidious, signs and symptoms include abdominal distension of variable degree, abdominal cramp and constipation
- mortality is high, once the blood supply of the bowel is compromised, a plain abdominal radiograph is often diagnostic
- immediate reduction of the loop can be achieved in 85% of the cases by the passage of a flexible endoscope; in many cases operative intervention is warranted

* ***adhesions***

- due to abdominal surgery may be a cause

history and physical examination

- * ask the patient about the:
 - onset of the problems
 - alteration of defaecation habits
 - abdominal pain
 - changes in medication
 - concurrent illnesses
- * digital examination of the rectum and vagina is mandatory:
 - cancer of the pelvic organs is common in elderly people
 - the presence of large masses of faeces, faecal impaction
 - the total absence of faeces, irritable colon or colonic inertia
 - the presence of a rectocele
- * absent of anal and perianal sensation, indicates a neurological lesion, but is common in patients with faecal impaction
- * excessive perianal descent on straining suggests the possibility of mechanical obstruction of defaecation, but is common in older people
- * constipation can complicate many neurological disorders; thus, it is important to examine the spine for deformity and tenderness and carry out a full neurological examination
- * the abdomen should be examined for the presence of tenderness, masses and gaseous or fluid distension;
do not forget to auscultate before palpation of the abdomen
- * proctoscopy may reveal fissures, haemorrhoids and ulceration or redness of the anterior rectal wall, solitary rectal ulcer or anterior mucosal prolapse

stool examination

- * small hard pellets indicate irritable bowel syndrome and diverticular disease
- * blood and mucus tends to indicate neoplastic disease but also ulcerative colitis, Crohn's disease and haemorrhoids
- * ribbon like stools may suggest anal stenosis

treatment

* *first phase treatment*

- bowel training
- dietary management
- adequate fluid intake of 1.5 litres or more
- regular exercise

* *second phase treatment*

- *fibre-containing bulk laxatives*, are often added if life style changes fail; they are contraindicated if the patient suffers from mechanical obstruction of any part of the digestive tract
- *lactulose* and *hyperosmolar compounds*, can be prescribed in these cases; the side effects

are

mild, transient bloating of the abdomen

- *saline laxatives* and *enemas* should not be given as chronic medications but as an addition when earlier phases of treatment are being tried; if no bowel movement has occurred for

more

than two consecutive days, allow the patient to use a small enema after the morning attempt of bowel opening

- *stimulant laxative*, should be considered after laxatives from other categories have failed or when treating patients with advanced chronic or malignant disease; long term use of

stimulant

laxatives may induce destruction of neurons in the enteric nervous system

- *anthracene derivatives* can cause melanosis coli

- *manual disimpaction* may be required
- *polyethylene glycol* is useful in high impaction with two days of oral administration of 2

litres

per day

19. FAECAL INCONTINENCE

causes:

- * *impaction*: the most common cause with impairment of rectal sensitivity
- * *progressive weakness of the pelvis floor*: often seen in multiparous women
- * *vascular and neoplastic disease*
- * *spinal and root compression*
- * *advanced dementia*: leads to loss of central inhibition
- * *use of laxatives*

treatment: treat the underlying cause

20. DIARRHOEA

definition: Diarrhoea is defined as a watery stool with a frequency exceeding three times daily. Diarrhoea in the elderly may be combined with incontinence and urgency and thus causes severe distress and social problems.

causes: [18]

- * disease of the pancreas, maldigestion
- * diseases of the small intestine, malabsorption
- * infections affecting the small intestine
- * side effect of given medication:
 - alteration of the normal intestinal bacterial flora, following the treatment with an antibiotic
 - laxatives
 - *clostridium difficile* associated pseudomembranous coli is often seen in frail elderly after treatment with broad spectrum antibiotics
 - some drugs interfere with receptors in the intestinal mucosa and may influence motility and secretion
 - cytostatics cause a direct damage on the intestinal mucosa.
- * inflammatory diseases Crohn's disease, mycobacterium
- * colonic disease diarrhoea is often a cardinal symptom, especially when stained with blood and mucus; carcinoma, diverticular disease and ulcerative colitis may occur
- * functional disturbances of the colon motility may exist in older age, but they never occur during the night and do not cause loss of weight
- * faecal impaction in the rectum is often associated with diarrhoea
- * laxative abuse

treatment: treat the underlying cause

21. DEPRESSION

definition: Five or more of the following symptoms have to have been present during the same 2 week period and represent a change from previous functioning; at least, one of the symptoms is either depressed mood or loss of interest or pleasure. [5]

- * depressed mood
- * loss of interest or pleasure in activities most in the day
- * significant weight loss or gain, not intentional, or decrease or increase in appetite
- * insomnia or hypersomnia
- * psychomotor agitation or retardation
- * fatigue or loss of energy
- * feelings of worthlessness or excessive or inappropriate guilt
- * diminished ability to think or concentrate or indecisiveness
- * recurrent thoughts of death, recurrent suicidal ideation, suicidal attempt or plan

particularities of depression in the old person [10]

associated presence of cognitive disturbance needs a difficult differential diagnosis with dementia

depression	Alzheimer dementia
<ul style="list-style-type: none"> * history of previous psychiatric illness common * rapid onset, often causal link identifiable * informants are usually aware of the presence of memory and orientation defects * patients complain of cognitive loss: complaints are detailed and often magnified * patient makes little effort to perform tasks, frequent losses in social and domestic skills * patient does not try to keep up * pervasive affective change * usually intact speech * 'don't know' answers and 'can't remember' answers frequent * marked variability in performing tasks of similar difficulty * presence of vegetative symptoms characteristic of depression, e.g. insomnia, early morning awakening, loss of appetite) * improvement of results of psychometric tests after treatment with anti-depressants * EEG normal 	<ul style="list-style-type: none"> * previous psychiatric history unusual * slow insidious onset * relatives are frequently unaware of the patient's cognitive defects * patient has little or no complaints of cognitive loss; complaints are usually vague * patient struggles to perform tasks; social skills well preserved until dementia is quite advanced * patient relies on notes, diary and calendar to keep up affect shallow * speech disorders frequent * 'near miss' and wrong answers frequent * consistent poor performance on tasks of similar difficulty * absence of such symptoms * no improvement of results of psychometric tests after treatment with anti-depressants * frequently abnormal

clinical differences in depression between old and young persons [1]

symptoms	old	young
depressed mood	+/-	+++
cognitive disturbances	+++	+ = pseudodementia
somatic complaints	+++	+ /+++ = masked depression
depressed thoughts	+++	+++
sleeplessness	+++	++
agitation/anxiety	+++	+ /+++
suicidal ideas	+/-	+++
successful suicide	+++	+/-

treatment:

