10.3: Conditions and Diseases

Several conditions can cause pain or inflammation that require the use of analgesics or musculoskeletal medication. Common disorders are briefly reviewed below.

Acute Pain

**Acute pain** usually comes on suddenly and is caused by something specific. It is sharp in quality. Acute pain usually does not last longer than six months. It goes away when there is no longer an underlying cause for the pain. Causes of acute pain include:

- Surgery
- Broken bones
- Dental work
- Burns or cuts
- Labor and childbirth

After acute pain goes away, a person can go on with life as usual.\[^{1}\]

Chronic Pain

**Chronic pain** is pain that is ongoing and usually lasts longer than six months. This type of pain can continue even after the injury or illness that caused it has healed or gone away. Pain signals remain active in the nervous system for weeks, months, or years. Some people suffer chronic pain even when there is no past injury or apparent body damage. Chronic pain is linked to conditions including:
People who have chronic pain can have physical effects that are stressful on the body. These include tense muscles, limited ability to move around, a lack of energy, and appetite changes. Emotional effects of chronic pain include depression, anger, anxiety, and fear of reinjury. Such a fear might limit a person’s ability to return to their regular work or leisure activities. [2]

Fibromyalgia

Fibromyalgia is a condition that causes pain all over the body (also referred to as widespread pain), sleep problems, fatigue, and often emotional and mental distress. People with fibromyalgia may be more sensitive to pain than people without fibromyalgia. This is called abnormal pain perception processing. Fibromyalgia affects about 4 million US adults, about 2% of the adult population. The cause of fibromyalgia is not known, but it can be effectively treated and managed. [3]

The most common symptoms of fibromyalgia are the following:

- Pain and stiffness all over the body
- Fatigue and tiredness
- Depression and anxiety
- Sleep problems
- Problems with thinking, memory, and concentration
- Headaches, including migraines

Other symptoms may include:

- Tingling or numbness in hands and feet
- Pain in the face or jaw, including disorders of the jaw known as temporomandibular joint syndrome (TMJ)
- Digestive problems, such as abdominal pain, bloating, constipation, and even irritable bowel syndrome (IBS)

Known risk factors include:

- Age. Fibromyalgia can affect people of all ages, including children. However, most people are diagnosed during middle age
- Lupus or Rheumatoid Arthritis. Patients diagnosed with lupus or rheumatoid arthritis (RA) are more likely to develop fibromyalgia

Other factors that have been weakly associated with onset of fibromyalgia include:
• Sex. Women are twice as likely to have fibromyalgia as men
• Stressful or traumatic events, such as car accidents or post-traumatic stress disorder (PTSD)
• Repetitive injuries. Injury from repetitive stress on a joint, such as frequent knee bending
• Illness (such as viral infections)
• Family history
• Obesity

Doctors usually diagnose fibromyalgia using the patient’s history, physical examination, X-rays, and blood work. [4]

---

**Gout**

Gout is a common form of inflammatory arthritis that is very painful. It usually affects one joint at a time (often the big toe joint). There are times when symptoms get worse, known as flares, and times when there are no symptoms, known as remission. Repeated bouts of gout can lead to gouty arthritis, a worsening form of arthritis.

There is no cure for gout, but you can effectively treat and manage the condition with medication and self-management strategies.

Gout flares start suddenly and can last days or weeks. These flares are followed by long periods of remission (weeks, months, or years) without symptoms before another flare begins. Along with the big toe, joints commonly affected are the lesser toe joints, the ankle, and the knee. [5]

Symptoms in the affected joint(s) may include:

• Pain, usually intense
• Swelling
• Redness
• Heat

Gout is caused by a condition known as hyperuricemia, where there is too much uric acid in the body. The body makes uric acid when it breaks down purines, which are found in your body and the foods you eat. When there is too much uric acid in the body, uric acid crystals (monosodium urate) can build up in joints, fluids, and tissues within the body. Hyperuricemia does not always cause gout, and hyperuricemia without gout symptoms does not need to be treated.

