

Low back pain and disc herniation

2016

Importance

- **one of the most common diseases resulting in decreased work-capability**
- **unfavorable economic effect**
- **serious neurological consequences may occur**
- **important differential diagnostic aspects**

Risk factors

- **age: 30-50 y**
- **Fitness level „weekend warriors“**
- **Weight gain**
- **Occupation: inadequate back support, heavy lifting, twisting**
- **Microtraumas of the spine (e.g. truck driver)**
- **Pregnancy**
- **Genetics**
- **Backpack overload in children**

Spinal disc

- **Flexible: adapting the spine to carry out movements in different directions**
- **Resistant to compression: maintaining strength and pliability of the spine**

Diagnosis

1. Pain, numbness, sensation abnormalities

- **Localization:** radiation of the pain-character- time-how it started (suddenly, movement, injury...)
- **Progression:** did the pain increase/decrease increases for abdominal pressure
- **sensation abnormalities** (numbness, pins and needles, lack of cold/warm sensation...)
- **Painful:** antalgic posture, paravertebral muscles
- **lumbar lordosis**
- **Hip painful e.g. for rotation**

Diagnosis

2. Paresis/paralysis of the limbs

- **problems with buttoning/lifting the arm/staggering/lifting the foot?-**
- **unwanted muscles movements (i.e. fasciculation)?**

3. Vegetative symptoms

- **signs of incontinency, retention**
- **consipation**
- **impotency-sexual dysfunction**

Imaging

X-ray

CT

MRI

myelo-CT, myelography

neurophysiology

Neurophysiology

- **Electroneurography:**
F-wave, H-reflex
- **Electromyography:** myogen/neurogen
- **SSEP, MEP:** spinal cord is affected

Cervical division

Causes: spondylosis, osteochondrosis, spondylarthrosis, herniation

Symptoms: pain (torticollis even), paraparesis in the lower limbs, tetraparesis, brisk deep tendon reflexes and pyramidal signs.

Cervical division

Causes: spondylosis, osteochondrosis, spondylarthrosis, herniation

Symptoms: pain (torticollis even), paraparesis in the lower limbs, tetraparesis, brisk deep tendon reflexes and pyramidal signs.

Cervical division

Spurling maneuver: turn the neck to the affected side, hyperextend the arm pressing the vertex at the same time.

IN CASE OF TRAUMA FORBIDDEN TO CARRY OUT!!

Differential diagnosis: e.g. brachial plexus lesion, Pancoast tumor, spinal tumors, periarthritides humeroscapularis, cervical myelopathy, anterior spinal artery syndrome

Cervical division

Cervicocephalic –syndrome: occipital headache (cervical plexus)

Cervicobrachialgia: the pain radiates to the arm.

Vertebrogen cervical myelopathy: gradually progressing spinal cord lesion due to narrow spinal canal, spondylosis, osteochondrosis, vascular factors

Thoracic division

Causes: disc herniation rare, rather space-occupying
procedures: trauma, tumor, epidural bleeding

Symptoms: Th5-12 is affected the umbilical reflex is
absent or diminished.

Differential diagnosis : e.g. intercostal neuralgia,
tumor, shingles, fracture of the vertebra, aorta
dissection, multiple sclerosis, abscess, inflammation.

Lumbar division

Causes: **Herniation and radiculopathy (LIV/V, LV/SI)**
Stenosis of the spinal canal
Spondylosis

The severity of the X-ray findings do not always correlate with the severity of the complaints.

Symptoms: **lumbar pain radiating to the different dermatomes**
lumbar lordosis flat, defense in the paravertebral muscles, antalgic posture , paresis, vegetative syndromes can accompany

Lumbar division

Lumbago: local lumbar pain, if there is no sign of radiating pain, reflex abnormalities, vegetative disturbance (muscle defense, muscle mass)

Radiculopathia (ischiodic pain): radiating pain

Herniation: strengthened with imaging techniques.

