

# Painful disorders of locomotor apparatus

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# Cervical spine – neck pain

- ▶ The neck is a complicated structure, containing several joints with capsules, discs, ligaments, fasciae and muscles, all of which may become hypersensitive to loading in conditions of pain.
- ▶ The principle of painful disorders is explained together with an increased cervical lordosis. In this condition the pressure concentrates on the posterior part of the vertebral bodies and intervertebral discs of the vertebral joints. The size of the intervertebral foramen may also decrease as a result, nerves are prone to be compressed resulting in neck pain.

# Lumbar spine – back pain

- ▶ There are many possible identifiable sources of low back pain. Which include degenerative changes on spine like spondylolisthesis and spondyloarthrosis, sciatic pain which has multiple potential causes, but the most common is nerve compression. The cause of sciatic pain includes mechanical injury, inflammatory response and obstruction to epidural veins leading to perineural fibrosis. Diseases like acute prolapsed inter-vertebral disc, central or lateral canal stenosis, mechanical sacroiliac joint syndrome or mechanical facet joint syndrome can also cause low back pain. Less than 1% of low back pain is caused by a serious disease such as cancer.
- ▶ In the vast majority of cases there is a poor correlation between symptoms and the severity of findings on X-ray, computerized tomography or magnetic resonance imaging. The majority of low back pain disorders (95%) are of a nonspecific or unknown origin without evidence of physiological abnormality.

# Scoliosis

- ▶ Scoliosis is a lateral deviation of the spine – spinal deformity in the frontal plane. It belongs to the defects, which affect all areas of the spine. Scoliosis is always two arcs. One arc deflects the spine to the side and the other in another section gives back. Muscles, tendons and ligaments on the concave side of the curve adapts and shortens.
- ▶ Vertebral bodies are deformed and have lower and wedge shape.
- ▶ Scoliosis is not only the lateral deviation, but also the rotation of vertebral bodies.

# Classification of scoliosis

- ▶ For precise examination is necessary to radiograph (supine and standing), upon which to measure the depth of curvature, for example, according to Cobb's – measured angle.
- ▶  $0 - 10^\circ$  – (by Cobb's angle) is not considered as scoliosis
- ▶  $10 - 20^\circ$  – only to monitor whether there is progression (interval of 3 months monitoring, if progression-free interval of 6 months)
- ▶  $20 - 40^\circ$  – treatment by corset
- ▶ Above  $40^\circ$  – surgical treatment

# Other disorders

- ▶ Bechterew's disease
- ▶ Scheuermann's disease
- ▶ Spondylarthrosis
- ▶ disc prolapse

# Upper extremity

- ▶ Shoulder
- ▶ Elbow
- ▶ wrist

# Rotator cuff syndrome

- ▶ It is one of the most frequently occurring disorders in the shoulder joint. Rotator cuff is located in the bottom layer of shoulder girdle, and given that it serves as a fixation of the shoulder joint is constantly subjected to pressure and tension. The most common disorders of the rotator cuff are degenerative changes in tendons of **m. supraspinatus**. **M. infraspinatus** tendon injuries is known as the pain and limited mobility in external rotation, and finally at the **m. subscapularis** is possible to observe the pain worse mobility in the internal rotation of the shoulder joint. For diagnostics of rotator cuff injury is most commonly used ultrasound.

# Bursitis in the shoulder joint

- ▶ They are very often associated with damage to the rotator cuff. These are primarily irritation and subsequent filling subacromial bursa. Filling subacromial bursa is a result of chronic shoulder joint overload. Damage to the rotator cuff or a so-called Impingement syndrome is accompanied by painful abduction in the range 60–120 °. Due to the oppression in subacromial space

# Enthesopathy of elbow joint

- ▶ Enthesopathy is understood as painful disorders of tendon origins or insertions of certain muscles, which show the typical impact of chronic overloading. They can be characterized as inflammatory changes in conjunction with bone tendon. Inflammation is manifested by pain or swelling. In case of further exposure can acute inflammation of the tendons move into the chronic phase with months and years of lasting symptoms. In chronic tendinopathies in the affected tissue is occurring perfusion disturbances and fibrous (scar) reconstruction.
- ▶ For tennis elbow is a typical pain located in the external epicondyle (radial epicondylitis), because of overloading the fingers and forearm extensors
- ▶ For javelin elbow is a typical pain located in internal epicondyle (ulnar epicondylitis), because of overloading of fingers and forearm flexors

# Carpal tunnel syndrome

- ▶ Oppression can occur after such injury and inflammation in the wrist joint but even after overloading or chronic overload.
- ▶ It is necessary to distinguish nerve damage in other areas of the (cervical spine, shoulder, elbow). The main manifestation of sy. Carpal tunnel is pain and tingling of fingers – especially 1 to 3 finger, and sometimes even fourth finger hurts often at rest and at night.
- ▶ A reliable diagnostic method is EMG (electro-myografie) when observing the speed of nerve conduction slowing we find guidance in the carpal tunnel. The only effective treatment is decompression of carpal tunnel

# Lower extremity

- ▶ Hip
- ▶ Knee
- ▶ Ankle
- ▶ foot

# Arthrosis

- ▶ It is degenerative joint disease from various causes. Primary arthrosis occurs on the basis of genetic predisposition, inferiority articular cartilage and other factors. The development of secondary arthritis occurs after previous accidents, diseases, defects of the locomotor system and its overload. Osteoarthritis is characterized by pain in the beginning of movement.

# Koxarthrosis

- ▶ It is arthritic changes in the hip joints often in combination with functional disorders of the lumbar spine and sacrum. In this disorder are restricted hip movements, which are also painful (internal rotation, extension, abduction, adduction, external rotation, flexion).

# Injury of soft tissues in knee joint

- ▶ It comprises meniscal injuries, damage to the lateral ligaments, damage to the anterior and posterior cruciate ligament.
- ▶ Meniscus – Damage to the menisci occur either during the violence in the knee, rotation around its longitudinal axis
- ▶ lateral ligament – damage occurs when lower leg is in fixed position while the body is continuing into the internal or external rotation
- ▶ ACL – The anterior cruciate ligament injuries occur when a violent internal rotation of the tibia during the final phase of knee extension.
- ▶ PCL – The injuries occur most frequently when the violence impact on front, proximal tibia, within knee flexion
- ▶ Unhappy triad – there is damage of three knee structures. It is the lateral ligament, anterior cruciate ligament, and the meniscus. The mechanism of damage is the rotational motion of the knee in a fall.

# Ligamentous sprains and ankle joint injuries

- ▶ Ligamentous sprains and ankle joint injuries
- ▶ More than 80% of all distortions are ankle sprains in inversion. Foot suddenly rewinds into plantar flexion and inversion. Athlete felt a sharp pain in the outer ankle. With this type of injury to the ankle joint is first injured talofibular ligament. This is also the most commonly injured structure in the ankle joint. If the violent mechanism continues, there is also a calcaneofibular ligament injury .
- ▶ When sprain occur in rotation are also injured tibiofibular ligaments and interosseous membrane (membrane interossea).