

# Examination methods in urology

## Physical examination

- In addition to the classic examination, the following should be mentioned:
  - Israel's touch – bimanual palpation of the kidney;
  - Tappotement – tap on the kidneys.

*See the Physical Examination page for more detailed information .*

## Urine examination

- Methods of urine collection:
  - the first stream of urine – for the detection of parasites;
  - medium stream of urine - highest permissible bacteriuria up to  $10^5$  /ml
  - last stream of urine – when diagnosing prostatitis
  - catheterization of the urinary bladder - the highest permissible bacteriuria up to  $10^3$  /ml
  - suprapubic puncture - the highest allowable bacteriuria is 0 (urine is sterile).
- Urine is examined in different ways - physically, chemically, by culture and by examination of urine sediment  
*More detailed information can be found on the Urinalysis page .*

## Examination of urethral and prostatic secretions, semen

- **of urethral secretions** - when urethritis is suspected, a microscopic and culture examination is indicated
- **prostatic secretion** – after 2-3 days of sexual abstinence, prostatic secretion is obtained by prostatic massage
- **semen examination** - 2-3 days of sexual abstinence is recommended, microbiological and culture examination may be indicated
- if trichomoniasis, bilharziosis is suspected, the material can be sent for parasitological examination<sup>[1]</sup>

## Cytology

Cytological examination is used for cytological examination of cells contained in urine, in irrigation fluid (physiological solution from the bladder or renal pelvis ) or fluid obtained by puncture (e.g. from a renal cyst). It is mainly used in uro-oncology both in screening and especially in monitoring patients with tumors from the transitional epithelium.

### Implementation

The freshly obtained material is, if possible, immediately centrifuged at 1500-3000 revolutions per minute in a cuvette and *stained by the Papanicolaou method* . The architecture of the cells, the nucleus and nuclear atypia (multiple prominent nucleoli, shape and structural deviations of the nucleus) are assessed.

The results:

- PAP 1-2 – negative finding, but a well-differentiated carcinoma of low degree of malignancy may be;
- PAP 3 – suspicious finding;
- PAP 4-5 – positive finding.

## Display methods

- Ultrasonography – method of first choice;
  - almost everything can be visualized, with the exception of the ureter, which is difficult to visualize in its entirety;
  - can be performed through the rectum – transrectal ultrasonography (TRUS);
  - findings:
    - concretions – have an acoustic shadow;
    - tumors – do not have an acoustic shadow;
    - hydronephrosis – expansion of the calicopelvic system;
      - the condition of the kidney is important for therapy (detected by IVU, see below) – if it is functional, pyeloplasty is performed, if not, nephrectomy is indicated.
- Magnetic resonance
  - angiography
  - urografie
- Radiodiagnostic examinations
  - **micturition cystourethrography** – intended mainly for evaluation of bladder pathologies;
  - **micturition urethrocytography** - indicated in suspected urethral strictures, bladder neck sclerosis;

- **intravenous excretory urography (IVU)** – evaluates morphological and functional changes in the kidneys and urinary tracts, especially the calicopelvic (CP) system and ureters;<sup>[1]</sup>
- **ascending pyelography** - used only if other non-invasive methods do not provide enough information
- **angiography**
- **interventional methods** – percutaneous nephrostomy, stents, etc.<sup>[1]</sup>
- **native nephrogram** (native image of the supine abdomen)
  - indicated for lithiasis (sensitivity but only 45–70%!), less so for tumors or tuberculosis;<sup>[1]</sup>
  - urate stones do not have contrast - then a CT scan is indicated (a CT scan has a higher radiation load than a native nephrogram)

#### Examination procedure in case of suspicion of a stone:

1. Anamnesis, physical examination (tapottement positive in 95% of cases);
2. Ultrasonography (it is difficult to detect a concretion in the middle part of the ureter);
3. Native nephrogram, preferably intravenous excretory urography (do not perform in case of acute problems);
4. CT scan.<sup>[2]</sup>

*More detailed information can be found on the page Radiodiagnostic examination of the urinary tract .*

#### ▪ Radionuclide examinations

- **dynamic kidney** scintigraphy (nephrography)
  - furosemide test - use in obstructive uropathy, if the pelvis does not empty during the dynamic scintigraphy of the kidneys by the end of the examination;
- **static scintigraphy of the kidneys** - intended for the evaluation of the functional renal mass ( pyelonephritis , scars and relative function of the kidneys);
- **radionuclide voiding cystography** - for monitoring children with vesicoureteral reflux;
- **scintigraphy of the scrotum** - for swelling and/or pain in the testicle area (differentiates acute testicular torsion from acute inflammation).

*More detailed information can be found on the Radionuclide kidney examination page .*

#### ▪ Endoscopy

- only cystoscopy can be performed on an outpatient basis ;
- anesthesia is required for other examinations - urethroscopy, percutaneous nephroscopy, ureterorenoscopy.

#### ▪ Urodynamic examination

## Links

### External links

- Flexible cystoscopy (<https://mefanet.lfp.cuni.cz/clanky.php?aid=392>)

### Source

- VAL'OVÁ, Z. *Basic examination procedures in urology* [lecture on the subject of Urology, field of General Medicine, 1st Faculty of Medicine, UK]. Prague. 9/12/2013.

### Used literature

- HANUŠ, Tomáš. *Urologie*. 1. edition. Triton, 2011. 207 pp. pp. 18. ISBN 978-80-7387-387-5.

### References

1. ↑ Jump up to:a b c d e HERÁČEK, Jiří and Michael URBAN, et al. *Urology for students* [online]. Androgeos, ©2013. Latest revision Version 2.0 [2013], [cit. 2013-12-12]. < <http://www.urologieprostudenty.cz> >.
  2. ↑ VOBOŘIL, Vladimír. Diagnosis and treatment of urolithiasis. *Practicus* [online] . 2012, year 11, vol. 2, pp. 7-10, also available from < <http://www.practicus.eu> >. ISSN 1213-8711.
1. HERÁČEK, Jiří and Michael URBAN, et al. *Urology for students* [online]. Androgeos, ©2013. Latest revision Version 2.0 [2013], [cit. 2013-12-12]. < <http://www.urologieprostudenty.cz> >
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