

Musculoskeletal System

By

Dr. Sali Jabrou

Lecture 10

The musculoskeletal system includes muscles, bones, joints, and related structures, such as the tendons and connective tissue that function in support and movement of body parts and organs.

The main function of the musculoskeletal system is to provide support, protection, and movement of body parts.

There are three types of muscle tissue in the body:

- 1) Skeletal muscles, also called voluntary or striated muscles
- 2) Cardiac muscle
- 3) Smooth muscles, also called involuntary or visceral muscles

Bone types

There are four principal types of bone:

- 1) Short bones
- 2) Irregular bones
- 3) Flat bones
- 4) Long bones

Medical Word Elements

Skeletal System

- ankyl/o: stiffness; bent, crooked
- arthr/o: joint
- kyph/o: humpback
- lamin/o: lamina (part of vertebral arch)
- lord/o: curve, swayback
- myel/o: bone marrow; spinal cord
- orth/o: straight
- oste/o: bone
- ped/o, ped/I : foot; child
- scoli/o: crooked, bent
- thorac/o: chest
- brachi/o: arm
- cephal/o: head
- cost/o: Ribs
- dactyl/o: fingers; toes
- crani/o: cranium (skull)
- pod/o: foot, child

Medical Word Elements—cont'd)

Muscular System:

- leiomy/o: smooth muscle (visceral)
- muscul/o, my/o: muscle
- chondr/o: cartilage
- fasci/o: band, fascia
- fibr/o: fiber, fibrous, tissue
- -asthenia: weakness, debility
- -clast: to break
- -desis: binding, fixation (of a bone or joint)
- -malacia: softening
- -physis: growth

Building Medical Word

- 1) ankyl/osis: abnormal condition of stiffness
- 2) arthr/itis: inflammation of a joint
- 3) kyph/osis: abnormal condition of a humpback posture
- 4) myel/o/cyte: bone marrow cell
- 5) orth/o/ped/ist: specialist in treatment of musculoskeletal disorder
- 6) oste/oma: tumor composed of bone
- 7) scoli/osis: abnormal bending of the spine
- 8) ped/i/cure: care of feet
- 9) thorac/o/dynia: pain in the chest
- 10) brachi/algia: pain in the arm
- 11) calcane/o/dynia: pain in the heel
- 12) carp/o/ptosis: wrist drop
- 13) cervic/o/dynia: pain in the neck; also called cervical neuralgia
- 14) cost/ectomy: excision of a rib
- 15) dactyl/itis: : inflammation of fingers or toes
- 16) lumb/o/dynia: pain in lumbar region of the back; also called lumbago
- 17) pod/iatry: treatment of the feet
- 18) leiomy/oma: tumor of smooth muscle
- 19) rhabdomy/oma : tumor composed of striated muscular tissue

Bone Disorders

A broken bone is called a fracture

The different types of fractures are classified by extent of damage:

- 1) closed (simple) fracture
- 2) open (compound) fracture
- 3) complicated fracture
- 4) comminuted fracture
- 5) impacted fracture
- 6) incomplete fracture
- 7) greenstick fracture
- 8) Colles fracture



(1) Closed



(2) Open



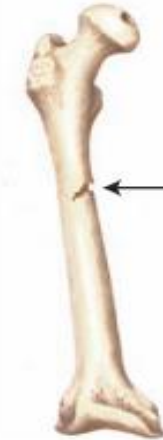
(3) Complicated



(4) Comminuted



(5) Impacted



(6) Incomplete



(7) Greenstick



(8) Colles fracture

Infections

- 1) Osteomyelitis: Infection of the bone and bone marrow
- 2) osteitis deformans: Paget disease, is a chronic inflammation of bones resulting in thickening and softening of bones

Osteoporosis

s is a common metabolic bone disorder in the elderly, particularly in postmenopausal women and especially women older than age 60.

Spinal Curvatures

Any persistent, abnormal deviation of the vertebral column from its normal position may cause an abnormal spinal curvature

Three common deviations are

1. Scoliosis
2. Kyphosis
3. lordosis.

Scoliosis: C-shaped curvature of the spine, abnormal lateral curvature of the spine, either to the right or left
kyphosis: humpback or hunchback. abnormal curvature of the upper portion of the spine
Lordosis: swayback, abnormal inward curvature of a portion of the lower portion of the spine

Joint Disorders

a general term for many joint diseases, is an inflammation of a joint usually accompanied by pain, swelling and, commonly, changes in structure

The main types of arthritis include

- 1) rheumatoid arthritis
- 2) Osteoarthritis
- 3) gouty arthritis, or gout

Rheumatoid arthritis (RA) a systemic disease characterized by inflammatory changes in joints, t occurs most commonly in women between ages 23 and 35 but can affect people of any age group

Osteoarthritis: degenerative joint disease (DJD), Cartilage destruction and new bone formation at the edges of joints (spurs)

Gouty arthritis: gout, is a metabolic disease caused by the accumulation of uric acid crystals in the blood

(nephroliths): renal calculi, form because of uric acid crystals collecting in the kidney.

Muscle Disorders

- 1) **Muscular dystrophy**, a genetic disease, is characterized by gradual atrophy and weakening of muscle tissue
- 2) **Myasthenia gravis (MG)**, a neuromuscular disorder, causes fluctuating weakness of certain skeletal muscle groups (of the eyes, face and, sometimes, limbs)

Duchenne dystrophy, affects children; boys more commonly than girls.

Neurotransmitter a substance that transmits nerve impulses

Fibrosarcoma develops in cartilage and generally affects the pelvis, upper legs, and shoulders. Patients with fibrosarcoma are usually between ages 50 and 60.

Osteosarcoma develops from bone tissue and generally affects the knees, upper arms, and upper legs. Patients with osteosarcoma are usually between ages 20 and 25.

Ewing sarcoma develops from primitive nerve cells in bone marrow. This disease usually affects young boys between ages 10 and 20

talipes equinovarus Congenital deformity of one or both feet in which the foot is pulled downward and laterally to the side; also called clubfoot

In talipes, the heel never rests on the ground. Treatment consists of applying casts to progressively straighten the foot and surgical correction for severe cases.



Arthrography

Series of radiographs taken after injection of contrast material into a joint cavity, especially the knee or shoulder, to outline the contour of the joint