BAU2019
19th ANNUAL CONGRES
OOSTENDE

29-30 NOVEMBER 2019
KURSAAL OOSTENDE

ESRU.be session

Pediatric urology

Vesico Urethral Reflux

Panel discussion

esru.be

Case 1

Case presentation

- Boy, 1 week old
- Prenatal US — full bladder, no dilatation of the upper urinary tract
- Birth a term
- Cesarean section: non progressing labour+ weight 4.130kg

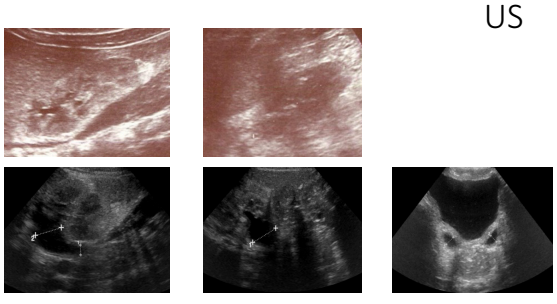
Case presentation

- 1 week post hospital discharge
- ED: fever
- Urine culture: MRSA +
- No other focus
- R/ Bactrim

Next step?

- Ultrasound
- Ultrasound + MCUG
- Ultrasound + MAGIII
- Ultrasound + DMSA

US

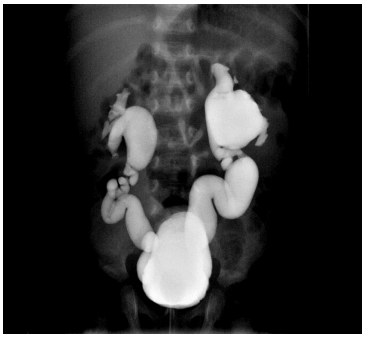


Rigt kidney
BPD 4,5 cm
Dysplastic fts
AP 1,13 cm

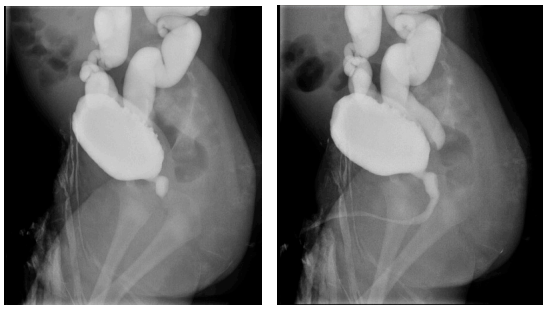
Left kidney
BPD 3,8 cm
more dysplastic fts
AP 1,16 cm

Bladderwall 2mm
Distal ureter
bilateral 0,4 cm

MCUG



MCUG



Next step?

- follow-up – proph. AB
- follow-up + proph. AB
- diagnostic cystoscopy + proph. AB
- MAGIII scan + proph. AB
- DMSA scan + proph. AB

Case presentation

- Prophylactic AB
- Follow-up
- Low treshold for diagnostic cystoscopy

- MAGIII after 3 months

Case presentation

- 2 breakthrough infections < 1 month

Next step?

- DMSA scan
- MAGIII scan
- repeat MCUG
- Diagnostic cystoscopy
- Endoscopic bulky agent
- Reimplantation
- Temporary ureterocutaneostomy (end/refluxing)

Diagnostic cystoscopy

- High bladderneck, trabeculated bladderwall
- Ostia bilateral open and more lateral aspect of the left-sided ostium
- Dilated posterior urethra: valve variant at 3 and 9 hours, cold resection. No typical PUV.

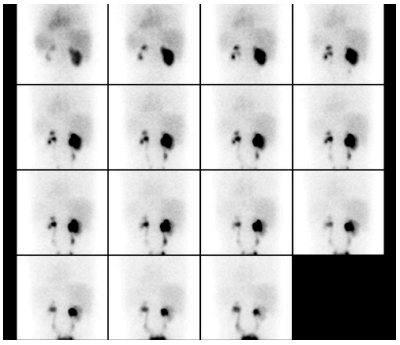
Spinal canal investigation

- Ultrasound: suspicion spina bifida occulta and hyperpechogenic lesion in the spinal canal
- MRI: no tethered cord, no spinal lipoma

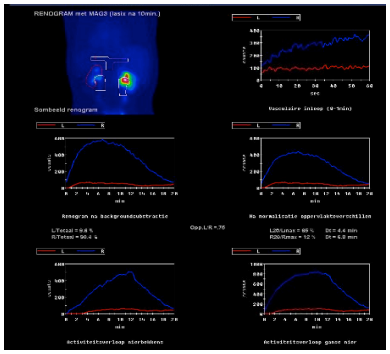
Follow-up

- Proph. AB
- High creatinin
- US:
  - bilateral dysplasia
  - left kidney: mild hydronefrosis left, smaller
  - right kidney: no real compensatory growth
- MAGIII

MAGIII



MAGIII



Case presentation

- Third breakthrough infection at age 16 months and still conservative treatment

Next step?

