Acute non-traumatic low back pain

Definition
A sensation of intense discomfort located in one of the costovertebral angles. The pain may radiate centrally, ascending or descending down to the groin, testicles, or vulva. It represents 50% of all urological emergencies.

Etiology

### Urological causes
- Renal or ureteral stones
- Urinary tract infections
- UPJ syndrome
- Renovascular diseases
- Renal papillary necrosis
- Retroperitoneal hemorrhage
- Testicular torsion

### Non urological causes
- Aortic aneurysm (dissection)
- Gastrointestinal disorders
- Cholelithiasis
- Pancreatic disease
- Gynecological disorders
- Musculoskeletal diseases

Diagnosis

- **Anamnesis**: patient’s medical history, anamnesis, and body temperature constitute the basic data of the initial evaluation.
  - **Renal colic**: pain of short duration, vegetative symptoms, and hematuria (micro or macroscopic). An imaging test is essential in single kidney patients.
  - **Complicated renal colic or acute pyelonephritis**: high fever, flank pain, and chills. Imaging tests are essential to rule out urinary tract obstruction.
  - **Renal infarction**: acute pain in patients at high risk for thromboembolic events.
  - **Aortic aneurysms**: pulsatile mass upon exploration; impaired distal pulses.
  - **Renal vein thrombosis**: acute pain, proteinuria, hematuria, hypotension, and renal failure.
  - **UPJ obstruction**: increase or onset of pain with high intake of fluids or diuretic drinks.
  - **Papillary necrosis**: due to the release of necrotized papillae into the urinary tract. In patients with diabetes or nephropathy caused by analgesics (rare).
  - **Torsion of the testicles or appendix**: common in children.
  - **Retroperitoneal hemorrhage**: secondary to tumors (AML), anticoagulants, or changes in coagulation.

- **Physical examination**:
  - **Truncal maneuvers** such as Lasegue’s sign: low back pain when lifting the extended leg.
  - **Pressure pain in costovertebral angle or Guyon’s sign**: typical of renal colic.
  - **Pressure pain in the right hypochondrium**: typical of cholelithiasis or cholecystitis.
  - **Abdominal exploration**: to search for tender points, peritonism, or organomegaly.
  - **Anxiety and agitation**: absent in retroperitoneal pathology; present in renal colic.
  - **Auscultation of lung bases**: if pneumonia is suspected or there is a history of respiratory problems.

- **Laboratory data**:
  - **Urinalysis**: to detect crystalluria, leukocyturia, bacteriuria, and nitrites.
  - **CBC**: leukocytosis >15000/mm³ indicates pyelonephritis or complicated renal colic.
  - **Biochemistry**: allows for the evaluation of serum creatinine and electrolytes.
  - **Acute phase reactants**: C-reactive protein in cases of fever or procalcitonin as a marker for sepsis risk.
Imaging tests
- **Ultrasound**: initial examination of choice. Assesses urinary tract ectasia (sensitivity 96%); kidney size; and the presence of lithiasis, tumors, abscesses, and perirenal collection. It is the method of choice during pregnancy. Together with a **KUB X-ray** it provides acceptable diagnostic accuracy in the absence of non-contrast CT.
- **IVP**: in cases of renal ectasia of unknown etiology, to detect urinary lithiasis (sensitivity 80-90%) or perirenal collection, in patients with a history of cardiovascular disease (with suspected renal infarction), or in the differential diagnosis of acute appendicitis.
- **Non-contrast CT**: high sensitivity (100%) and specificity (96%) in the assessment of acute low back pain. It detects urinary tract lithiasis with a sensitivity of 94-100% regardless of the size, composition, or location of the stone. Identifies extra-urinary causes of low back pain in one third of patients.
- IVP and non-contrast CT should be considered in patients initially evaluated with other imaging techniques and in those whose symptoms persist (fever lasting >72 hours) to rule out other causes.

When to consider hospitalization
- Intractable pain.
- Suspected renal infarction.
- High leukocytosis with left shift.
- Clinical signs of sepsis.
- Anuria or oligoanuria.
- Renal colic in a single kidney patient.
- Severe ectasia or perirenal collection.

Treatment
- **Systemic analgesia**:
  - **IV NSAIDs**: *Diclofenac* (VOLTAREN solution®) 75 mg in a bolus or *Ketorolac* (KETOROLACO®) 30 mg/6 h slow-drip iv are effective in controlling acute pain.
  - **Analgesics**: *Dipyrone* (METAMIZOL®) 1 or 2 g iv (has been shown to be as effective as bolus Diclofenac) or *Dexketoprofen* (ENANTYUM®) 50 mg iv.
  - **Opioids**: *Pethidine* (PETHIDINE MARTINDALE®) 50-100 mg/slow-drip iv has been shown to be effective when administered with NSAIDs, but with a higher incidence of nausea and vomiting.
- **Local analgesia**:
  - Heat applied locally to the abdomen and back may reduce pain.
  - Injection of local anesthetics such as *Lidocaine* at renal colic pain points have proven effective in 50% of patients.
- **Double J stent or percutaneous nephrostomy**:

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<th>Indications</th>
<th>Outcome</th>
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<tr>
<td>Obstruction and urinary infection</td>
<td>Urinary sepsis</td>
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<tr>
<td>Pain or intractable symptoms</td>
<td>Solitary kidney obstruction</td>
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<tr>
<td>Bilateral obstruction (lithiasis)</td>
<td>Obstructive lithiasis</td>
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Acute low back pain

History and physical examination
  Ultrasound/X-ray
  Laboratory tests

Persistent pain >72H

CT/Intravenous pyelography

Normal imaging tests
  Normal Urinalysis
  Abnormal Urinalysis

Abnormal imaging tests
  No hydronephrosis
    No lithiasis
      Specific treatment
      Renal infarction
      Renal abscess
      Renal vein thrombosis
      Renal cancer
      Renal cyst
      Hematoma
      Urinoma
      Retroperitoneal tumor
    Lithiasis
      Specific treatment
      Urothelial tumor
      Retroperitoneal fibrosis
      UPJ syndrome
      Renal papillary necrosis
  Hydronephrosis
    No lithiasis
      Specific treatment
    Lithiasis