The following make it more likely that you will develop hyperuricemia, which causes gout:

• Being male
• Being obese

Having certain health conditions can also increase your chances of developing hyperuricemia. These conditions include the following:

• Congestive heart failure
• Hypertension (high blood pressure)
• Insulin resistance
• Metabolic syndrome
• Diabetes
• Poor kidney function

Additional factors may increase your chances of developing hyperuricemia:

• Using certain medications, such as diuretics (water pills)
• Drinking alcohol. The risk of gout is greater as alcohol intake increases
• Eating or drinking food and drinks high in fructose (a type of sugar)
• Having a diet high in purines, which the body breaks down into uric acid. Purine-rich foods include red meat, organ meat, and some kinds of seafood, such as anchovies, sardines, mussels, scallops, trout, and tuna.

A medical doctor diagnoses gout by assessing your symptoms and the results of your physical examination, X-rays, and lab tests. Gout can only be diagnosed during a flare when a joint is hot, swollen, and painful and when a lab test finds uric acid crystals in the affected joint. [6]

Muscle Spasm

Spasms of skeletal muscles are most common and are often due to overuse and muscle fatigue, dehydration, and electrolyte abnormalities. The spasm occurs abruptly, is painful, and is usually short-lived. It may be relieved by gently stretching the muscle. [7] Diseases such as multiple sclerosis can also cause chronic muscle spasms.

Multiple Sclerosis

Multiple sclerosis (MS) involves an immune-mediated disease process in which an abnormal response of the body’s immune system is directed against the central nervous system (CNS). The CNS is made up of the brain, spinal cord, and optic nerves.

Within the CNS, the immune system causes inflammation that damages myelin (the fatty substance that surrounds and insulates the nerve fibers), as well as the nerve fibers themselves and the specialized cells that make myelin. When myelin or nerve fibers are damaged or destroyed in MS, messages within the CNS are altered or stopped completely. Damage to areas of the CNS may produce a variety of neurological symptoms that will vary among people with MS in type and severity. The damaged areas develop scar tissue that gives the disease its name – multiple areas of scarring or multiple sclerosis. The cause of MS is not known, but it is believed to involve genetic susceptibility, abnormalities in the immune system, and environmental factors that combine to make MS symptoms variable and unpredictable. No two people have exactly the same symptoms, and each person’s symptoms can change or fluctuate over time. One person might experience only one or two of the possible symptoms, while another person might experience several symptoms of the disease.

Symptoms include:

• Fatigue
- Numbness or tingling
- Weakness
- Dizziness or vertigo
- Walking difficulties
- **Muscle spasticity**
- Blurred vision

At this time, there are no symptoms, physical findings, or laboratory tests that can, by themselves, determine if a person has MS. Several strategies are used to determine if a person meets the long-established criteria for a diagnosis of MS and to rule out other possible causes of whatever symptoms they are experiencing. These strategies include a careful medical history, a neurologic exam, and various tests including magnetic resonance imaging (MRI), spinal fluid analysis, and blood tests. [8]

Myasthenia Gravis

Myasthenia Gravis (MG) is an autoimmune disease that occurs when the immune system attacks the body’s own tissues. In MG, the attack interrupts the connection between nerve and muscle called the neuromuscular junction. Myasthenia gravis is characterized by autoantibodies against the acetylcholine receptor or against a receptor-associated protein called muscle-specific tyrosine kinase. You can read more details about acetylcholine receptors in the “Autonomic Nervous System” chapter.

MG causes weakness in muscles that control the eyes, face, neck, and limbs. Symptoms include partial paralysis of eye movements, double vision and droopy eyelids, as well as weakness and fatigue in neck and jaws and problems chewing, swallowing, and holding up the head. MG is treatable with drugs that suppress the immune system or boost the signals between nerve and muscle. [9] The group of drugs used to control MG are called acetylcholinesterase (ACh) inhibitors. They inhibit the action of the enzyme acetylcholinesterase so that more acetylcholine (ACh) is available to activate cholinergic receptors and promote muscle contraction. ACh inhibitors are classified as parasympathomimetics. Pyridostigmine is an example of an ACh inhibitor.

Overdosing with ACh inhibitors can cause a complication called cholinergic crisis, which is an acute exacerbation of symptoms. A cholinergic crisis usually occurs 30-60 minutes after taking cholinergic medication with severe muscle weakness that can lead to respiratory paralysis and death. [10]


