

**Purpose** To evaluate the diagnostic performance and safety of intravesical administration of a second-generation ultrasound contrast-agent (UCA) for the diagnosis of vesicoureteric reflux (VUR) in children.

**Methods and materials** 1350 children (587 boys/763 girls, mean-age 2.6y, range 15d-17y) with 2720 pelvi-ureter-units, underwent contrast-enhanced voiding urosonography (ceVUS) to rule out VUR and urethral pathology. A second-generation UCA (SonoVue®, Bracco, Milan) was administered intravesically through 5–8F feeding-tube at a dose of 0.5 ml/bladder filling. Possible adverse-events were monitored during the examination and followed-up for 7 days after the ceVUS by phone-calls. Urine analysis and culture were performed 3–5 d before ceVUS in all children and 24–48 h in any patient reported with adverse-events.

**Results** VUR was detected in 450/1350(33%) patients (162 boys/288 girls). This was in 653 pelvi-ureter-units (reflux-grade distribution: grade I = 1, grade II = 276, grade III = 266, grade IV = 100, grade V = 10). The urethra was normal in all children. Mean duration of examination was  $14 \pm 7$  min, including urethral imaging. Minor adverse-events were reported in 45 (3.3%) children. These included dysuria (n = 39), abdominal pain (n = 2), increased frequency of micturition (n = 1), vomiting (n = 1), perineal irritation (n = 1), and urinary-tract-infection after ceVUS (n = 1). The onset of adverse-events were subacute in 92% and delayed in 8% and were self-limited non-requiring hospitalisation.

**Conclusions** There were no serious adverse-events with intravesical use of SonoVue®. Only a few minor adverse-events were reported during ceVUS most likely due to catheterization process. Thus ceVUS with intravesical administration of a second generation UCA (SonoVue®) for VUR and urethral pathology detection is a safe and reliable diagnostic procedure in children.

#### PS-238 STUDY OF BONE BIOCHEMICAL MARKERS AND THE CYTOKINE SRANKL/OPG SYSTEM IN CHILDREN WITH IDIOPATHIC HYPERCALCIURIA

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**Background** Idiopathic Hypercalciuria (IH) has been associated with decreased bone density up to 30% of the children.

**Aims** To determine the concentrations of cytokines osteoprotegerin (OPG) and sRANKL and other biochemical indices of bone metabolism in children with IH.

**Methods** In 31 children of median age 6.3 years (range 2.2–16.4) with IH OPG, sRANKL, 25(OH)D, 1,25(OH)<sub>2</sub>D, PTH, Ca, Pi, osteocalcin, ALP and CTx-Crosslaps were determined in serum and Ca/Cr, oxalate/Cr and citrate/Cr in urine. Times of study were at diagnosis and after 3 months of salt free and adequate Ca diet. Height and BMI z-score were assessed. Clinically healthy children (n = 35) matched for age/sex and season were used as controls (median 7.8 years, range 1.8–16.3).

**Results** Although urinary Ca excretion (24 hCa and UCa/UCr) decreased at 3 mo ( $p < 0.05$  and  $p < 0.01$ ) on average it had not reached control values ( $p < 0.0001$ ,  $p = 0.0004$ ). No significant differences were found for urine excretion of citrate and oxalate

or for serum Ca, Pi, 25OH<sub>2</sub>D, 1,25(OH)<sub>2</sub>D, PTH, osteocalcin, ALP, OPG, sRANKL and sRANKL/OPG ratio in patients before and after diet or compared to controls. Only serum concentrations of CTx-Crosslaps were significantly higher in both patient samples ( $p < 0.02$ ,  $p < 0.05$ ) than controls. The BMI z-score was lower in patients than controls ( $p = 0.016$ ), but height did not differ.

**Conclusion** Although serum OPG/sRANKL and osteocalcin were not different in children with IH, the higher serum CTx-Crosslaps levels (bone resorption index) may suggest bone turnover uncoupling with an autocrine role of the above cytokines.