- DMSA scan
- repeat MAGIII scan
- Repeat MCUG
- Repeat cystoscopy
- Endoscopic bulky agent
- Reimplantation
- Temporary ureterocutaneostomy (end/refluxing)

repeat MCUG

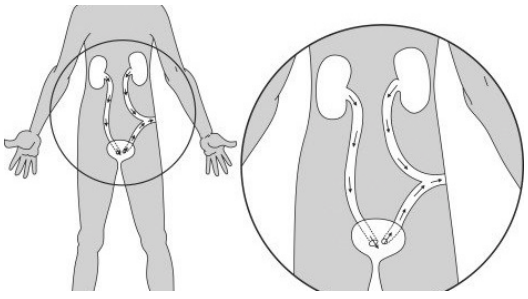
Case presentation

- Switch to active treatment of VUR

Next step?

- Endoscopic bulky agent
- Reimplantation
- Temporary ureterocutaneostomy (end/refluxing; right-/leftsided)
- Left-sided nephrectomy

Temporary refluxing left-sided ureterocutaneostomy



Follow-up

- stable CKD 3
- No new breakthrough infections
- DMSA scan: 14% left sided function at age of 2 years, 12% left sided function at age of 3 years
- VUDO: left sided reflux, DOA (P 21cmH2O)

Surgery

Control cystoscopy with PIC cystography (after occlusion of left-sided ostium) shows residual right-sided reflux

Plan:

Right-sided endoscopic bulky agent injection and left-sided ureter reimplantation

Follow-up

- After six months: stop proh. AB
- After three years of follow-up:
  - stable CKD 3
  - no hypertension
  - no infections
  - anticholinergica for OAD
  - stable US without UUT dilatation

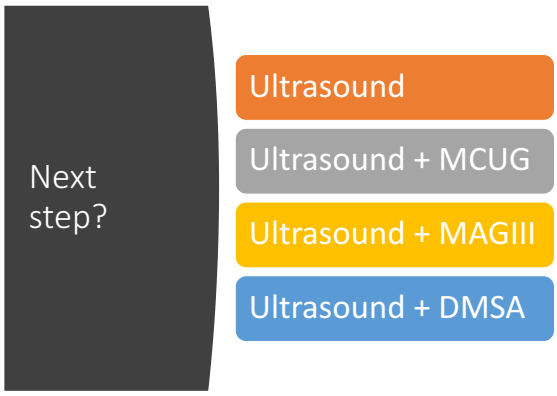
Case 2

Case presentation

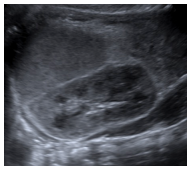
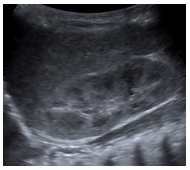
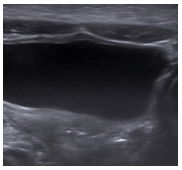
- Girl, presentation 5 weeks old
- Birth a term
- Prenatal US
  - no dilatation

Case presentation

- ED: fever
- Admission for pyelonephritis
  - R/ augmentin
  - after admission start cefadroxil prophylaxis



