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GENETIC PREDISPOSITION TO SCAR FORMATION IN REFLUX NEPHROPATHY: EVIDENCE FOR A ROLE OF ANGIOTENSIN CONVERTING ENZYME GENE POLYMORPHISM

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The impact of angiotensin I-converting enzyme (ACE) gene polymorphism on prognosis of certain renal diseases has given us important insight into mechanisms of disease progression in the kidney. In this study we have attempted to assess whether the ACE genotype played a role in scar formation in reflux nephropathy. We have examined the influence of deletion (D) and insertion (I) polymorphism in the ACE gene on renal prognosis in reflux nephropathy. Twenty-six children with III or IV degree reflux were the subject of the study. They were stratified into 2 groups according to the DMSA findings: the first group consisted of 10 patients with no scar formation whereas in the second group (n=16) there was significant scar formation in the refluxing units and 13 had decreased renal function. The frequency of patients homozygous for the D allele was significantly more in the scarred group compared to the non-scarred patients (68.8 % and 20.0%, respectively, $p<0.05$). D allele homozygosity of the patient and the family, introduced a 9-fold and 10-fold risk, respectively, for the development of renal scar ($p<0.05$,CI 95% for both). On the other hand we were unable to find any correlation with the presence of DD genotype with hypertension, with increased creatinine levels, and with proteinuria.
This study provides evidence that the DD genotype maybe a genetic susceptibility factor contributing to adverse renal prognosis in reflux nephropathy, namely scar formation. We are continuing our study to enlarge the study group.

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THE FIRST UTI IN CHILDREN > 2 y IS RELATED TO A BLADDERDYSFUNCTION: IS THERE STILL A PLACE FOR A CYSTOGRAPHY IN THE DIAGNOSTIC APPROACH?

Aim of the study: Is aetiology of first UTI in children > 2y related to organic or func-tional disorder ? Is the first examination to perform a cystography or a cystomanometry?
Study-group: prospective study 1994-1995: children > 2y, with proven UTI (clinical, urine-sediment : WBC > 10/field, urine-culture > 100 000/mm^3. Exclusion: neurological disorders, UTI during hospitalisation or after catheterisation, UTI < 2 y. N= 56 : M6/F60, age 2-14 y.
Methods: all patients received a radio-cystomanometry and a full micturation-screening: anamnesis, clinical ex., calendar, ultrasonography (US), bladdervolume for age, uroflow followed by US-residu.
Results: radiocystomanometry : bladderdysfunction 52/56, 4 with isolated detrusor instability, 1 dyssynergy, 47 dysfunctional voiding. Organic abnormalities were present in 17 patients : 14 had vesico-ureteral reflux. Non-invasive screening for bladderdysfunction was positive in 46/56 : 25 nocturnal enuresis, 34 diurnal incontinence, 35 urge-syndrome, 36 abnormal bladdervolume, 22 abnormal voiding pattern, 12 constipation. This was only mentioned in a minority of cases (8) by the referring clinician, while reflux was suggested to the parents in 35 pt
Conclusion : Children with first UTI > 2y need a good anamnesis and full non invasive screening for a micturation disorder, what will lead to a suspicion for bladder dysfunction. The subsequent examination is a radio-cystomanometry and not a cystography, surely if we want to avoid a second catheterisation.Cystography alone may reveal VUR, without recognising the underlying bladder-dysfunction. Because all patients with VUR had a bladderdysfunction, it is suggestive that the reflux is or is maintained secondary by the bladderdysfunction.

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RADIOLOGIC LONG TERM ASSESSMENT OF RENAL DEVELOPMENT IN GIRLS WITH URINARY TRACT INFECTIONS

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In 1960 an epidemiological study of children with urinary tract infections (UTI) was started in Göteborg. The children with UTI were followed at a specialized UTI clinic and examined according to an uniform program. 107 females were selected for follow-up because of renal scarring (parenchymal reduction with adjacent caliceal deformity) in 51 and recurrent UTI in 56 of whom 14 had untreated covert bacteriuria; all were considered to be at risk of deterioration of renal function. **The aim** of the study was to describe development of scars and compensatory hypertrophy during long term follow-up.
Results: The median age at first urography was 7.1 years and at last 22.4 years. The median interval between the two investigations was 14.8 years. At first urography there were 38 females with scarring (31 unilateral and 7 bilateral) and 69 without; at the last the corresponding figures were 51 (37 unilateral and 14 bilateral). Reflux was found in 46/51 with scarring and in 33/56 without ($p<0.001$). Progress of renal scarring was seen in 33 females. The area of the unscarred kidney in females with unilateral damage was significantly larger than the area of unscarred kidneys in females without damage. However, the total renal area in females with unilateral scarring was significantly smaller than in females without scarring.
Conclusion: This group of females had a relatively high median age at the first urography. Of the 51 females with ultimate renal scars, 13 (25%) were normal at the first investigation. Compensatory hypertrophy was a significant feature in those with unilateral scarring although the total renal area was reduced compared to those without scarring.

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PROCALCITONIN IS A MARKER OF SEVERITY OF RENAL LESIONS IN PYELONEPHRITIS

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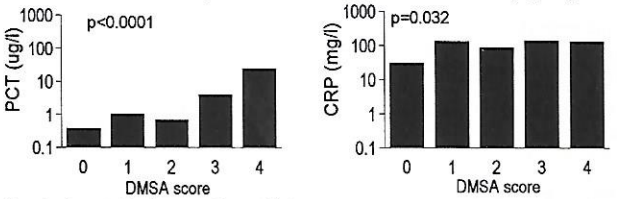
Procalcitonin (PCT) has been recently described as a marker of infection which appeared to be correlated with the severity of microbial invasion. The aim of this prospective study was to measure serum PCT in children with UTI, to compare it to other inflammatory markers and to evaluate its ability to predict renal involvement as assessed by technetium-99m-labelled DMSA scintigraphy, the imaging agent of choice for the detection of acute renal lesions and cortical scarring.
Serum PCT, CRP and leukocyte blood counts from 23 children with low UTI (normal DMSA scans) were compared to those of 37 children with pyelonephritis defined as the presence of acute renal lesions at DMSA scan. Values of PCT, CRP and leukocyte counts were significantly different between the two groups: respectively 0.38 ± 0.19mg/l, 30.3 ± 7.6, 10939 ± 834/mm^3 versus 5.37 ± 1.9, 120.8 ± 8.9, 17429 ± 994. When inflammatory markers were correlated to the severity of the renal lesion (ranked from 0 to 4 by DMSA scintigraphy), we found a significant correlation with serum levels of PCT contrasting with a weak correlation with CRP (Figure).



Conclusion: PCT is a marker of infection that is significantly increased when severe renal parenchymal involvement is present and thus allows to predict immediately at admission patients at risk of severe renal lesions.

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