#### PS-239 EARLY ACUTE RENAL INJURY VERSUS LATE ACUTE RENAL INJURY. ARE THERE ANY PROGNOSTIC DIFFERENCES BETWEEN THEM?

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**Objectives** To evaluate the clinical differences between patients developing early acute kidney injury (EAKI) and late acute kidney injury (LAKI) during their stay in a PICU.

**Methods** Retrospective study including patients admitted to the PICU over the last 4 years. Children were excluded if they had a length of stay of less than 2 days or if they had end stage renal disease. AKI was defined according to the KDIGO criteria. The episodes of AKI that began within the first 72 h of admission were considered early AKI (EAKI), and those that appeared later were considered LAKI.

**Results** 1082 patients fulfilled the inclusion criteria. 415 patients (38.3%) developed AKI: EAKI 354 patients (173 had stage I AKI, 77 stage II and 104 stage III); 61 patients LAKI (33 stage I, 15 stage II and 13 stage III). The severity and duration of the AKI, the need for dialysis and the incidence of pre renal AKI were not different between EAKI and LAKI groups. Patients with LAKI had more time of mechanical ventilation (156 h vs 72 h,  $p = 0.006$ ) and a longer PICU stay (13 vs 7 days,  $p < 0.001$ ). There were no differences in age or mortality between groups. LAKI was found to be more frequent in post-operative cardiac patients (41%) ( $p < 0.001$ ).

**Conclusions** LAKI is associated with more time of MV, longer PICU stay and with the cause of admission to the PICU. However LAKI is not associated with greater severity or mortality than EAKI.

#### PS-240 DEVELOPING A TOXIC PAEDIATRIC ANIMAL MODEL OF NON-OLIGURIC ACUTE RENAL INJURY WITH CISPLATIN

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**Introduction** Developing a non-oliguric paediatric animal model of acuterenal injury (AKI) could be useful to study the evolution of diuresis after treatments. Cisplatin causes a dose-dependant poliuric renal failure in humans. A dose of 5 mg/kg has been used in rats to produced AKI but there are no studies in pigs.

Abstract PS-240 Table 1

Cisplatin dose mg/kg	Days after injection	Initial diuresis (ml/h)	Creatinine (mg/dL)	Urea (mg/dL)	Sodium (mmol/L)	Potassium (mmol/L)	Phosphate (mg/dL)
2	4	-	1.0	46	140	4.3	-
2	4	31	0.9	45	138	4.5	6.8
3	2	20	3.6	174	138	4.6	13.5
3	2	22	1.5	142	135	3.4	15
3	2	38	4.2	209	132	5.9	16
3	2	30	3.8	189	137	4.2	15.8
3	4	7	9.5	518	137	8.7	20.3
5	3	1	5.5	409	120	10.4	14.8

**Objectives** To define the target dose of Cisplatin that develops an oliguric toxic acute kidney injury in piglets.

**Methods** A prospective experimental study was performed in 8 piglets (mean 10 kg). Three different intravenous doses of Cisplatin (2, 3 and 5 mg/kg) and two different periods of time between administration and evaluation (2 and 4 days) were studied. Urine and blood samples were collected.

**Results** Results are presented in Table 1. A dose of 2 mg/kg did not produce important alteration of renal function at any given time. A very severe oliguric AKI with extremely high hyperkalemia was observed four days after a 3 mg/kg dose and 3 days after a 5 mg/kg dose. A dose of 3 mg/kg administered 48 h before produced an important AKI without severe hyperkalemia.

**Conclusions** A dose of 3 mg/kg of intravenous cisplatin produced non-oliguric AKI after 48 h in piglets. This dose and interval can be used for toxic paediatric animal models of AKI.

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WITHDRAWN

PS-242

#### RITUXIMAB IN THE TREATMENT OF MINIMAL CHANGE DISEASE IN CHILDREN WITH NEPHROTIC SYNDROME

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**Background and aims** To explore the efficiency and side effects of rituximab in the treatment of minimal change disease (MCD) in children with steroid-dependent nephrotic syndrome (SDNS).

