

# Imaging methods in psychiatry

- the hopes of diagnostic devices were fulfilled only in the field of organic psychosyndromes (atrophy, tumors, vascular abnormalities, ...)
- **methods:**
  1. *anatomical (PEG, angiography, MR, CT)*
  2. *functional (SPECT, PET)*

## Pneumoencephalography (PEG)

- the oldest, lumbar or suboccipital, 10–30 ml of cerebrospinal fluid is drained and air is blown in, it is shown on the x-ray
- to atrophic processes, hydrocephalus and tumors

## Ventriculography

- modification of PEG, air is insufflated through the trepanation hole into the lateral ventricles, shows the posterior cranial fossa and trunk

## Angiography

- Atherosclerotic vessels on the image are wire-like, aneurysms, tumors

## Encephalography

- ultrasound
- tumors

## Scintigraphy

- radioisotopes accumulate in pathological tissue

## Sonography

## Doppler

- after opening the calva, we determine the exact location of some tumors

## Digital subtraction angiography (DSA)

- monitors blood flow, blockage in a vessel, ...

## Thermography

- measures skin temperature, changes in skin temperature on the face - tumors and flow disturbances

## CT (Computed Tomography)

- organic psychosyndromes
- is an attempt to use CT to reveal the etiology of diseases, the results are ambiguous
- Alzheimer's disease – atrophy, does not correlate with the clinical picture
- fronto-temporal atrophy - Pick's disease
- an attempt to classify schizophrenia according to the CT image, sometimes the ventricles expand immediately, sometimes later

## MRI (Magnetic Resonance Imaging)

- better for edema, better differentiates gray and white matter
- cerebrovascular diseases, MS, infection (HSV - temporal lobes), tumors, m. Wilson and Parkinson's muscles (non-specific changes), atherosclerosis, schizophrenia (smaller frontal lobes, atrophy of the left hippocampus, enlargement of the temporal lobe, enlargement of the ncl. lentiformis), depression (areas increased densities)

in the periaqueductal white matter, larger Sylvian groove, changes in BG)

## PET (Positron Emission Tomography)

- u schizophrenia
- higher glc metabolism in BG during neuroleptic treatment, decrease of glc metabolism in the frontal lobes – frontal lobe dysfunction theory
- in mania – increased glc metabolism, in depression less glc in the prefrontal cortex
- Dementia of the Alzheimer's type - slight glc metabolism of the parieto-occipital lobe

## SPECT (Single Photon Emission Computed Tomography)

- Alzheimer's disease - reduction of flow and metabolism parietal

## Links

### Source

- BENEŠ, Jiří. *Studijní materiály* [online]. [cit. 08.03.2010]. <<http://jirben.wz.cz>>.



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