- * tricyclic antidepressants
 - amitriptyline
 - lofepramine
- * atypical agents
 - trazodone
 - nefazodone
- * selective serotonin re-uptake inhibitors, SSRIs
 - fluoxetine
 - paroxetine
 - sertraline
 - citalopram
- * serotonin/noradrenaline re-uptake inhibitors, SNRIs
 - venlafaxine
- * reversible inhibitors of monoamine oxidase A, RIMA agents
 - moclobemide
- * there has been a tendency for choosing a drug for its side effects profile rather than its therapeutic efficacy
- * electroconvulsive therapy, ECT, is the most effective treatment even in older patients
- * psychotherapy can be beneficial

22. ACUTE AND CHRONIC BRAIN FAILURE - DELIRIUM AND DEMENTIA

general remarks

Brain failure is more common and costly than heart, lung or kidney failure, however, as the techniques for assessment and management have only been developed and consolidated recently, they have not received the same priority with healthcare staff.

- * two thirds of hospital patients are over 65 years of age
- * up to 40% of them suffer from acute and/or chronic brain failure
- * it is important to detect and manage, as:
 - it affects diagnosis and therapy
 - can be managed positively
 - affects nursing management
 - is a marker for morbidity, mortality, institutionalisation and length of stay

approach: a four stage approach is recommended:

- * to detect/establish the presence of cognitive impairment; cognitive impairment is a symptom and a sign; it is not a syndrome or a disease
- * to establish the presence of dementia, delirium or other psychiatric illness; dementia and delirium are syndromes
- * determine the specific cause of the dementia/delirium
- * treat the underlying causes and aggravating factors, design management package

comparison of brain and pulmonary disease

symptom/sign syndrome disease	cognitive impairment dementia Alzheimer's disease	dyspnoea alveolitis psittacosis
-------------------------------------	---	---------------------------------------

detection of cognitive impairment

Internists working with older people need to routinely assess for cognitive impairment: an assessment of 'orientation in time, place and person' has been shown to be ineffective in detecting cognitive impairment. Standard short tools for the assessment of cognitive impairment in a hospital or specialist clinic setting are the Folstein Mini-Mental State Examination, 30 items, and the Abbreviated Mental Test Score, 10 items. Suspicion of cognitive impairment should trigger obtaining a collateral informant and history.

defining the syndrome of brain failure

Once cognitive impairment is established, it is important to work out whether this is acute brain failure, delirium, or chronic brain failure, dementia, or a combination of both. Dementia is a risk factor for the development of delirium and those afflicted by delirium have more than double the risk of developing dementia in the subsequent two years. In the past, much was made of pseudo-dementia, depression masquerading as dementia. This is now recognized as rare but depression complicating dementia is common and should be aggressively treated.

delirium

Delirium is common among sick older people. It may be found at admission or may occur during stresses such as the perioperative period or during intercurrent illness.

defition: delirium is characterized by:

- * relatively short onset
- * clouding of consciousness, i.e. reduced clarity of awareness of the environment, with reduced ability to focus, sustain or shift attention
- * memory or other cognitive problems not better accounted for by a pre-existing, established or evolving dementia
- * it may be accompanied by
 - alteration of the sleep-wake cycle
 - increased/decreased psychomotor activity
 - delusions/hallucinations
 - incoherent speech

causes: almost any illness, drug or combination of both can cause delirium

approach: In the presence of a clear cause (drug, infection, metabolic, MI, stroke) the strategy is:

- * to treat the illness and/or remove the drug
- * to avoid sedation; if required start low, go slow and review daily; note that 'as required' sedation is associated with falls, fractures and death; suitable agents include *risperidone* 0.25 mg bd or *haloperidol* 0.25 mg bd orally
- * to correct metabolic/nutritional abnormalities

- * to avoid restraints, including chemical restraint
- * do not start planning long-term care precipitously!

Peri-operative delirium can be avoided by scrupulous attention to oxygenation, blood pressure, infection, drugs and nutrition; in general medical settings, hydration, expert nursing and the avoidance of urinary catheters and night sedation will lessen the risk of developing delirium.

dementia

diagnosis: the diagnosis of dementia is relatively straight-forward, three positive and two negative criteria are required:

- * significant memory problems
- * other cortical deficits; aphasia, apraxia, personality change, loss of judgement
- * social or occupational dysfunction as a result of both of the above
- * absence of altered consciousness, which implies delirium
- * absence of uncorrected secondary causative factors

collateral history: Assessment of social or occupational dysfunction obviously requires a collateral history, i.e. a history from the patient's family or friends. The inclusion of the higher cortical deficit is of some interest, it emphasizes the organic nature of the dementing disease and highlights the frequent parietal deficits found in dementia. For example 100% of patients with Alzheimer's disease have a form of nominal aphasia; in the early stages it is quite subtle and skilful use of circumlocution by the patient may mask its presence.

causes: The third stage is to diagnose the cause of the dementia. To those who feel that this step is superfluous: vascular dementia may stabilise or even improve with the control of such risk factors as smoking and hypertension. Symptomatic drug therapy, *donepezil* and *rivastigmine*, is available for Alzheimer's disease and the Lewy-body variant of Alzheimer's disease. Although there are almost 100 established causes of dementia, the top eleven major causes of dementia are routinely screened for in common practice:

- * Alzheimer's disease, an exclusion diagnosis
- * vascular dementia
- * mixed Alzheimer's and vascular dementia
- * Lewy body dementia
- * alcoholic dementia, not Korsakoff's
- * Parkinson's dementia
- * fronto-temporal dementia
- * vitamin B12 deficiency
- * hypothyroidism
- * tertiary syphilis
- * depressive pseudodementia

There are a host of others including HIV, normal pressure hydrocephalus, Huntington's and Creutzfeldt Jakob's disease. The incidence of 'reversible' dementia, like the last four listed types, is very low in the elderly.

diagnosis: necessary factors for diagnosis include:

- * a history from the patient
- * a history from a collateral source about:
 - onset
 - progression
 - functional capabilities
 - behaviour
 - problems, e.g. driving
- * full physical examination with emphasis on:
 - mental state
 - affect
 - neurological and cardiovascular examination

A high index of clinical suspicion is required for alcohol abuse, depression, HIV and the features of normal pressure hydrocephalus.

* **basic investigations**

- basic biochemistry/haematology screens
- erythrocyte sedimentation rate
- thyroid hormone
- vitamin B12 and folate acid
- syphilis serology
- electrocardiograph
- chest x-ray

* **neuroradiological investigations**: the use of neuroradiology depends on:

- the presentation
- the expertise of the clinician in interpreting and using the information, particularly presumed vascular stigmata, such as periventricular white matter change
- clinical suspicion or evidence of a space occupying lesion or normal pressure hydrocephalus should be followed with a CT or MRI scan of the brain.
- single photon emission computerised tomography, SPECT, is a potentially useful tool, however, despite considerable publicity, its usefulness as a diagnostic technique in dementia has not been established.

* **neuropsychological investigations**: Referral to neuropsychology and/or occupational therapy will help to determine the presence and nature of cognitive deficits in more depth. It is particularly helpful in the diagnosis of early dementia and atypical dementia, as well as supporting decisions on capacity of the patient in areas such as financial competence and driving

ability.

features of common illnesses, there may be considerable overlap:

- * **Alzheimer's disease**: insidious onset and progression, cortical signs and the presence of neurological signs below the tentorium (the long-tract, cerebellar, movement disorders, myoclonus), militates against a diagnosis of Alzheimer's disease, as does predominance of frontotemporal signs (personality change, disinhibition, mutism)

treatment: in mild to moderate Alzheimer's disease, a trial of cholinesterase inhibitors should be initiated; these include

- * *donepezil* 5 mg nocte, increasing to 10 mg nocte after 6 weeks
 - * *rivastigmine* 1.5 mg bd, increasing at increments of 1.5 mg bd every 2-4 weeks, until side-effects occur
- and then continue at previous intensity of dosage

vascular dementia: the diagnosis should be prompted by features such as vascular signs/stigmata, may be sudden onset, step-wise deterioration, Parkinsonism, gait disturbance, incontinence.

treatment: vascular risk factor management

Lewy-body dementia: with Parkinsonism, fluctuating mental state, delusions/hallucinations, neuroleptic sensitivity, sub-cortical signs and falls

treatment: avoid neuroleptics and a trial of cholinesterase inhibitors should be initiated, these include:

- * *donepezil* 5 mg nocte, increasing to 10 mg nocte after 6 weeks
 - * *rivastigmine* 1.5 mg bd, increasing at increments of 1.5 mg bd every 2-4 weeks until side effects occur
- and then continue at previous intensity of dosage

fronto-temporal dementia: frontal signs, may be little memory disturbance at the beginning

Huntingdon's disease: family history, chorea, sub-cortical signs

genetic markers are associated with dementing illnesses, but only a handful, with an asterix, are of diagnostic significance:

- * Alzheimer disease:
 - 1*, 14*, 21* pre-senile
 - 19 (ApoE) senile
 - 12?
- * frontal lobe dementia:
 - 17
- * Huntingdon's disease:
 - 4*
- * Creutzfeld-Jakob's disease:
 - 20
- * familial amyotrophic lateral sclerosis:
 - 20

management of dementia

- * share the diagnosis with carer, and increasingly, the patient
- * information at:
National Alzheimer Society; <http://www.alz.co.uk/alz/index.html> for national society address
- * treat the underlying cause(s):
Alzheimer's disease, vascular dementia, mixed Alzheimer's disease and vascular dementia
- * treat aggravating factors:
depression, alcohol, medication
- * assess function, problem list:
behaviour, safety, driving; <http://www.thecyberfactory.com/bpsd> for excellent information on management of behavioural and psychological symptoms of dementia
- * psycho-social care package:
social worker involvement

23. TREMOR AND PARKINSON'S DISEASE

fine tremor

- * essential/senile
 - action tremor involving hands, jaw, face
 - no rigidity
 - common
- * Parkinsonism
 - resting tremor involving upper and lower limbs
 - occasionally jaw and tongue
 - rigidity present
- * hyperthyroidism
 - continuous involving hands
 - no rigidity
 - usually other signs of hyperthyroidism
- * anxiety
 - exaggerated physiological tremor

coarse

- * *cerebellar*: action tremor involving hands associated with past pointing and ataxic gait
- * *hypercapnoea*: flap of outstretched hands held in dorsiflexion associated with chronic obstructive pulmonary disease with retention of carbon dioxide.
- * *liver flap*: of hands due to liver failure

idiopathic Parkinson's disease

definition: a syndrome characterised by four cardinal features:

- * tremor
- * rigidity
- * bradykinesia / hypokinesia
- * poor balance

differential diagnoses:

- * drug induced parkinsonism, e.g. phenothiazines
- * multisystem atrophy, Shy-Drager syndrome
- * progressive supranuclear palsy
- * Lewy-body disease
- * dyskinesias
- * senile dystonia
- * multi-infarct disease, *marche à petit-pas*

pathology:

- * dopamine deficiency in corpus striatum in basal ganglia
- * imbalance between dopamine and acetylcholine

prevalence:

- * in Europe and North America 2% in over 70 year olds
- * less than 1% in under 50 year olds
- * both sexes affected equally

clinical features:

- * *tremor at rest*
 - not present in one third
 - absence can make the diagnosis difficult to make
 - often starts in one upper limb extending to lower limb of the same side and then upper limb and lower limb of other side
 - the jaw or tongue may be affected
- * *rigidity-common in all types of parkinsonism*
 - usually bilateral and symmetrical from onset
 - it affects the neck muscles causing pain and the characteristic flexed posture; rigidity may be cogwheel in nature, frequently in presence of tremor, or leadpipe
- * *bradykinesia / hypokinesia*
 - describes the slowness and difficulty initiating any movement which is the underlying cause of many of the other features
 - it is usually bilateral and symmetrical

other clinical features:

- | | |
|--|--|
| * mask like facies | * constipation |
| * reduced blinking | * postural hypotension |
| * low volume and monotonous speech | * festinant gait |
| * dysphagia, can lead to aspiration | * loss of arm swing |
| * salivation due to: <ul style="list-style-type: none"> - flexed posture - difficulty initiating swallowing - possible excessive production | * difficulty turning in |
| | * difficulty getting in and out of bed |
| | * depression, common |
| * micrographia | * impaired cognitive function |

management: the management consists of drugs, therapy, supportive care and surgery

drugs:

* *levodopa:*

- this is the drug of first choice in elderly patients
- it is the precursor of dopamine and is converted into it which then acts on the post synaptic striatal dopamine receptors
- improvement is found in all features of the disease and if there is no improvement, the diagnosis should be questioned
- common side effects are:
 - nausea
 - vomiting
 - postural hypotension
 - confusion
 - dyskinesias later on in treatment
- with the progression of the disease there is a reduction in the effectiveness, with 'end of

dose'

deterioration and well known 'on-off' response

- *Sinemet* and *Madopar* are the two preparations and come in a variety of forms - tablets, slow or controlled release, dispersible preparations
- initiation of treatment should be with low doses and slow increments, start low and go slow
- * *dopamine agonists* e.g. *pergolide*, *bromocriptine*, *ropinorole*
 - these drugs activate the dopamine receptors
 - they cause less dyskinesia than L-dopa but are associated with postural hypotension and psychotic episodes
 - they can be introduced as 'add-on' therapy to low doses of L-dopa at an early stage to help reduce the long term side effects of L-dopa
 - they can also be used as monotherapy
- * *monoamine oxidase-B inhibitor*, *selegilene*
 - it extends the effect of L-dopa by interfering with one pathway of metabolism
 - it was also thought to be neuroprotective, but this is now questioned
- * *catechol-O-methyltransferase inhibitor*, *COMTI*, e.g. *entacapone*
 - this also prolongs the bioavailability of dopamine by inhibiting the other metabolic pathway

of

dopamine

- this group of drugs is relatively new and unproven
- * *amantadine*, this antiviral agent has been shown to complement L-dopa in improving all features of the disease but its main benefit is short-lived: 2-3 months
- * *anticholinergics*, e.g. *benzhexol*, *orphenadrine*
 - their use is limited in the elderly patient due to the high incidence of side effects
 - they are useful to reduce tremor and rigidity with less effect on the bradykinesia

therapy: it is important that patients suffering from Parkinson's disease are assessed by physiotherapy to maintain mobility and overcome initial problems of movement such as transfers, occupational therapy to help with activities of daily living, and speech and language therapy to assess communication and swallowing

supportive care: referral to social services may be required to allow continuing care at home. In some countries there are voluntary organisations, such as the Parkinson's Disease Society in the United Kingdom, which are helpful, providing advice and information to patients and carers

surgery: there has been a revival of stereotactic surgery in selected cases; research into the use of foetal tissue transplant continues

essential tremor: this often responds to treatment with a β -blocker or alcohol

24. JOINT PAIN and STIFFNESS: OSTEOARTHRITIS, RHEUMATOID ARTHRITIS, POLYMYALGIA

immobility: [3]

- * 53.5 % of all elderly people over 75 years have difficulty in getting around their own home
- * among the ambulant aged 80 years and over at least 25% will need some mechanical support when walking, such as a stick or frame
- * 20% are totally house bound and many find it difficult to climb on to a bus and are unable to drive

reasons for immobility are:

- * pain and stiffness in bones, joints and muscles
- * weakness, including generalised systemic disease
- * fear, anxiety, depression, dementia
- * frequent falls
- * iatrogenic, e.g. sedation, surgery like amputations and unsuccessful orthopaedic procedures

immobility caused by pain/stiffness

in joints:	in muscles:	in bones:
* osteoarthritis	* myositis	* osteoporosis
* rheumatoid arthritis	* polymyalgia rheumatica	* osteomalacia
* gout	* Parkinson's disease	* Paget's disease of bone
* pseudogout	* hypothyroidism	* malignant disease
* infection		

rheumatoid arthritis

- * may have very sudden and severe onset in old age
 - * may be self-limited
 - * equal sex incidence, female are no longer predominate
 - * fewer systemic complications
 - * treatment may be more hazardous; potential problems may be that complications of treatment are more pronounced in the elderly e.g. NSAIDs; therefore steroids, in spite of disadvantages, may be used earlier than in younger patients; the use of the new COX-II antagonists is increasing for older people
- as
- they are less likely to cause gastric bleeding
 - * for 15% of patients, rheumatoid arthritis begins after 60; presents as a very acute inflammatory attack involving not only the small distal articular joints but also the big proximal ones with marked general symptoms and a rapid progression; sedimentation rate is higher than 60 mm/h and rheumatoid factors are positive
 - * another form of rheumatoid arthritis, beginning abruptly after 70 years presents with muscular pains, especially shoulder and affecting the small joints; inflammatory signs are clear but rheumatoid factors are negative
 - * differential diagnosis is with polymyalgia rheumatica. [11]