Ultrasound on admission

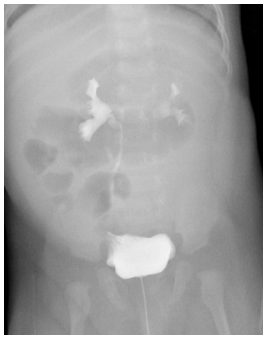




Left kidney
BPD 4,9 cm
No dilatation
Normal corticomedullary differantiation

Right kidney
BPD 6,2 cm
No dilatation
Normal corticomedullary differantiation

Bladder
Normal bladderwall
No distal ureters

MCUG 2 weeks later



MCUG 2 weeks later

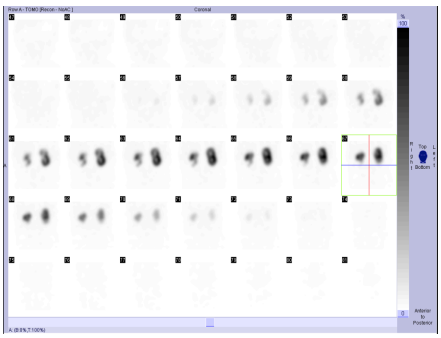
Case presentation

- Age 3 months first breakthrough infection

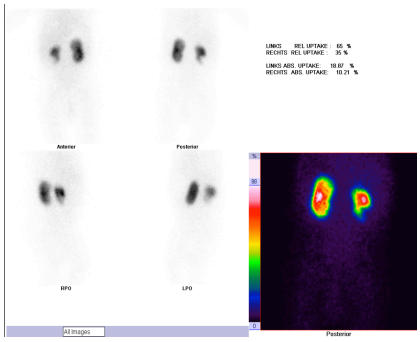
Next step?

- Follow-up
- DMSA scan
- MAGIII scan
- repeat MCUG
- Diagnostic cystoscopy
- Endoscopic bulky agent
- Reimplantation
- Temporary diversion

DMSA



DMSA



Next step?

- Follow up + proph. AB
- Diagnostic cystoscopy
- Endoscopic bulky agent
- Reimplantation
- Temporary diversion
- Right-sided nephrectomy

Follow-up

- Proph. AB
- No infection
- US: stable and no dilatation
- DMSA at 6 months interval

Follow-up

- At age 7 months: new breakthrough infection with fever

Next step?

- Follow up + proph. AB
- Diagnostic cystoscopy
- Endoscopic bulky agent
- Reimplantation
- Temporary diversion
- Right-sided nephrectomy

Cystoscopy

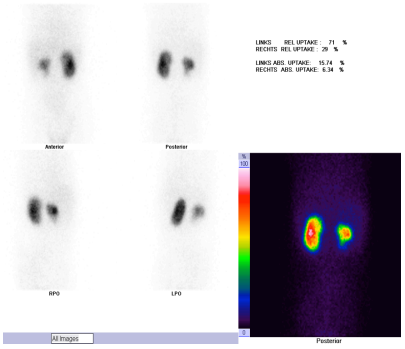
- Bilateral orthotopic ostia, open on flushing
- No trabeculated bladder, no high bladderneck

- Bilateral endoscopic bulky agent injection

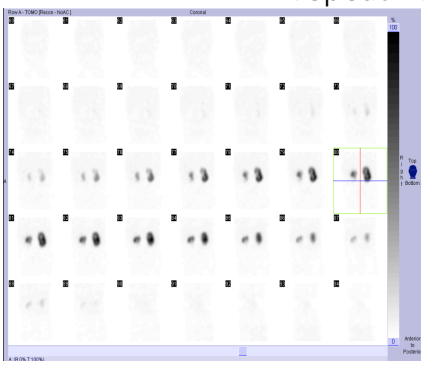
1 month later

- New breakthrough infection with fever

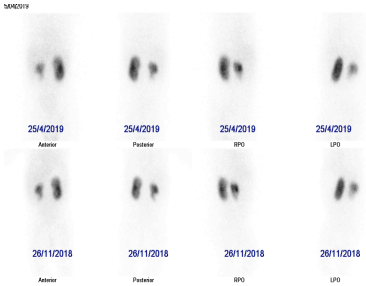
repeat DMSA



repeat DMSA



repeat DMSA



Next step?

- Follow-up
- repeat MCUG
- VUDO
- repeat diagnostic cystoscopy
- repeat endoscopic bulky agent
- Reimplantation
- Temporary diversion

VUDO

- Persistent active right-sided VUR grade III , no passive VUR, no left-sided reflux
- Normal bladdercapacity
- Normal bladderfunction, no DOA

Next step?

- Follow-up
- repeat diagnostic cystoscopy
- repeat endoscopic bulky agent
- Reimplantation
- Temporary diversion
- Right-sided nephrectomy

Surgery

- Cystoscopy + PIC cystography
  - right-sided VUR grade III
  - no left-sided VUR
- Open right-sided ureter reimplantation (Cohen)

Follow-up

- No breakthrough infections
- US: stable
- Stop proph. AB 2 months after the surgery

Background: Reflux?

