Adrenal glands
Imaging methods

- Plain X-ray
- Ultrasound
- CT
- MRI
- Angiography
Plain X-ray

- Calcifications
  - haemorrhage
  - tuberculosis
  - tumor
Ultrasound

- Normal adrenals are usually invisible (exclusion: children and asthenics)
- US is less reliable than CT (gas, obesity)
More reliable than US
(not limited by gas and obesity)
MRI

T1 v.o.

T2 v.o.
Angiography

- **Arteriography** – pathologic vascularization (e.g. pheochromocytoma)

- **Venography** – level of adrenal hormones in venous blood
  - upper and lower part of IVC
  - renal veins
Pathological conditions

- Atrophy
- Hypoplasia
- Hyperplasia
- Primary tumors
  - hormonal inactive
  - hormonal active
  - cortex - adenoma
    - carcinoma
    - myelolipoma
  - medulla - pheochromocytoma
    - neuroblastoma (children)
- Metastases (from lung, breast, kidney)
- Bleeding
- TB
Hypoplasia / aplasia

girl with adrenal insufficiency

hypoplasia aplasia on the right side, hypoplasia on the left side
Hyperplasia
Septic activation

Enlargement of the left adrenal gland, multiple liver abscesses
Adenoma

Low density on CT (lipoid content)
Myelolipoma

Contains fat and bone marrow
Density on CT same as fatty tissue
Carcinoma
Pheochromocytoma
Neuroblastoma

Malignant tumor

Children

Metastases to the skull
Metastases

bronchogenic carcinoma
Conventional renal carcinoma

Primary tumor of the left kidney

Adrenal metastasis

Metastases to the lungs
Haemorrhage

Enlargement, density 40-80 HU
Posthaemorrhagic pseudocyst

Hyperintensity on T1 and T2 images - methemoglobin
Contusion

Liver contusion

Right adrenal contusion

Right kidney contusion
Posttuberculous calcifications
(Addisons disease)