Muscular disorders

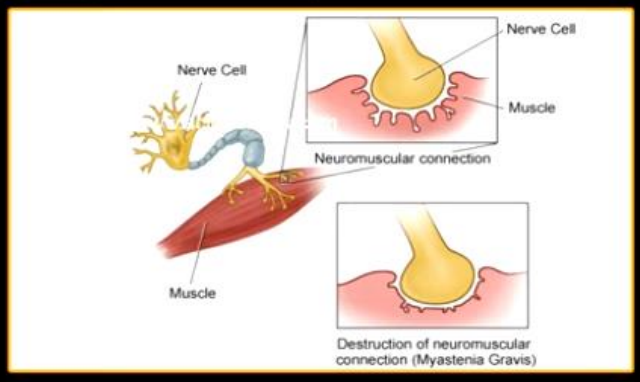
Abnormalities of skeletal muscle function may be due to disease or damage of any of the components of a motor unit: somatic motor neurons, neuromuscular junctions, or muscle fibers. The term **neuromuscular disease** encompasses problems at all three sites; the term **myopathy** (mī-OP-a-thē; *-pathy* = disease) signifies a disease or disorder of the skeletal muscle tissue itself.

Myasthenia Gravis

Myasthenia gravis (mī-as-THĒ-nē-a GRAV-is; *mys-* = muscle; *-aisthesis* = sensation) is an autoimmune disease that causes chronic, progressive damage of the neuromuscular junction. The immune system inappropriately produces antibodies that bind to and block some ACh receptors, thereby decreasing the number of functional ACh receptors at the motor end plates of skeletal muscles (see **Figure 10.9**). Because

order. As the disease progresses, more ACh receptors are lost. Thus, muscles become increasingly weaker, fatigue more easily, and may eventually cease to function.

3. Myasthenia gravis: (muscle weakness)



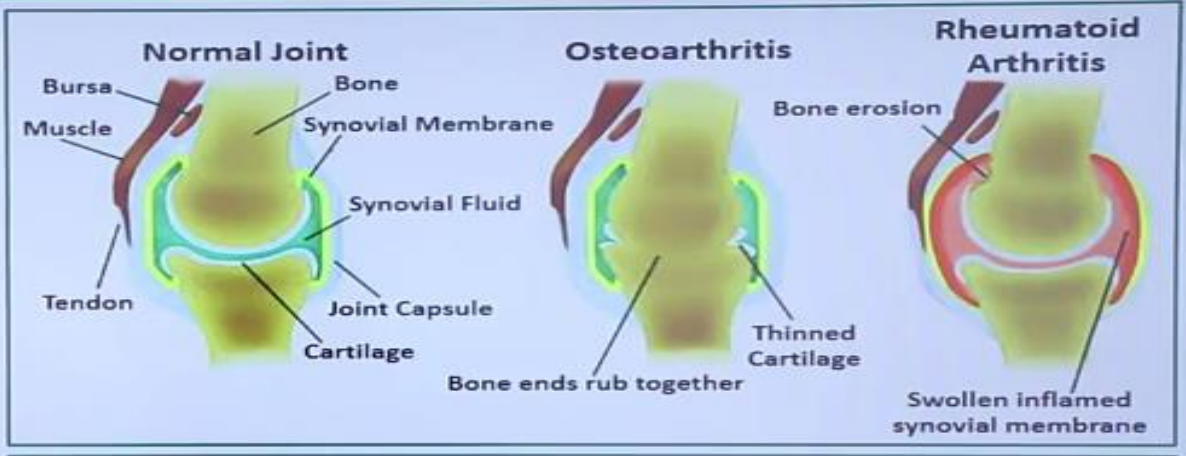
It is an autoimmune neuromuscular disease leading to fluctuating muscle weakness and fatiguability.

Abnormal Contractions of Skeletal Muscle

One kind of abnormal muscular contraction is a **spasm**, a sudden involuntary contraction of a single muscle in a large group of muscles. A painful spasmodic contraction is known as a **cramp**. Cramps may be caused by inadequate blood flow to muscles, overuse of a muscle, dehydration, injury, holding a position for prolonged periods, and low blood levels of electrolytes, such as potassium. A **tic** is a spasmodic

of tics. A **tremor** is a rhythmic, involuntary, purposeless contraction that produces a quivering or shaking movement. A **fasciculation** (fa-sik-

Arthritis



- A common disease of old age in which there is a inflammation of joints.