VUR Importance

- >30% of children with UTI have VUR
- >90% of children with renal scarring and hypertension
- Cause of 25% renal failure in patients under dialysis or with renal transplant in Europe and USA

VUR:

- Incidence:
  - < 1% of healthy children
  - 13-51% with symptomatic UTI
- Epidemiology
  - Prevalence of VUR ≈ 1/age
  - More frequent in White Children
  - Incidence x10-20 in brothers, sisters and parents of children with VUR (incidence 30-40%)
    => routine screening: ultrasound

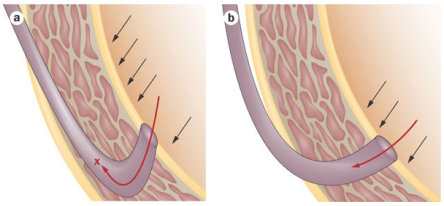
VUR: associated to some pathologies

- Posterior Urethral Valves
- Duplex system: reflux lower moeity
- Prune belly syndrome
- Exstrophia vesicae
- Bladder dysfunctions

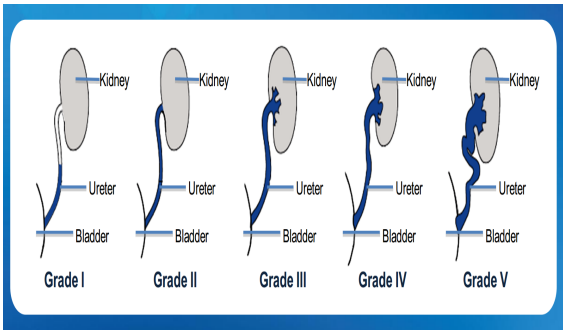
VUR: Classification

- **Primary reflux:**
  - Congenital deficiency of VUJ with deficient sub-mucosal tunnel
- **Secundary reflux:**
  - UT dysfunction:
    - Neuropathy:
      - Meningomyelocoele
      - Spinal cord lesion
    - Obstruction
      - Dysfunctional voiding
      - PUV
      - Ectopic ureterocoele
    - Infection: cystitis

VUR



VUR



VUR: treatment

Conservative treatment

Long term AB profylaxis
Prevents kidney damage

Surgical Treatment

Endoscopic
Laparoscopic (RA or not)
Open surgery

VUR EAU guidelines

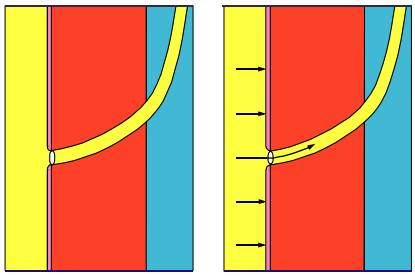
In high-risk patients who already have renal impairment, a more aggressive, multidisciplinary approach is needed.

Table 10: Management and follow-up according to different risk groups

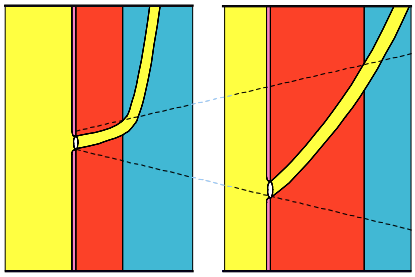
Risk Groups	Presentation	Initial treatment	Comment	Follow-up
High	Symptomatic male or female patients after toilet-training with high-grade reflux (grades IV-V), abnormal kidneys and LUTD	Initial treatment is always for LUTD with CAP; intervention may be considered in cases of BT infections or persistent reflux	Greater possibility of earlier intervention	More aggressive follow-up for UTI and LUTD; full re-evaluation after 6 months
High	Symptomatic male or female patients after toilet-training with high-grade reflux (grade IV-V), abnormal kidneys and no LUTD	Intervention should be considered	Open surgery has better results than endoscopic surgery	Post-operative VCUG on indication only; follow-up of kidney status until after puberty
Moderate	Symptomatic male or female patients before toilet-training, with high-grade reflux and abnormal kidneys	CAP is the initial treatment. Intervention may be considered in cases of BT infections or persistent reflux	Spontaneous resolution is higher in males	Follow-up for UTI, hydronephrosis; full re-evaluation after 12-24 months
Moderate	Asymptomatic patients (PNH or sibling) with high-grade reflux and abnormal kidneys	CAP is the initial treatment. Intervention may be considered in cases of BT, infections or persistent reflux		Follow-up for UTI/ hydronephrosis; full re-evaluation after 12-24 months
Moderate	Symptomatic male or female patients after toilet-training, with high-grade reflux and normal kidneys with LUTD	Initial treatment is always for LUTD with CAP; intervention may be considered in cases of BT, infections or persistent reflux	In case of persistent LUTD, despite urotherapy, intervention should be considered. The choice of intervention is controversial	Follow-up for UTI and LUTD, kidney status; full re-evaluation after successful urotherapy
Moderate	Symptomatic male or female patients after toilet-training with low-grade reflux, abnormal kidneys with or without LUTD	Choice of treatment is controversial. Endoscopic treatment may be an option. LUTD treatment should be given if needed.		Follow-up for UTI, LUTD, and kidney status until after puberty
Moderate	All symptomatic patients with normal kidneys, with low-grade reflux, with LUTD	Initial treatment is always for LUTD with or without CAP		Follow-up for UTI and LUTD
Low	All symptomatic patients with normal kidneys, with low-grade reflux, with no LUTD	No treatment or CAP	If no treatment is given, parents should be informed about risk of infection	Follow-up for UTI
Low	All asymptomatic patients with normal kidneys with low-grade reflux	No treatment or CAP in infants	If no treatment is given, parents should be informed about risk of infection	Follow-up for UTI

