SAWA UNIVERSITY

جامعة ساوة الاهلية
كلية التقنيات الصحية والطبية
قسم التخدير - اللجنة العلمية

ADVANCED MEDICINE

LECTURE SEVEN : DISEASE OF THE NERVE AND MUSCLE

Sawa University — جامعـــــة ســـــاوة الاهلية

College of health and medical techniques — كليـــة التقنيـــات الصحيـة والطبيـة

Department of Anesthesia — قسم تقنيـــات التخديـــــر

Fourth Stage — المرحلـــــــــة الرابعة

Lecture eight

Theoretical

Dr. shaker kadhium

M.Sc. medicine

Neuromuscular disorders represent a broad range of conditions that involve dysfunction of peripheral nerves, muscles or the communication between them. This most often results in muscle weakness, muscle atrophy (loss) and disturbance of sensation (like numbness and tingling). Neuromuscular disorders can cause other symptoms as well, depending on the type.

There are several subgroups of neuromuscular disorders based on the area of dysfunction

A neuromuscular disorder represents any condition that affects the structure and/or function of any component of your neuromuscular system, including:

1. **Anterior horn cells.**
2. **Nerve roots (including dorsal root ganglia).**
3. **Plexuses (like the brachial plexus and lumbosacral plexus).**
4. **Peripheral nerves.**
5. **Neuromuscular junction.**
6. **Muscle fibers.**

Anterior horn cell conditions

Anterior horn cell diseases are often progressive, degenerative diseases (they get worse with time) of the motor neurons. Motor neurons are the cells in your brain and spinal cord that allow you to perform all movements, like walking, speaking and breathing. They relay commands from your brain to the muscles that carry out these functions.

Anterior horn cells specifically are motor neurons that are in the grey matter of your spinal cord. They're essential for the movement of your skeletal muscles. The breakdown of these cells causes a lack of nerve supply (denervation) to your muscles, resulting in weakness.

Plexus disorders (plexopathies)

Soon after emerging from your spine at different spinal levels, the nerves may intermingle to form a complex network, or plexus. There's a plexus in your upper limbs called the brachial plexus. And there's another in your lower limbs called the lumbar or lumbosacral plexus.

These plexuses may be vulnerable to various types of injuries, like those from trauma, compression or even inflammation. This may cause pain, numbness and tingling, and weakness in the affected limb

Nerve root conditions

Nerve roots are the short branches of a spinal nerve. Spinal nerves exit your spinal cord along the length of your spine between your vertebrae (spine bone segments). Each spinal nerve contains motor nerve root and sensory nerve root fibers. Motor nerve roots contain nerve fibers that carry commands from your brain and spinal cord through your peripheral nerves to your muscles.

When surrounding tissues press on nerve roots, it can cause pain, numbness and tingling in different areas of your body. This is called radiculopathy. Compression of motor nerve roots causes

Peripheral nerve conditions

“Peripheral neuropathy” is an umbrella term for nerve diseases that affect any of the nerves outside of your brain and spinal cord (peripheral nerves).

Peripheral neuropathies may affect only parts of your body or most of your body. The most common form of peripheral neuropathy affects the parts of your limbs farthest away from your core, especially your feet and hands.

Peripheral neuropathy is the most common type of neuromuscular disorder. This is mainly because it has several types and causes.

Neuromuscular junction conditions

The neuromuscular junction (NMJ) is a connection (synapse) between the end of a motor nerve and a muscle. To communicate with the muscle, motor nerves release a molecule across the synapse called acetylcholine. Issues with this communication lead to certain neuromuscular junction disorders.

Muscle conditions

Myopathies are conditions that directly affect your skeletal muscles (muscles that connect to your bones). These diseases attack muscle fibers, making your muscles weak. There are several types of myopathies. Some you're born with (they're genetic or inherited) and some you can develop later in life.

Myopathies don't include direct muscle injuries, like a muscle tear, strain or bruise.

Symptoms of neuromuscular disorder

1. Muscle weakness and pain
2. Spasticity.
3. Difficulty walking.
4. Issues with coordination and balance.
5. Drooping eyelids or other facial features.
6. Difficulty speaking
7. Difficulty swallowing
8. Difficulty breathing due to diaphragm muscle weakness.

Causes of neuromuscular disorder

Neuromuscular disorders have many different causes. But a some of them are genetic. This means that you inherited the genes from your biological parents, or a genetic mutation (change) happened randomly. A neuromuscular disorder may result from an error in a single gene or several genes.

Some neuromuscular disorders are autoimmune diseases. Others are a result of an injury, nutritional or metabolic disturbance, toxin exposure or inflammation. Sometimes, there's no known cause.

Diagnosis and Tests

your medical and family history, medications and symptoms.

physical exam and a neurological exam.

Other tests that help diagnose neuromuscular disorders include:

1. **Electromyography (EMG)**
2. **Nerve conduction test**
3. **Blood tests**
4. **Imaging tests**
5. **Muscle biopsy**
6. **Genetic testing**

Treatment for neuromuscular disorders

In general, many neuromuscular disorders don't have a cure. But there may be treatments and therapies that can improve the symptoms and stop or slow the condition's progression. Your treatment may consist of:

1. **Medications.**
2. **Physical and occupational therapy.**
3. **Speech therapy.**
4. **Nutrition therapy.**
5. **Assistive devices to help with mobility.**
6. **Procedures, including surgeries.**

QUIZ

What is the causes of neuromuscular disorder ?

Any questions?