

with no clinical symptoms, underwent ultrasonography (US) of the urinary tract and voiding cysto-urethrography (VCUG), renal static scintigraphy (DMSA) and MRU. The results of these diagnostic imaging studies were then compared with each other and with the results of the final diagnosis, as established at surgery and by histology, if available.

RESULTS

Dysplastic orthotopic or dystopic renal buds were suspected on US in 11 of the 30 patients

and were confirmed in all 11 by MRU. While the accompanying ectopic ureteric insertions were detected in only three patients by US, they were visualized in all four by MRU (the other seven patients with dysplastic renal buds had orthotopic ureteric orifices). DMSA scintigraphy failed to detect 10 renal buds.

CONCLUSIONS

The diagnostic value of MRU appears to be better than that of other imaging tests, even than DMSA scintigraphy which, together with VCUG, is at present considered the standard

for evaluating cases of suspected solitary kidneys on US with contralateral orthotopic or dystopic renal buds and ectopic ureteric insertions.

E-36 (P)

MRU, IVU and ultrasonography in examining the upper urinary tract in children before surgery

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OBJECTIVE

To compare the imaging quality of MRU using an open low-field silent magnet with that of IVU, ultrasonography (US) and urinary tract scintigraphy before surgery.

PATIENTS AND METHODS

The results of static MRU in 51 children with dilatation of the upper urinary tract were compared with the results of IVU and US. In 12 patients dynamic MRU was compared with dynamic kidney scintigraphy (MAG-3). Data

from various levels of the urinary tract were assessed. Indications for surgery were always based on all the examinations.

RESULTS

MRU was more accurate in 18 of 36 hydronephrotic kidneys, and IVU in eight; the accuracy was similar in 10. MRU was more accurate than IVU in seven megaureters, at the same level in six and less accurate in eight. The results differed in different age categories. US of the kidney and the lower ureter yielded good results, but was insufficient for the mid-ureter. Excretion

curves in dynamic MRU and dynamic scintigraphy were identical in six patients.

CONCLUSIONS

MRU by an open low-field magnet can provide valuable information on the anatomy and function of the entire urinary tract in one examination. Compared with excretion urography it can also be used for imaging and evaluating the hypofunctional part of the kidney. MRU is a significant improvement on existing stressful examinations.

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E-37 (P)

Age- and lean body weight-related growth curves of infant kidneys using real-time three-dimensional ultrasonography

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BACKGROUND

To date, normal values of kidney size and growth have been based on two-dimensional measurements combined

with arithmetic formulae. Real-time three-dimensional (RT3D) ultrasonography (US) is a new imaging method allowing 3D imaging in real time to estimate kidney volume. We created nomograms of kidney

volumes for routine diagnostics in children, as a standard for assessing infant renal growth, thus reducing the need of invasive tests.

PATIENTS AND METHODS

RT3D US volumetry was used in 620 kidneys in 310 children (aged 0–10 years with a homogeneous age distribution) with no evidence of renal disease. Polynomial regression analysis was used to predict and estimate growth variables of kidney volumes as a function of either age, body mass index (BMI) or lean body weight (LBW).

RESULTS

Kidney volume correlated significantly with age and LBW. Stepwise multiple regression analysis incorporating the independent variables of age, height, weight, sex, BMI and LBW indicated that age and LBW were the strongest predictors of kidney volumes in children.

CONCLUSIONS

This study shows that RT3D US is particularly good for evaluating kidney volume in infancy. It is suitable for monitoring renal growth, reflecting kidney function, which is crucial in the diagnosis and conservative management of different pathologies in children. Furthermore, such volumetric US is feasible in screening programmes assessing congenital urogenital diseases.

E-38 (S0)

A comparison between ultrasonographic and bladder scan measures of bladder volume in infants and children: a preliminary blind study

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BACKGROUND

A noninvasive evaluation of bladder volume (BV) is recommended in children with voiding dysfunction. In adults, the bladder scan (BS) is a simple, portable noninvasive method for measuring BV. The aim of the study was to assess the accuracy of ultrasonography (US) in children, comparing BS and US for evaluating BV.

US during the same session by different operators unaware of the other's results. Data were analysed using the Pearson's correlation index (R). Patients were divided by age into three subgroups (3–24 months, 3–6 years and 7–16 years). Moreover, in children >2 years old the full bladder capacity was calculated according to the expected BV/age to create the three more subgroups, i.e. <20%, 20–50% and >50%.

considering all patients ($R = 0.98$), or among subgroups (3–24 months, $R = 0.73$; 3–6 years, $R = 0.92$; 7–16 years $R = 0.97$) and percentage of bladder capacity (<20%, $R = 0.75$; 20–50% $R = 0.96$; >50% $R = 0.92$).

CONCLUSIONS

Our results confirm that BS is reasonably accurate and helpful for measuring BV in both younger and older children, and for different conditions of bladder emptying.

PATIENTS AND METHODS

In all, 92 children (aged 4 months to 16 years) had their BV evaluated using BS and

RESULTS

There was a statistically significant ($P < 0.001$) correlation between BS and US, either

E-39 (P)

Dynamic assessment of the bladder and urethra with ultrasonography: a 4-year experience

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AIM

To show the reliability of the ultrasonographic (US) visualization of the male and female bladder and urethra in children during spontaneous voiding, both without and with first- and second-generation echo-contrast (EC) cysto-urethrosonography (CUS).

PATIENTS AND METHODS

During a 4-year period, 820 patients were routinely assessed without, and 452 with, EC during spontaneous voiding using a transperineal sagittal US approach with portable, low-, medium- and high-end US equipment; 62% of the patients (aged 0–18

years) were male. All the examinations, as previously described [*J Urol* 2002; 168: 1711], had VCUG and cystoscopic controls in case of suspected lower urinary tract (LUT) malformations. CUS was associated with a urodynamic evaluation (video-urosonography) in selected cases.