Abdominal tenderness to touch with irradiating pain into the lower extremity

Neurology Department
2013.
The present complains

• 28 yrs. old female patient had severe pain, which irradiated into her left leg and into her right ham, started 2 days ago, she was not able to walk.

• *The day before* she got tolperison and painkiller iv. from her family doctor, had nausea, vomited, but the pain ↓.

• *At night* the pain increased, got meloxicam and tolperison, pain ↑ more, she was sent to our Clinic.
The patient
Course of the disease

28 years old ♂

Allergy

- Pain which irradiated into the left leg and into the right ham
  - tolperison
  - vomited, but the pain ↓

- During the night the pain increased, got meloxicam, tolperison, pain ↓ + had a temperature

4 years ago

1 day before

1 day before

Day of admission
Status

Alert
RR: 110/70 Hgmm
P: 68/ min
EKG: SR
T: 38.1 fok

Both sided abdominal tenderness to touch!
Missed abdominal reflexes!

Lasegue sign positive at 50 degree on the left side!
Valleix’ point: painful at pressure on the left side!
Left sided decreased patella and Achilles reflexes correlated to the other side!

Cross or sensory abnormalities Ø
The possible diagnosis is always questionable, in case of low back pain, always have to think on primary and secondary causes!
What could be the possible diagnosis?
The possible diagnosis...

1: retroperitoneal bleeding or abcess
2: pelvic processes (adnexitis, extrauterine pregnancy)
3: lumboischialgia
4: nephrolith, ureter stone, cystitis
5: degenerative conditions (coxarthrosis, sacroileitis)
1: retroperitoneal bleeding or abcess: **could be**, abdominal US must be done
2: pelvic processes: **could be**, gynaecological examination is needed
3: lumboischialgia: **could be**
4: nephrolith, ureter stone, cystitis: the complains are not characteristics for urological processes
5: degenerative conditions: in this age, it’s not typical
How to start the examination?
Results of the examinations

Laboratory deviations:

Wbc: 12,71 Giga/L  
Neut%: 79,1 %  
Lymp%: 4,0 %

CRP: 68 mg/L

Liquor glucose: 5,1 mmol/L  
Cell analysis was not performed.
**Abdominal US**: (abdominal tenderness to touch, elevated sedimentation/inflammatory parameters and had temperature):

*no pathological, but the pelvic region couldn’t be examined surely*

**Gynecological examination**: Sine morbo gynec. Because of the menstruation, pregnancy test couldn’t be performed, HCG laboratory test was suggested.

**HCG**: < 0,1 U/l (negative)
Results of examinations:

✓ **Lumbosacral spine X-ray:**
No pathological abnormalities.

✓ **Lumbosacral spine CT:**
- On the left mediolaterally part a half cm large hernia, which fills the recessus lateralis, on the left side \(L.5.\) \textit{radical compression}.
- Height of the L.III. discus is normal. In this level on the left side laterally 3 mm large protrusion could be seen.
The explanation of the differential diagnosis

1: retroperitoneal bleeding or abcess: NO, because on the abdominal US there was nothing pathological

2: Pelvical processes: NO, because the gynecological examination excluded the possibility of this

3: lumboischialgia: YES

4: nephrolith, ureter stone, cystitis: NO, because the symptoms were not typical for urogenital processes

5: degenerative conditions: NO, in this age it’s not typical and the X-ray was also negative
Diagnoses – How to take on the anamnesis?

- **Pain, paraesthesia, sensory deficit:** the localisation of the pain? What kind of pain is it? How long does it take? How does it start (sudden movement, injury)? Any worsening? Does abdominal squeezing provoke pain? During coughing, sneezing what happens? Where does the irradiating pain spread? Does the pain decreased/disappeared? Sensory deficit/ sensory loss/ paraesthesia?

- **Weakness of the extremities:** clumsy movements during dressing, not able to elevate the arm, not able to do stepping, drop his leg? Muscle atrophy?

- **Vegetative:** Incontinence? Feel the stool/urine? Not able the evacuate the urinary bladder? Impotence?
• **Spinal column:** patting is painful? Antalgic gait? Tone of the parevertebral muscles? Examination of the hip joints, the rotation is painful?

• **Sensory symptoms:** subjective (without stimuli, for example: spontaneous paraesthesia), objective (tactile, algetic, temperature, vibration, dermatolexia, joint position); localisation is typical for dermatome, peripheral nerve, the whole extremity?

• **Motoric movement, reflexes, pyramidal signs:** able to stand on heels and toes, foot slapping, able to cower and stand up, fingers and toes works proximally well?