**Methods** From 2011.10 to 2014.4, children with MCD who hospitalised always relapsed although treated with steroid and one or more immunosuppressants. Then they were given rituximab 1 or 2 times (375 mg/m<sup>2</sup>).

**Results** Fifteen patients (male: female 7:8) with MCD, ageing from 4–17 years old ( $7.93 \pm 3.26$  years old) were followed up for 2–30 months ( $15.4 \pm 9.86$  months). After infusion of rituximab, the B cell was obviously decreased ( $CD20 < 1\%$ ,  $T = 110$ ,  $PT = 4$ ,  $PT = 91$ ,  $PT = 1$ ,  $P$  Side effect: Only two patients got mildly uncomfortable in the infusion of rituximab but relieved with decreasing the rate of infusion.

**Conclusion** Rituximab has efficiency in treating children with MCD. It can help to reduce the dosage of steroids. And maybe one time of rituximab is enough for children with MCD. And there are no seriously side effects of rituximab.

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#### THE CLINICAL SIGNIFICANCE OF URINARY NEUTROPHIL GELATINASE ASSOCIATED LIPOCALIN, KIDNEY INJURY MOLECULAR-1 AND INTERLEUKIN-18 IN ACUTE KIDNEY INJURY AFTER CHILDHOOD RDIOPULMONARY BYPASS

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**Background and aims** To investigate the value of urinary neutrophil gelatinase associated lipocalin (NGAL) kidney injury molecular-1 (KIM-1) and interleukin-18 (IL-18) in the diagnosis of acute kidney injury (AKI) following childhood cardiopulmonary bypass (CPB).

**Methods** 67 patients accepted CPB assigned to acute kidney injury group (group AKI) or non-acute kidney injury group (group non-AKI). Samples were taken regularly after CPB 30 min, 2 h, 4 h, 24 h, 48 h and 72 h.

**Results** The incidence of AKI was 34%, including 15 cases with Risk stage AKI, 4 cases with Injury stage AKI, 3 cases with Failure stage AKI, 1 cases with Loss stage AKI. Comparing with the non-AKI group, the levels of urinary NGAL/Cr was much higher than that of controls after CPB 24 h. The levels of urinary NGAL/Cr were higher than that of controls after CPB 48 h. The values for the AUC were determined for urine KIM-1 as 0.698 and 0.662 after CPB 24 h and 48 h. Comparing with the pre-operation, the levels of urinary IL-18/Cr were higher than that of controls after CPB 30 min. AKI group has a higher level than that of non-AKI group after CPB 4 h.

**Conclusion** In this study, our results identify that possibly urine NGAL, KIM-1 and IL-18 are more significative than Scr for early detection. However, the exact clinical value needs to be further elucidated.

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#### ACETAZOLAMIDE TREATMENT FOR METABOLIC ALKALOSIS IN A PAEDIATRIC INTENSIVE CARE UNIT

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#### Study

**Objective** To evaluate the efficacy of enteral acetazolamide treatment for hypochloreaemic metabolic alkalosis in critically ill children.

**Methods** We designed an observational retrospective study that included critically ill children admitted to the PICU from January 2010 to December 2013 and treated with acetazolamide for at least 48 h for metabolic alkalosis. We recorded demographic data, dose and type of diuretic treatment, use of mechanical ventilation and acid-base and biochemical data. Acetazolamide was administered enterally and both dose and adverse effects were collected.

**Results** A total of 120 episodes of treatment (86 post-cardiac surgery, 17 cardiac decompensations and 17 patients with respiratory disease) in 93 patients (median age 6 months) were analysed.

85% received a continuous IV furosemide infusion and 14.2% intermittent bolus administration of furosemide. Furosemide doses of patients with respiratory disease were lower ( $p < 0.001$ ) than in patients with other pathologies.