➢ **Symptoms:-**

- Pain and stiffness in the joints.

➢ **Cure:-**

- Only pain killers will be helpful.

Osteoporosis

- Age related disorder characterised by decreased mass bone mass and increased chances of fractures.
- Mainly due to loss of calcium and phosphorus from the bones.

➢ **Cause :-**

1. Common cause is decreased of level of estrogen .
2. Deficiency of calcium. Vitamin C and Vitamin D.

Gout

- Inflammation of joints due to accumulation of uric acid crystals.
- Gout usually affects the large joint of your big toe, but it can occur in any joint.
- Normally, uric acid dissolves in your blood and passes through your kidneys into your urine. But sometimes either your body produces too much uric acid or your kidneys excrete too little uric acid. When this happens, uric acid can build up, forming sharp, needlelike urate crystals in a joint or surrounding tissue that cause pain, inflammation and swelling.

Muscular Dystrophy

- **Progressive degeneration of skeletal muscle mostly due to genetic disorder.**
  - It is a genetic disease due to which dystrophin protein synthesis is inhibited which causes the paralysis of muscles.
  - Dystrophin is a protein found in muscle cells. It is one of a group of proteins that work together to strengthen muscle fibers and protect them from injury as muscles contract and relax.

1. MUSCULAR DYSTROPHY

- Muscular dystrophy is a disease characterized by progressive degeneration of muscle fibers, without the involvement of nervous system.
- Mostly it has a hereditary origin.

- The muscles fail to regenerate, resulting in progressive weakness and confinement to a wheelchair.
- Eventually, death occurs.
- Common types of muscular dystrophy are Duchenne muscular dystrophy and Becker muscular dystrophy.

Duchenne Muscular Dystrophy

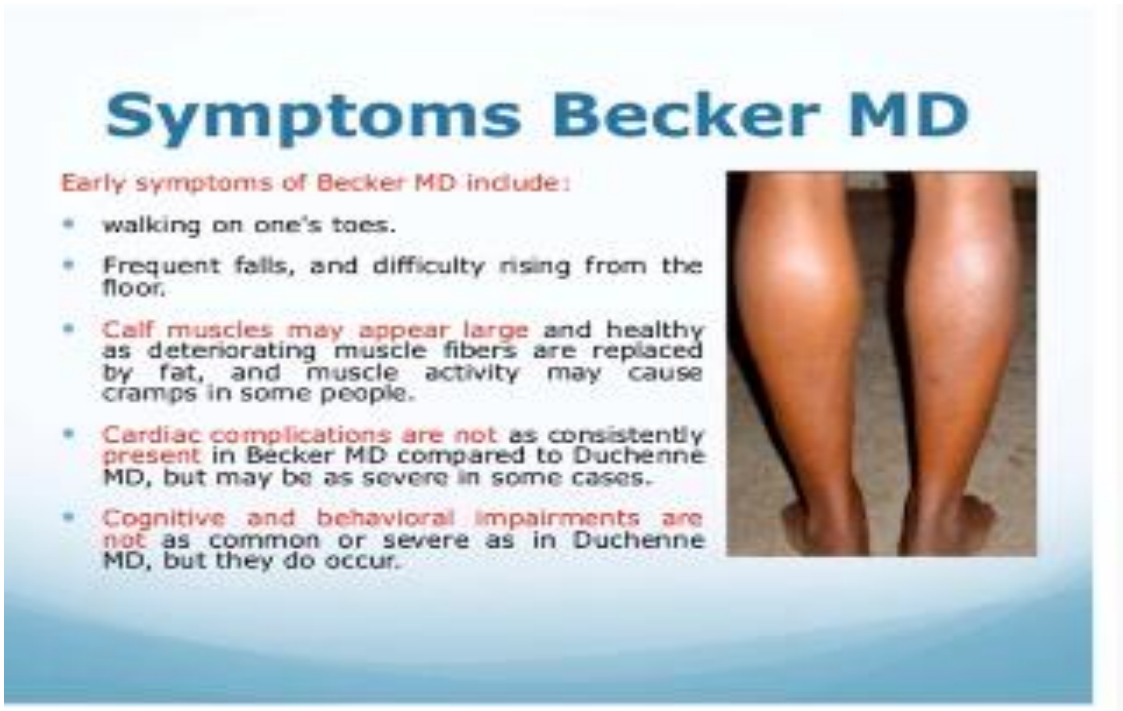
- Duchenne muscular dystrophy is a sex linked Recessive disorder.
- It is due to the absence of a gene product called dystrophin in the X chromosome.
- Dystrophin is necessary for the stability of sarcolemma.