PNH = prenatal diagnosed hydronephrosis.

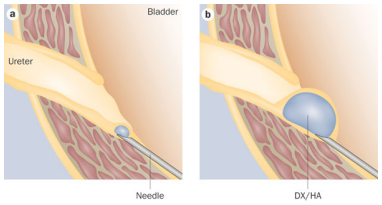
Vesico-ureterale reflux: primaire reflux

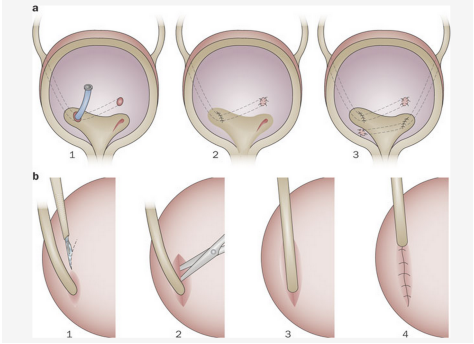


Vesico-ureterale reflux: spontane genezing



VUR





VUR:

- Surgery:
- Open surgery: 98% succesful
  - Endoscopic correction: Deflux: depending on the inititial reflux grade
  - Laparoscopic correction: still to be proven effective

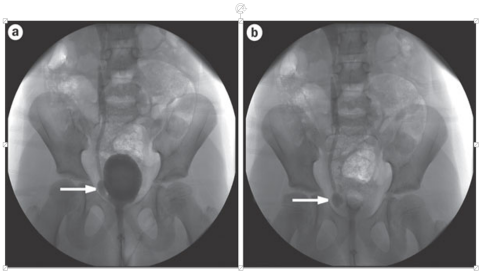
VUR: What's Deflux? ® 500 Euros/1.5ml

Viscous gel: dextranomer + Hyaluronic Acid

- Both components are biocompatible and well tolerated
  => no allergic reactions
- Deflux does not migrate
- Stays stabile in size and position: Hyaluronic Acid is degradated and is replaced by fibroblasts and collagen

VUR: Deflux controversies

- Used to be for low grade reflux
- More and more often for high grade and duplex system
- Even if fails, no problem to do open surgery

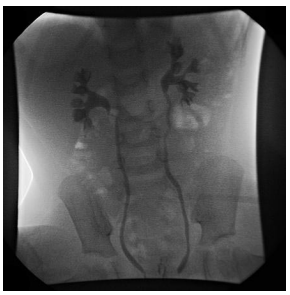


VUR: Choose the right indication for endoscopic correction!

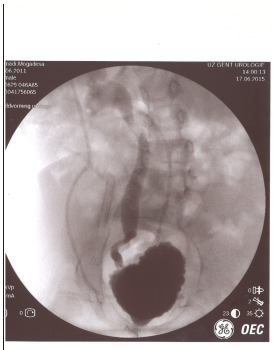
- Not always necessary to correct
- In high risk patients, choose wisely
- Experience is needed for Endoscopic treatment

8 months old boy, 1 febrile UTI

4 years old boy



1 year old boy



Thank You !