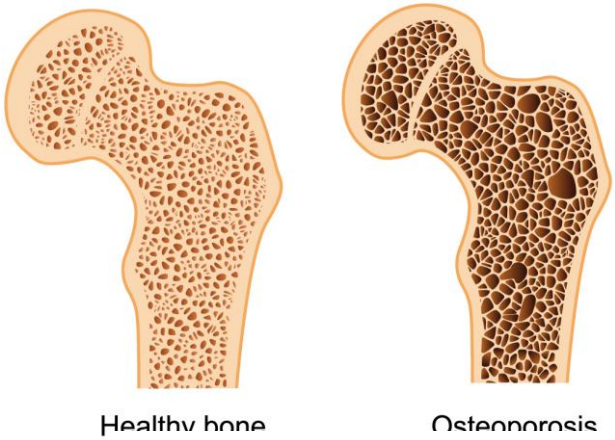
METABOLIC DISORDERS

Metabolic disorders are conditions that affect any aspect of metabolism. As a result, some people may produce too much or too little of a substance to remain healthy. Metabolism is a term that describes the biochemical processes that allow people to grow, reproduce, repair damage, and respond to their environment.

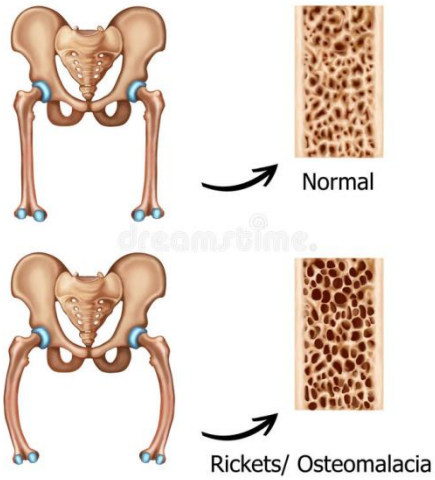
OSTEOPOROSIS

Osteoporosis is by far the commonest metabolic bone disease. It is characterised by a diffuse reduction in the bone density due to a decrease in the bone mass. It occurs when the rate of bone resorption exceeds the rate of bone formation.



RICKETS AND OSTEOMALACIA

Rickets and osteomalacia are the diseases where the organic matrix of the bone fails to calcify properly, leaving large osteoid seams. Manifestations of the two diseases are different only with respect to the stage in life at which they occur. Rickets occurs in the growing bones of children; osteomalacia in the bones of adults. Both conditions are primarily due to a deficiency of vitamin D or a disturbance in its metabolism secondary to renal disease.



RICKETS

Rickets is a disease of the growing skeleton. It is characterised by failure of normal mineralisation, seen prominently at the growth plates, resulting in softening of the bones and development of deformities.

Osteoporosis is reduction of mass of the bones. On the other hand osteomalacia is the softening of the bones.

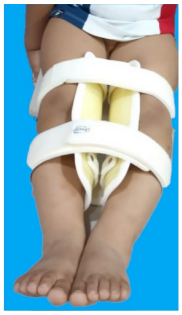
TREATMENT

It consists of medical and orthopaedic treatment.

Medical treatment: Administration of vitamin D

Orthopaedic treatment: It is required for the correction of deformities by conservative or operative methods.

Conservative methods: Mild deformities correct spontaneously, as rickets heals. Some surgeons use specially designed splints (mermaid splints) or orthopaedic shoes for correction of knee deformities.



OSTEOMALACIA

Osteomalacia, which means softening of bones, is the adult counterpart of rickets. It is primarily due to deficiency of vitamin D. This results in failure to replace the turnover of calcium and phosphorus in the organic matrix of bone. Hence, the bone content is demineralised.

DIABETES MELLITUS

Diabetes mellitus is a clinical syndrome characterised by an increase in plasma blood glucose (hyperglycaemia). It has many causes (see Box 20.9), most commonly type 1 or type 2 diabetes. Type 1 diabetes is generally considered to result from autoimmune destruction of insulin-producing cells (β cells) in the pancreas, leading to marked insulin deficiency, whereas type 2 diabetes is characterised by reduced sensitivity to the action of insulin and an inability to produce sufficient insulin to overcome this 'insulin resistance'.

DIABETIC FOOT

The foot is a frequent site of complications in patients with diabetes and for this reason foot care is particularly important. Tissue necrosis in the feet is a common reason for hospital admission in diabetic patients. Treatment of the foot complications of diabetes accounts for more inpatient days than any other diabetes-related complication.

i Complications of diabetes

Microvascular/neuropathic

Retinopathy, cataract
- Impaired vision

Nephropathy
- Renal failure

Peripheral neuropathy
- Sensory loss
- Pain
- Motor weakness

Autonomic neuropathy
- Gastrointestinal problems (gastroparesis; altered bowel habit)
- Postural hypotension

Foot disease
- Ulceration
- Arthropathy

Macrovascular

Coronary circulation
- Myocardial ischaemia/infarction

Cerebral circulation
- Transient ischaemic attack
- Stroke

Peripheral circulation
- Claudication
- Ischaemia