- This disease is characterized by degeneration and necrosis of muscle fibers.
- The degenerated muscle fibers are replaced by fat and fibrous tissue.
- Common symptom is the muscular weakness.

- Sometimes, there is enlargement of muscles (pseudo hypertrophy).
- In severe conditions, the respiratory muscles become weak, resulting in difficulty in breathing and death.

Becker Muscular Dystrophy

- Becker muscular dystrophy is also a sex linked disorder.
- It occurs due to the reduction in quantity or alteration of dystrophin.

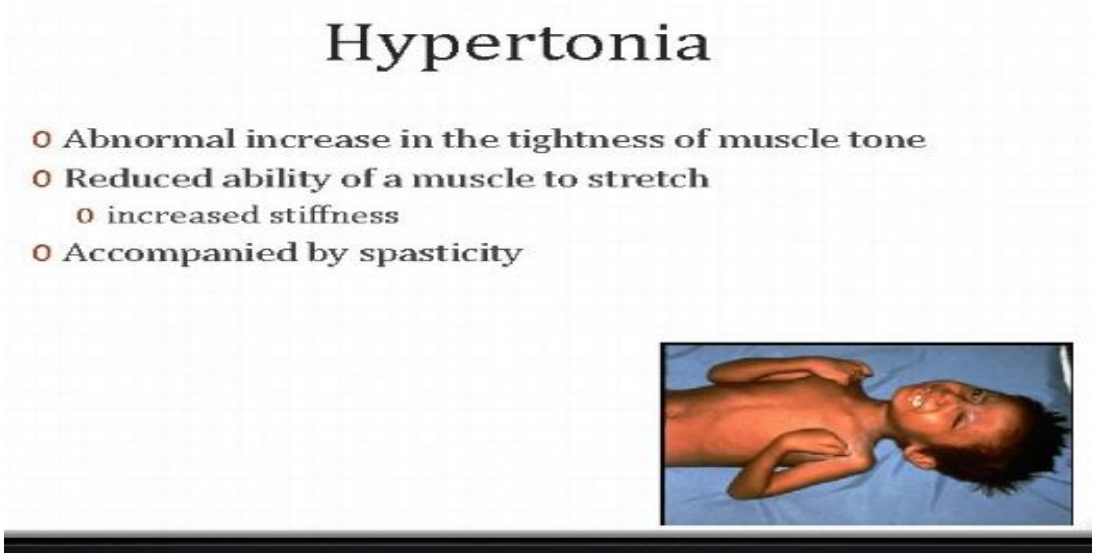


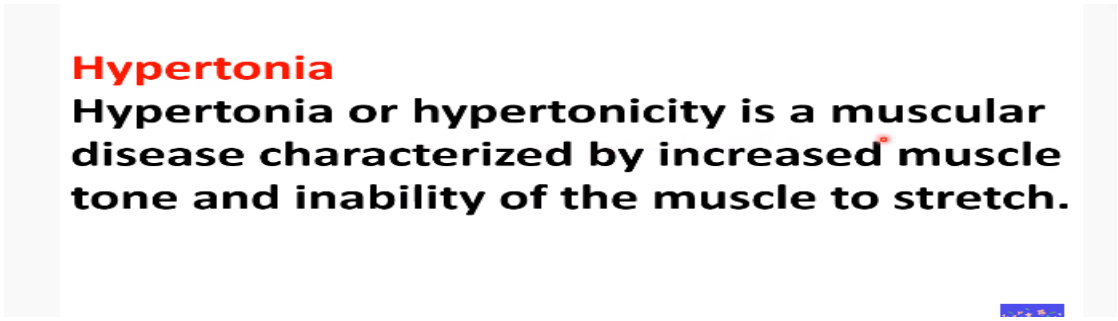
Tetany : Low calcium level

Overly stimulated nerves cause involuntary muscle cramps and contractions, most often in the hands and feet. But these spasms can extend throughout the body, and even into the larynx, or voice box, causing breathing problems.

Severe episodes can result in:

- vomiting
- convulsions
- serious pain
- seizures
- heart dysfunction





Causes

- **Hypertonia** occurs in upper motor neuron lesion.
- During the lesion of upper motor neuron, inhibition of lower motor neurons (gammamotorneurons in the spinal cord) is lost.
- It causes exaggeration of lower motor neuron activity, resulting in hypertonia.