gout

- * generally gout occurs in 40 to 60 year old males
- * only 10% of cases appear after 60 years, often secondary to use of thiazide diuretics
- * on the contrary, pseudogout occurs generally after 70 years. 10 to 20 % of cases occur even after 80years
- * chondrocalcinosis may be responsible for a rapidly destructive arthropathy

gout and pseudogout

<p>gout</p> <ul style="list-style-type: none">* urate crystals* generally great toe affected* may be precipitated by:<ul style="list-style-type: none">diureticsoverindulgence of alcoholfastingexcessive exercise or restacute illness or surgery* tophi may be present* uric acid levels raised* NSAID and specific treatment with:<ul style="list-style-type: none"><i>colchicine</i><i>probenecid</i><i>allopurinol</i>* erosion on x-ray* obesity, increased blood pressure and ischaemic heart disease are associated conditions* family history common	<p>pseudogout</p> <ul style="list-style-type: none">* pyrophosphate crystals* knee is affected usually* no clear precipitation, but:<ul style="list-style-type: none">acute illness or surgery may be responsible* chondrocalcinosis may be present* uric acid may be normal* anti-inflammatory treatment* chondrocalcinosis on x-ray* diabetes mellitus, hyperparathyroidism, myxoedema are associated conditions* family history less common
--	---

infection

- * consider when single joint is painful
- * difficult to diagnose in presence of old joint deformities
- * may be confused with gout or pseudogout
- * systemic toxic effects may be minimal in the elderly
- * concurrent treatment may mask the problem, e.g. steroids, analgesics and antibiotics
- * aspirate if in doubt

myositis in old age

- * tender and weak muscles
- * rarely infective in old age, but transient postviral symptoms are common
- * often associated with underlying malignancy
- * often associated with skin involvement, dermatomyositis

myopathy in old age

- * weak proximal muscles without tenderness
- * non-metastatic complications of malignancy, commonest cause
- * endocrine diseases: Cushing's syndrome, thyrotoxicosis, diabetes mellitus
- * drug induced, e.g. steroid and alcohol
- * metabolic, usually due to hypokalaemia
- * vitamin D deficiency, osteomalacia

myasthenia

- * exaggerated fatiguability, 10% of all cases occur in old age
- * idiopathic, corrected by edrophonium, *tensilon*
- * may be associated with underlying malignancy, poor response to *tensilon*
- * may be drug induced: penicillamine and aminoglycosides

polymyalgia rheumatica

diagnosis: three positive items suggest a diagnosis of polymyalgia rheumatica:

- * bilateral shoulder pain and or neck stiffness
- * onset of illness or less than 2 weeks
- * initial erythrocyte sedimentation rate greater than 40 mm/h
- * duration of morning stiffness of more than one hour
- * age greater than 65 years
- * depression and / or weight loss
- * bilateral tenderness in upper arm
- * a successful trial with steroids will confirm diagnosis
- * response must be dramatic
- * begins between 65 and 70 years - classically

differential diagnosis between rheumatoid arthritis, myositis and myopathy:

- creatinine phosphokinase
- muscle biopsy and
- EMG
- all are usually normal

differential diagnosis of shoulder pain: [5]

- * rotator cuff tendonitis / subacromial bursitis
- * rotator cuff tears
- * bicipital tendonitis
- * frozen shoulder

differential diagnosis of hip pain:

- * trochanteric bursitis
- * osteoarthritis
- * hip fracture
- * non-rheumatic pain:
 - referred pain from viscera
 - radicular pain from the lower spine
 - avascular necrosis of hip
 - Paget's disease
 - metastasis

differential diagnosis of back pain:

- * unstable lumbar pain
- * lumbar pain stenosis
- * vertebral compression fracture
- * non rheumatic pain:
 - tumours
 - aneurysms
 - spondylitis

25. FALLS AND INSTABILITY

general remarks

- * falls are a geriatric emergency, the next one may result in a fracture
- * falls are common in elderly people both in the community and in institutions [12]
- * the prevalence increases with age, 35% in the age group 65-69 years, rising to over 50% in the over 85 years old
- * women are more liable to fall than men
- * falls at home tend to be during the day, whereas in institutions they occur mostly at night
- * falls occur due to a failure to adjust to or correct for a displacement of the body
- * falls are the result of extrinsic factors, e.g. tripping or intrinsic factors, e.g. syncope

age related changes:

- * peripheral receptors, central processing and motor effects are all combined to provide righting reflexes
- * age reduces the speed and efficiency of these responses which may also be aggravated by concomitant disease processes
- * with increasing age there tends to be an increase in postural sway especially in females
- * competent vision, an intact proprioceptive pathway, normal vestibular function and central co-ordination of postural control mechanisms are essential to prevent falling

risk factors:

- * cognitive impairment
- * increasing age
- * polypharmacy, >4 medications
- * hypnotics
- * alcohol
- * abnormal gait
- * functional disability
- * common offenders:
 - antidepressants
 - tranquillisers
 - hypotensives agents
 - phenothiazines

history and physical examination:

- * an accurate and full history is required
- * patients with cognitive impairment may not give an accurate history
- * ask the patient to describe what they mean by terms such as dizziness, and faintness
- * checking the event with a witness is useful as the patient may not recall the episode
- * medications require to be elicited including non-prescribed drugs
- * general physical examination
- * neurological examination
- * special attention to mobility and stability
- * sway, gait turning and visual acuity should all be tested
- * assessment by the physiotherapist and occupational therapist is helpful

common causes:

- * *with loss of consciousness:*
 - epilepsy
 - cardiac arrhythmias
 - aortic stenosis
 - carotid sinus hypersensitivity
 - transient ischaemic attacks

- * *without loss of consciousness:*
 - trips
 - postural hypotension
 - parkinson's disease
 - arthritis
 - medication
 - alcohol abuse

therapy: correction of any identified underlying cause

26. HEADACHE

age related aspects:

- * the prevalence of headache is very low in older persons compared with young adults
- * two situations, almost exclusively at an advanced age, representing genuine emergency and presenting as acute and severe headaches:
 - giant cell arteritis or Horton disease, often in association with symptoms of polymyalgia rheumatica; sedimentation rate is very high with a normochronic, normocytic anaemia
 - acute glaucoma
- * these diseases are emergencies, requiring immediate treatment

four principal causes of headache in older people: [3]

- * raised intracranial pressure
- * pain radiating from cervical spondylosis
- * giant-cell arteritis
- * psychological

other causes of headache in older persons are: [6,8]

- * vascular changes:
 - cerebrovascular insult, through subarachnoid haemorrhage, intracerebral haematoma, Sylvian extensive softening
 - cerebellar vascular insult, through intra-cerebellar haematoma or acute ischaemia with threat of coning
 - acute, subacute or chronic subdural haematoma; headaches develop within several days or in one to two weeks
 - neurological focal signs are discrete or absent; there may be a fluctuating confusion or drowsiness
- * infection:
 - meningitis with or without fever
- * neoplastic:
 - any cerebral tumour may develop headache due to intracranial hypertension
- * medication:
 - *nitrates, calcium channel blockers, hypotensive agents, vasodilators, AINS, theophylline*
 - hypoglycaemia, iatrogenic
 - acute sinusitis
 - carbomoxide intoxication

facial pain presenting as headache: [3]

- * trigeminal neuralgia, rarely starts in old age
- * dental problems
- * sinusitis
- * giant-cell arteritis

27. VISUAL PROBLEMS

general remarks:

- * visual problems may occur with cerebral vascular disease, particularly a transient ischaemic attack
- * the physician has to distinguish between sudden and progressive visual loss

sudden visual loss: [10]

- * ischaemic optic neuropathy, arteriosclerosis, giant-cell arteritis
- * arterial occlusion
- * venous occlusion
- * retinal detachment involving macula
- * amaurosis fugax
- * massive vitreous haemorrhage
- * acute glaucoma
- * stroke
- * migraine

it is imperative to exclude:

- giant-cell arteritis
- acute glaucoma, which is found in about 1% of all Europeans over the age of 40 years, increasing to 2% at 55 years of age, and about 10% at 70 years of age
- retinal detachment involving macula
- these need urgent treatment

progressive visual loss: [10]

- * chronic open angle glaucoma, represents 5% of cases of blindness in old age
- * cataracts, represents 33%
- * retinopathy with diabetes mellitus, represents 17%
- * macular degeneration, represents 45%
 - 52-64years 1.6%
 - 65-74years 11 %
 - >75years 28 %

28. HEARING PROBLEMS

epidemiology [11]

- * deafness represents the 4th commonest chronic disease in patients aged 65 years or more, after arthritis, arterial hypertension and heart disease
- * the prevalence is:
 - >65 years 295/1000
 - >75 years 347/1000

causes: [4,10,11]

- * wax and foreign bodies, in external auditory meatus
- * middle or inner ear inflammation
- * Meniere's disease
- * iatrogenic lesion of internal ear, e.g. aminoglycoside, loop diuretics and chemotherapeutic agents, especially cis-platinum
- * lesion of internal ear through bone transformation, e.g. Paget's disease of cochlea
- * otosclerosis
- * less common causes of sensorial hearing loss in the aged include metabolic disorders e.g.:
 - diabetes melitus
 - infection
 - autoimmune diseases
 - hereditary syndromes
- * hearing loss may be unilateral due to:
 - thrombotic or embolic obstruction of the internal auditory artery
 - acoustic neuroma
 - cholesteatoma
 - unexplained cause, but presumably vascular
- * presbycusis, the principal aetiology after 50 years, with a progressive involution in association with a degeneration of peripheral and central hearing pathways; Gacek and Schuknecht propose a classification of presbycusis with audiometric differences, although these different types may be mixed:
 - sensory presbycusis
 - neural presbycusis
 - stridal presbycusis
 - cochlear conductive presbycusis

treatment:

- * there is no curative treatment, apart from removal of wax and foreign body
- * hearing prosthesis is the single palliative means
- * deafness is a severe problem for the patient, often badly understood with the risk of loneliness and of developing persecutory ideas
- * advice can be given to caregivers:
 - speak with a normal clear voice, without shouting, slowly in front of the person
 - remember that all round noises make deafness worse and make word discrimination difficult
 - remember that the older patient is handicapped not only by decreased hearing but also by inability to discriminate between similar words

29. COMMON SKIN CONDITIONS

age related changes: [15]

the skin undergoes numerous changes with increasing age:

- * it becomes more lax and wrinkled, due to changes in elastin and collagen
- * there is thinning of the dermal layer and an increased tendency to damage from shearing forces
- * due to fewer dermal vessels and capillary loops there is an increased likelihood of senile purpura
- * hyperpigmentation with macules or freckles is an ageing change
- * decreasing sebaceous gland function related to changes in androgens leads to dryness, xerosis, of the skin particularly of the legs
- * atrophy of eccrine sweat glands and loss of innervation cause decreased sweating

itch: pruritis is the commonest problem in the elderly

- * itch is often due to *asteatosis*, dryness
- * itch often develops on the anterior aspect of the tibia, with erythema, shiny atrophic skin and possible excoriation
- * as water tends to dry the skin, less frequent bathing is required, along with the use of moisturising creams and appropriate treatment of super-imposed infection
- * antihistamines, neuroleptics and other antipruritics are often tried, but with limited success and often their side effects cause more problems

scabies: is a common cause of itch in elderly people especially in institutions

- * atypical presentation without the classical burrows is common
- * treatment is with *quellada*, and if there is any possibility of this diagnosis it should be tried

drug reactions: especially to antibiotics is a common cause of macular or maculo/papular rash

contact dermatitis: can occur on changing the material used for clothing or washing agents

itchy rashes: are found in:

- * psoriasis
- * uraemia
- * hepatic failure with cholestasis
- * some malignant conditions, such as lymphoma and carcinoma

benign skin conditions: increased age, genetic predisposition and cumulative sun exposure can lead to an increased prevalence of many benign skin conditions in elderly people, especially institutionalised patients; examples are:

- * actinic keratosis
- * seborrhoeic keratosis
- * stasis dermatitis
- * bullous pemphigoid

malignant skin conditions: increased age, genetic predisposition and cumulative sun exposure can lead to an increased prevalence of many malignant skin conditions in elderly people, especially institutionalised patients; if in doubt, a biopsy should be taken; the commonest malignant skin lesions are:

- * basal cell carcinoma
- * squamous cell carcinomae
- * metastatic spread from an underlying carcinoma

infective skin diseases: are common:

- * candidiasis may present as thrush, vaginitis, paronychia and intertrigo
- * diabetes mellitus, antibiotic use, steroid therapy and malnutrition are predisposing factors
- * treatment is drying the skin, treating any underlying condition and the use of an appropriate antibiotic or antifungal drug e.g. *nystatin*, *fluconazole* or *clotrimazole*

herpes zoster: a common infection in the elderly person:

- * it is likely to be a recrudescence of the herpes varicella/zoster virus, latent in the dorsal root ganglion
- * reactivation may be caused by stress, trauma, illness or T-cell immuno suppression
- * tingling, itching or burning may precede the onset of the typical vesicular rash confined to a unilateral dermatome
- * immediate treatment with *zovirax* stops the virus replicating and reduces the likelihood of complications and post-herpetic neuralgia

30. PYREXIA

two commonest cause of pyrexia in the older person are:

- * pneumonia
- * urinary tract infection

two other important causes of pyrexia in older persons are:

- * subacute bacterial endocarditis
- * tuberculosis

general remarks:

- * the characteristic fever and raised white cell count may be absent in the elderly
- * rectal temperature gives a truer reading than oral or axillary

pneumonia:

- * the onset is often insidious, with few of the characteristic signs present
- * the only presenting feature may be:
 - delirium or confusion
 - the complication of cardiac failure
 - dehydration
- * Gram positive cocci remain the commonest organisms, but atypical pneumonia due to mycoplasma, legionella or rickettsial infection must not be overlooked
- * aspiration pneumonia is probably under-diagnosed and should be looked for in patients with altered levels of consciousness or swallowing difficulties from whatever cause
- * if aspiration is a possibility, anaerobes require to be covered.
- * exacerbation of chronic bronchitis is common
- * sputum for culture and blood cultures are helpful for diagnosis and sensitivity of antibiotics

treatment: good hydration, chest physiotherapy and appropriate antibiotics

urinary tract infection:

- * this is common, especially in institutionalised elderly patients
- * factors leading to this increased prevalence are immobility, poor fluid intake, constipation, residual urine in the bladder and catheterisation
- * it is frequently asymptomatic
- * it may present with frequency, dysuria or haematuria
- * it may present as confusion or incontinence
- * a urine specimen should be taken and checked by dipstick for blood, protein, leucocyte esterase, nitrate
 - dipstick positive: a mid-stream specimen of urine should be sent for culture and sensitivities
 - dipstick is negative: it is highly unlikely that infection is present
 - catheterisation may be required to obtain a specimen.

treatment: a high fluid intake, 1.5-2 litres per day, and appropriate antibiotics

- * unless there are systemic symptoms, treatment with antibiotics should be withheld
- * bladder irrigation with an antiseptic is helpful for mild symptoms
- * recurrent infections are common
- * in-dwelling catheters are most likely to be accompanied by infection
- * predisposing causes such a prostatic hypertrophy, prolapse, stones or tumours, should be treated
- * the use of Cranberry juice, 300 ml daily, has been shown to reduce the frequency of bacteruria in older women

subacute bacterial endocarditis:

- * it classically affects valves, damaged by rheumatic fever, but this cause is reducing
- * pyrexia, splinter haemorrhages, finger clubbing and splenomegaly are the common signs
- * normally a heart murmur is heard

- * cardiac failure endocardiography and especially trans-oesophageal echocardiography will confirm the presence of vegetations on the valves
- * blood culture establishes the diagnosis
- * streptococcus is the commonest organism, but staphylococcus and gram negative organisms can be the cause
- * it is a common example of atypical presentation in the elderly patient, triggers can be:
 - worsening heart failure
 - microscopic haematuria
 - acute confusion
 - arterial emboli
 - normochromic, normocytic anaemia
 - rapid erythrocyte sedimentation rate
 - worsening renal failure

treatment: intravenous antibiotics continued for a minimum of four weeks

tuberculosis:

- * reactivation of previous disease is the common cause in elderly people
- * presentation is often non-specific illness:
 - cough
 - haemoptysis
 - breathlessness
 - pleural effusion
 - more rarely ascites or meningitis
- * chest radiograph may show changes of cavitation, bronchopneumonia or miliary mottling
- * sputum should be sent for culture and microscopy; ascitic or pleural fluid can also be sent
- * renal tuberculosis can be diagnosed from 3 early morning urine specimens
- * in many cases none of the above are present and bone marrow aspiration in the presence of unexplained anaemia may be the only mechanism of diagnosis

treatment: triple therapy, initially for three months, then double therapy for a further 9-15 months

other infections: with pyrexia in older people are:

- * cholecystitis
- * empyema of the gall bladder
- * paracolic abscess
 - abdominal ultrasound examination will help with the diagnosis
- * infarction of heart or lung may present with low grade pyrexia
 - cardiac enzymes, ECG and ventilation/perfusion scan may help to confirm the diagnosis
- * malignancy, in particular lymphoma and hypernephroma, may cause pyrexia
- * more rarely collagen-vascular disorders e.g. temporal arteritis may present with a temperature

31. OSTEOPOROSIS

definition: World Health Organisation 1994: A progressive systemic skeletal disease characterised by low bone mass and micro architectural deterioration of bone tissue, with a consequent increase in bone fragility and susceptibility to fracture.

general remarks:

- * osteoporosis is normal calcified bone but less of it
- * there is a continual resorption and formation of bone:
 - in younger people it is in balance

- in older people there is more resorption than formation, with a 1% per year bone loss after the age of 40 years
- bone loss increases to 3-5% per year for 10 years after the menopause
- * osteoporosis commonly results in fractures:
 - lifetime risk in a 50 year old woman of sustaining one or more osteoporotic fractures is 40%
 - lifetime risk in men is 13%
 - consequence of a hip fracture is 1 in 5 die and only 50% of survivors regain independence
- * common fractures are vertebra, distal radius and proximal femur
- * hip fractures account for some 20% of orthopaedic bed occupancy

risk factors:

- * age
- * post menopausal women
- * low initial bone mass
- * low body weight
- * smoking
- * maternal hip fracture
- * anorexia
- * malabsorption
- * prolonged bed rest / immobility
- * use of steroids, more than 7.5 mg oral *prednisolone* for over 6 months
- * dietary deficiency of calcium and vitamin D, is very common in the elderly

classification: Bone Mass Density, BMD, can be measured by dual-energy x-ray absorptiometry, DEXA, at axial and appendicular sites. Other non-invasive techniques such as quantitative ultrasound and computed axial tomography are available but no one technique provides information on all functions of skeletal assessment. DEXA at hip is the preferred site for predictive value for hip fracture risk. DEXA at spine is preferred site for assessing the response to treatment. The use of BMD has a high specificity, but a low sensitivity. It should be used for case-finding rather than population screening.

- * *osteoporosis* is a BMD of 2.5 SD or more below the young adult mean value, T-score less than -2.5
- * *osteopenia* is a BMD of 1 to 2.5 SD below the young adult mean value, T-score between -1 and -2.5
- * the risk of fracture increases with decreasing BMD:
 - for each standard deviation decrease in BMD the risk doubles
 - the predictive value of BMD for a fracture is as good as that of blood pressure for stroke

investigations:

- * history and physical examination
- * full blood count, erythrocyte sedimentation rate, serum creatinine, calcium, phosphate, albumin, alkaline phosphatase and liver transaminases
- * lateral radiograph of lumbar and thoracic spine
- * bone mass measurement
- * serum testosterone and gonadotrophins, in men
- * serum vitamin D
- * serum TSH and T4

diagnosis:

- * lateral radiograph of lumbar and thoracic spine
 - with one or more vertebral fractures, without a severe traumatic event
- * DEXA scanning

prevention:

- * reduce prevalence of smoking
- * reduce alcohol consumption
- * increase level of physical activity at all ages
- * increase dietary calcium intake
- * hormone replacement therapy at the time of ovarian failure, for 10 years, risk of small increase in breast cancer and endometrial cancer
- * in patients 'at-risk' for osteoporosis e.g. those receiving steroids:
 - selective oestrogen receptor modulators, *raloxifene*, risk of thrombo-embolic events
 - bisphosphonates, *etidronate*, *alendronate*, *risindronate*
 - calcium and vitamin D, especially in housebound or institutionalised elderly people

treatment:

- * calcium, 1000 mg per day
- * vitamin D 800 units per day, in housebound patients
- * oestrogen
- * bisphosphonates:
 - alendronate*
 - etidronate*
- * calcitonin, for acute pain management
- * anabolic steroids, for frail elderly
- * calcitriol

pain management:

- * pain associated with osteoporosis can be severe, requiring morphine or its derivatives
- * use of NSAIDs, such as *diclofenac*, are helpful but may not be enough
- * calcitonin can also be used in acute pain management

32. REFERENCES

1. Camus V. Dépression du sujet âgé. *Gériatrie Pratique*. 1999;no3:14-9.
2. Chan D, Brennan NJ. Delirium: Making the diagnosis, improving the prognosis. *Geriatrics* 1999;54:28-42.
3. Coni N. St Webster Lecture Notes on Geriatrics. Blackwell Sciences 1998.
4. Lumergau ET, ed. *Geriatrics, a Lange Clinical Manual*. Prentice Hall International Inc 1996.
5. *Geriatrics at your finger tips*. Am Ger Excerpta Medica Inc. Belle Mead, New York 1998/99.
6. Legrain S, Kagan K. *Guide pratique de gériatrie*. MMI editions 1998.
7. *Merck Manual of Geriatrics*. MSD Research Labs, New York 1995
8. Mumenthaler M. *Imigran Headache-Service*. 1998.
9. Pras P, Bertrand F. Urgences du sujet âgé. In: Masson, ed. Paris, Milan, Barcelona, Bonn 1993.
10. Van der Cammen TJM, Rai GS, Exton-Smith AN. *Manual of Geriatric Medicine 1991* Churchill Livingstone, Edinburgh, London, Melbourne, New York 1991.
11. Wettstein A et al. *Checklist Geriatrie*. George Thieme Verlag Stuttgart 1997; Vigot Paris 1998.
12. Williamson J, Smith RG, Burley LE. *Primary Care of the Elderly-A Practical Approach*. Wright Bristol 1987.
13. Zagury G, Bruyère F. *Medi Chiffres*. Estem, ed. Paris 1998.
14. *Prophylaxis of Venous Thromboembolism*. Scottish Intercollegiate Guidelines Network. Edinburgh 1995.
15. Gambert SR, ed. *Handbook of Geriatrics*. Plenum Medical Book Co. New York 1987.
16. *Geriatrisk Vårdprogram. Trycksår oth trycksårsbehandling*, ISBN no 9-1-630 - 7428-1, Vivianne Schubert 1998.

17. Constipation: Common sense care of the older patient. *Geriatrics* 1996;51(12):28-36.
18. Rundgren Å, ed. *Geriatrisk gastroenterologi*. Glaxo AB. Göteborg (Gothenburg) 1992.
19. La déshydratation chez la personne âgé. *Rev Med Liege* 1997;52(4):215-20.
20. Evans JG, Williams TF, Beattie BL, et al, eds. *Oxford Textbook of Geriatric Medicine*. Oxford 2000.