

# Vesicoureteral reflux

**Vesicoureteral reflux** is a finding found in conventional X-ray micturition cystourethrography (MCUG) - after bladder catheterization with an iodine-contrast crystalloid infusion (in the supine position). There are **5 levels** according to the international classification:

- I - reflux to the lower part of the unexpanded ureter,
- II - reflux to the renal pelvis, which is not dilated
- III - ureter and renal pelvis are dilated, the contours of the calyces are preserved,
- IV - significant dilation, contour of the calyx dull,
- V - massive dilatation of the hollow system, the calyces are convex.

## Passive reflux

urine returns to the kidney during filling of the bladder.

## Active reflux

it appears only when micturition.

## Occurrence

It often occurs in patients with urinary tract infections - in pyelonephritis it is present in up to 50%, as well as in congenital malformations (ureter duplex, ectopy of ureteral orifices, ...).

## Pathogenesis

Reflux probably also has a genetic basis - if it is in one child, the probability that it will be in others is about 25%.

- the main mechanism of ureteral occlusion is its oblique passage through the bladder wall and the pressure of the detrusor and trigon
- in children this orifice often matures late, lower levels of reflux often disappear spontaneously,
- reflux alone is probably not dangerous for scarring, it damages the kidney when a urinary tract infection is present

## Clinical appearance

Clinically it manifests as **recurrent urinary inflammation**, often under the image of pyelonephritis. During large reflux - double micturition - when urinating, a lot of urine gets into the ureters, urinates little and then comes the next urge to urinate. The first symptom may be hypertension and its accompanying symptoms.

## Examination

- cystography
- uroflowmetry
- IVU (intravenous urogram) (UUT condition)
- radioisotope renal scan with DMSA (functional state of the kidneys, pyelonephritic scars)

## Therapy

Previously, reflux was treated more surgically - to create a valve mechanism by extending the intramural part of the ureter. In the last 10 years, **conservative therapy** is recommended - long-term application of prophylactic doses of antibacterial drugs. Following eradication of the infection, furantoin or cotrimoxazole are most commonly given prophylactically (approximately 20-30% of the normal therapeutic dose),

- in VUR I - III spontaneous retreat can be expected,
- IV and V level are usually not adjusted, but even here the operation is questionable, antireflux plastic surgery is then effective in about 95%, further consideration should be given to the risk of possible stenosis and congestion.

Newer methods are endoscopic **application of collagen** to the ureteral ostia - they are more gentle, but studies are still lacking. Bacteriuria and urinary sediment should be monitored during conservative therapy. We do not control the regression of reflux by classical cystourethrography, but by so-called isotope cystography (lower radiation exposure), in which a solution of crystalloid with a radiopharmaceutical is infused into the bladder and we detect reflux.