• **Vegetative:** incontinence, retention?
Imaging

✓ Imaging examinations:
  - bilateral X-ray
  - Spinal CT scan 99% is enough
  - Spinal MR scan
  - Myelographia, myelo CT (rarely)

✓ Electrophysiological examinations:
  - ENG: F-wave, H-reflex: root lesion? Before imaging, it’s apparent!
  - EMG: to differentiate neurogen and myogen damages! To localise the level of the spinal lesion! SSEP (upper or lower extremity), MEP-examination could be useful
Characteristics of the slipped disc

- **Types:**
  - dorsolateral extraforaminal
  - mediolateral foraminal
  - medial

- **Responsible for the symptoms:**
  - radical or spinal compression
  - muscle defense

- **Prevalence:**
  1. Lumbar
  2. Cervical
  3. Thoracic
**Disc prolapse**

*The process of the development*

![Diagram showing normal, protrusion, and prolapse stages of disc prolapse.]

**Provoking factors:**
- congenital deformities (spina bifida)
- mechanical causes (sitting work)
- injuries
- metabolic osteopathies
- inflammations (spondylitis, spondylodiscitis)
- genetics, obesity
Localisation: cervical spine

**Cause:** Most common levels affected are C5/C6 and C6/C7.

- Cervicocephalic syndrome: the impairment of the plexuses causes nuchal or occipital headache.
- Cervicobrachialgia: pain in the neck radiating into the arm.

**Symptoms:**

- Pain in the neck, which could radiate into the neck, arms, shoulders or the head
- Paracervical defense
- In the case of medially progression: paraparesis, tetraparesis with increased deep reflexes and pyramidal signs

**Diagnostics:**

- Spurling-sign: it involves turning the patient's head to the affected side and applying downward pressure to the top of the patient's head, if radicular pain is elicited, this is called a positive **Spurling's!**
Clinical presentation of cervical radiculopathies:

<table>
<thead>
<tr>
<th>Nerve root</th>
<th>Sensory disturbance</th>
<th>Motor weakness</th>
<th>Muscle movement, which could be affected</th>
<th>Reflex absent/decreased</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>C5</strong></td>
<td>Shoulder, lateral arm</td>
<td>m. deltoideus</td>
<td>Abduction of the arm</td>
<td>radialis</td>
</tr>
<tr>
<td></td>
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</tr>
<tr>
<td><strong>C6</strong></td>
<td>Lateral forearm, thumb and index finger</td>
<td>m. biceps brachii, m. brachioradialis</td>
<td>Flexion of the elbow</td>
<td>biceps and radialis</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>C7</strong></td>
<td>Posterior arm, dorsum, forearm, middle finger</td>
<td>m. triceps brachii, m. extensor carpi radialis longus et brevis</td>
<td></td>
<td>triceps</td>
</tr>
<tr>
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<td></td>
</tr>
<tr>
<td><strong>C8</strong></td>
<td>Shoulder medial forearm, ring and little fingers</td>
<td>hypothenar, m. flexor carpi ulnaris</td>
<td>Flexion of the fingers</td>
<td></td>
</tr>
</tbody>
</table>
Differential diagnosis:
- cervical spondylosis
- spinalis tumor, which cause radicular compression like meningeoma, neurofibroma
- Thoracic outlet syndrom
- Pancoast tumor which infiltrates the plexus brachialis
- Tunnel syndromes (carpal/ulnar tunnel syndromes).
- Periarthritis humeroscapularis
Thoracic spine

*Cause:* the most stable part of the spinal column, disc prolapses are rare! In this localisation malignancy have to be think on always!

*Symptoms:*

- Pain, which irradiates like lunar shape
- If Th 5-12 is affected, abdominal reflexes could be weaker

*Differential diagnosis:*

- Intercostal neuralgia
- Tumor
- Herpes zoster
- Dissection of the aorta
- MS, neuromyelitis optica
Lumbar spine:

**Cause:** L5/S1 disc and L4/5 disc prolapses account for >95%, older ages the stenosis of the canalis spinalis is common!

**Symptoms:**
- Irradiating pain from the lumbar region
- Lumbar lordosis will be straighten, the mass of the paralumbar muscles will increase, defense could be seen
- Antalgic position, which spares the painful side
- In severe cases paresis, vegetative symptoms

**Lumbago:** the pain is locally, which is characteristics for the radix. **No irradiating pain, no reflex abnormalities, no vegetative symptoms!**

**Lumboischialgia:** irradiating pain could be detected. The clinical symptoms do NOT localise the radix with the help of the dermatome or the reflex abnormalities. Imaging could help!

**Hernia dicsi intervertebralis:** dermatome and also reflex abnormality could be seen. Anamnesis, physical examinations could help, imaging confirms!
Lumbar spine - Diagnostic:

- **Lasegue-sign**: (extend the ischiadic nerve); positive in case of L4, L5, S1 radices
- **Bragard-sign**: the same manoeuvre, but with dorsalflexion of the leg
- **Inverz Lasegue-sign**: (extend the femoral nerve); positive in case of L3, L4 radices
- **Valleix-points**: points are painful which are at the radiation of the gluteofemoral part of the ischiadic nerve
### Clinical presentation of lumbar radiculopathies:

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<tr>
<th>Nerve root</th>
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<th>Muscle movements could be damaged</th>
<th>Plus examination</th>
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</thead>
<tbody>
<tr>
<td>L3</td>
<td>m. psoas, m. quadriceps</td>
<td>Hip flexion, adduction of the leg</td>
<td>Inverz Lasegue sign positive</td>
<td>No abnormalities</td>
</tr>
<tr>
<td>L4</td>
<td>m. tibialis anterior, m. quadriceps femoris</td>
<td>Femoral extension (walking on stairs)</td>
<td>Lasegue and inverz Lasegue signs are positive</td>
<td>Patella reflex</td>
</tr>
<tr>
<td>L5</td>
<td>m. peroneus longus and m. tibialis anterior, m. extensor hallucis longus</td>
<td>Dorsalflexion, (stand on heels)</td>
<td>Lasegue sign positive</td>
<td>No reflex abnormalities</td>
</tr>
<tr>
<td>S1</td>
<td>m. gastrocnemius</td>
<td>plantarflexion (stand on toes)</td>
<td>Lasegue-sign positive, Valleix points are painful</td>
<td>Achilles-reflex</td>
</tr>
</tbody>
</table>
Lumbar radical lesions

**Cauda syndrome:**

**Cause:** After the conus medullaris, the canal contains a mass of nerves (the cauda equina) that contains L1-5 and S1-5. The nerve roots from L4-S4 join in the sacral plexus which affects the sciatic nerve, travels caudally. Compression, trauma or other damage to this region of the spinal cord can result in this syndrome.

**Symptoms:**

- sensory disturbances (S3-4-5, coccygeal dermatomes)
- missing lower extremity reflexes
- vegetative symptoms
- missing anal and cremaster reflexes
**Conus-syndrome:**

*Cause:* the lesion is at the level of L1, the conus medullaris and the cauda equina are damaged!

*Symptoms:* - sensory loss
  - L3-S2 radical damage could associate
  - urinary and/or faecal incontinence
  - deep reflexes of the lower extremities could be evoked

**Spinal canal stenosis:**

*Cause:* narrowing of the spinal canal causing root compression, most common L4/5 and L 3/4

*Symptoms:* Lumbar: usually bilaterally but may affect only one leg, leg numbness or paraesthesia
Other differential diagnostic problems:

- **Spina bifida**: is a developmental congenital disorder caused by the incomplete closing of the embryonic neural tube.

  **Types**:
  - spina bifida occulta
  - spina bifida meningo- or myelomeningocele

- **Syringomyelia**: is a generic term referring to a disorder in which a cyst or cavity forms within the spinal cord. This cyst, called a syrinx, can expand and elongate over time, destroying the spinal cord.
Other differential diagnostic problems:

**Neuromyelitis optica /Devic**

(3 vertebral segments < lesion)

- The white matter is damaged in more segments (often the opticus nerve as well)
- Oligoclonal gammopathy is uncommon in the CSF
- Antibodies against the Aquaporin-4 antigen could be detected
Other differential diagnostic problems

**Spinal tumors:**
- extradural
- intradural extramedullaris (juxtamedullar
- intramedullar

- Most of them have metastatic origin and take place in the vertebras (80% the primary sources: lung, breast, prostate, GI, malignant melanomes)
- The pain is typical for the extraduralis processes, that is why they could turn out early
- Most of the intradural tumors are meningeomas or spinal neurinomas (Schwannoma)
- Intramedullary astrocytomases infiltrates the spinal cord diffuse way
Conservative treatment:

✓ *In case of acute pain (<4 weeks)*
  - muscle relaxants
  - non-steroid anti-inflammatory drugs (NSAID)
  - painkiller gel, unguent, suppository
  - Lidocain infiltration (Lange)
  - initial bed rest, early mobilisation
  - physiotherapy

✓ *In case of chronic pain (>3 months)*
  - tricyclic antidepressants, SSRI, carbamazepine
  - lumbal corset, physiotherapy
72% of patients had herniations at presentation:

✓ one-third of these herniations regressed in size or disappeared at 6-week follow-up,

✓ and two-thirds regressed or disappeared at 6-month follow-up.

✓ 15% of herniations in the LBP group and 35% of herniations in the radiculopathy group were reduced or had disappeared at 6-week follow-up.

Indications for surgery:

- **Absolute surgical indication:**
  - paresis
  - vegetative symptoms
  - cauda syndrome

- **Relative surgical indication:** after 4-6 weeks conservative treatment there is no improvement

!! Failed back surgery syndrome: the surgery doesn’t decrease the complains of the patient, could be chronic!!

!!Behind lumbago could be an atipical discus hernia, if it doesn’t recover imaging must be done!!
Further examinations are needed:

- Severe pain not responding to conservative measures
- Chronic recidive pain
- Chronic pain and symptoms of radicular compression (paresis)
- Compression of the spinal cord
Indications for surgery:

- Severe pain not responding to conservative measures
- Chronic recidive pain
- Chronic pain and progressive motor deficit (paresis)
- Symptoms of the compression of the spinal cord, which could be confirmed radiologically also (size, localisation), the symptoms and the results of the examination have to be fit!
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