Lumbar division diagnostics

Lasegue sign: stretching the ischiadic nerve The angle between the lower limb and the bed is given. Positive in L4, L5, S1 radiculopathy.

Bragard sign: like Lasegue sign but with the hallux dorsalflected.

Inverse Lasegue sign: stretching of the femoral nerve. Positive in L3, L4 radiculopathies.

Lumbar division diagnostics

Valleix points: the ischiadic nerve is painful on palpation in the gluteo-femoral region.

Schober-index: the patient leans forward with stretched knees. The distance between the processus spinosus of the LV vertebra and the point above it 10 cm must be measured after leaning (normal: 10/15)

Cauda-syndrom:

Cause: **The damage of the radices running in the spinal canal**

Symptoms: - **sensation disturbances in S3-S4 coccygeal dermatomes**
- **paraesthesia, hypaesthesia in the anal region.**
- **absent reflexes in the lower limbs, anal and cremaster reflex are absent as well**
- **L5-S1 incontinency urinary, alvi**

Conus-syndrom

Cause: the lesion is in the altitude of L1, both the medullar cone and the cauda equina is affected.

Symptoms:

- L1-2 urinary retention with overflow, constipation, priapism
- sensation disturbances in S3-S4 coccygeal dermatomes,
- paraesthesia, hypaesthesia in the anal region
- L3-S2 radiculopathy can occur
- absent reflexes in the lower limbs

In case of paresis, urinary retention and constipation operation is needed in 24 hours!!

Stenosis of the spinal canal

Cause: bony narrowing of the spinal canal, usually seen in the cervical and lumbar divisions.

Symptoms:

Cervical: spastic tetraparesis, ascending sensation disturbances

Lumbar: (neurogen claudication) the pain increases with strain.

Running up the steps will not cause severe pain in neurogen claudication, while downwards-due to the stretching of the radices- the patient will complain about pronounced pain. If it compresses the radicals it can even cause paralysis.

Diagnostics: CT/MRI (the cross diameter is <10 mm absolute stenosis, 10-12mm relative stenosis)

Therapy: surgery-more segments

Differential diagnosis

- **aortic aneurysm**
- **osteoarthritis, rheumatoid arthritis**
- **infection of the spine (osteomyelitis, discitis, abscess)**
- **kidney infection or kidney stones**
- **cystitis**
- **problems related to pregnancy**

Differential diagnosis:

- **endometriosis, ovarian cysts, ovarian cancer**
- **retroperitoneal abscess or bleeding,**
- **degenerative hip disorders, coxarthrosis, sacroileitis**
- **prostatic cancer**

Treatment

- **team work: rheumatologist, orthopedist and neurologist, neurosurgon, GP, physiotherapist**

Treatment

Acute pain (<4 weeks)

- Medication:*
- muscle relaxants, non-steroid anti-inflammatory drugs (gel, supp, oinment, tbl.)-painkiller
 - carbamazepine, oxcarbazepine
 - in sever cases epidural steroids and opioids

Physiotherapy and rest:

- it must be carried out very carefully, because if the patient does not feel the pain might strain the spine improperly leading to further damages (USA guideline)
- avoided

Treatment

Chronic pain (>3 months)

Medication: - as in chronic pain tricyclic antidepressants, SSRI, valproate, carbamazepine, oxcarbazepine

Medical aids: eg. Schantz collar, flexible girdle

Physiotherapy:

- underwater exercises
- pain relief with TENS, sonotherapy, galvan therapy.

iontophoresis=transdermal medication+ultrasound),
sonodynator (Ultrasound+diadinamic electric therapy)

Treatment

Nerve block therapies: anaesthetics, steroids

Epidural steroid injections: only temporary pain relief and long-term outcomes were worse

Surgery

Absolute indication: paresis/paralysis-vegetative symptoms (retention, incontinency, Horner syndrome also!), cauda or conus syndrome

Relative indication: no regression in 4-6 weeks with conservative therapy.

failed back surgery syndrome: inappropriate wound healing, rehabilitation or indication.