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Renal Outcomes of a Solitary Kidney

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1. Renal function is similar in solitary kidneys from patients with and without diabetes.

Author(s): Gluhovschi, Cristina; Gluhovschi, Gheorghe; Gadalean, Florica; Velciov, Silvia; Petrica, Ligia; Timar, Bogdan; Kaycsa, Adriana; Timar, Romulus

Source: Nefrologia : publicacion oficial de la Sociedad Espanola Nefrologia; 2017; vol. 37 (no. 2); p. 195-198

Publication Date: 2017

Publication Type(s): Journal Article

PubMedID: 28262263

Abstract:OBJECTIVESDue to the shortage of living kidney donors and the current diabetes mellitus (DM) pandemic, studying the association of solitary kidney (SK) with DM is of paramount importance. Our aim was to assess the significance of the association between SK and DM.MATERIALS AND METHODSEighty-four patients with SK and DM (group A), with a mean age of 62.46±12.72 years, of whom 36 were males and 48 were females, were enrolled in the study. The control group (group B) comprised 84 SK patients without DM of similar age and duration of existence of a SK. Mean age: 61.58±8.22 years, 23 males and 61 females. Serum creatinine, GFR (CKD-EPI), glycaemia, cholesterol, triglycerides, uric acid, proteinuria/24h, systolic blood pressure (SBP), diastolic blood pressure (DBP) and BMI were assessed.RESULTSThe group of patients with SK and DM (group A) had a higher BMI (p=0.0007), higher metabolic abnormalities (higher glycaemia [p<0.001], triglycerides [p=0.0004], uric acid [p=0.019] and proteinuria/24h [p=0.006]). The study group also had a higher prevalence of hypertension (p=0.003) and coronary artery disease (p=0.031).CONCLUSIONSWe found a higher value of proteinuria in the study group, significant metabolic abnormalities, as well as a higher prevalence of hypertension and coronary artery disease. However, no differences with respect to GFR were found, which could have significant implications for transplantation.

Database: Medline

2. Simple renal cysts in the solitary kidney: Are they innocent in adult patients?

Author(s): Tatar, Erhan; Ozay, Emine; Atakaya, Mehmet; Yeniay, Pinar Kezban; Aykas, Ahmet; Okut, Gokalp; Yonguc, Tarik; Imamoglu, Cetin; Uslu, Adam

Source: Nephrology (Carlton, Vic.); May 2017; vol. 22 (no. 5); p. 361-365

Publication Date: May 2017

Publication Type(s): Journal Article

PubMedID: 26990893

Abstract: In patients with a solitary kidney; residual renal volume is an important prognostic factor for kidney survival. At present, the impact of renal cysts on solitary kidney survival is not clear. The aim of this study is to examine the association of cysts on progression of renal failure in patients with a solitary kidney.METHODSThis study included sixtyfive solitary kidney patients. The remaining kidneys after indication nephrectomy (IN) were evaluated with urinary system ultrasound. The primary outcome of the study is the progression of kidney failure during follow-up which was defined as: 25% decrease in glomerular filtration rate (GFR) and / or the need for renal replacement therapy (RRT).RESULTSThe mean age of the patients was 55 ± 14 years and mean follow-up was 53 ± 27 months. Renal cysts were present in 30.7% of patients. 33.8 percent of patients had kidney disease progression and 10.7 % required RRT. Those with progressive disease were older (61 ± 13, 52 ± 14; P = 0.011), had lower baseline GFR (30 ± 11, 39 ± 18; P = 0.035), higher proteiuria (2.84 ± 0.58, 2.47 ± 0.57; P = 0.031) and frequently harboring cysts in the solitary kidney (52.3%, 20.4%; P = 0.006). Progression to kidney failure and RRT requirement in cases with or without renal cysts was (60% vs. 22%; P = 0.004) and (20% vs. 6.6%; P = 0.123), respectively. Acquired cysts in solitary kidney was independently associated with progression to kidney failure and RRT respectively (Exp(B) 3.173; P = 0.01 and Exp(B) 12.35; P = 0.04).CONCLUSIONSimple renal cysts in solitary kidney patients with impaired renal function is associated with poor renal outcome. Large-scale studies are needed to clarify this issue.

Database: Medline

3. Outcomes of a Cohort of Prenatally Diagnosed and Early Enrolled Patients with Congenital Solitary Functioning Kidney.

Author(s): Marzuillo, Pierluigi; Guarino, Stefano; Grandone, Anna; Di Somma, Allegra; Della Vecchia, Nicoletta; Esposito, Tiziana; Macchini, Giulia; Marotta, Rosaria; Apicella, Andrea; Diplomatico, Mario; Rambaldi, Pier Francesco; Perrone, Laura; Miraglia Del Giudice, Emanuele; La Manna, Angela; Polito, Cesare

Source: The Journal of urology; May 2017

Publication Date: May 2017

Publication Type(s): Journal Article

PubMedID: 28554812

Abstract:PURPOSEWe evaluated the clinical course of patients prenatally diagnosed and enrolled early with congenital solitary functioning kidney, and identified the risk factors for renal injury.MATERIALS AND METHODSWe retrospectively evaluated 322 patients with congenital solitary functioning kidney according to the inclusion criteria of 1) prenatal diagnosis of solitary kidney; 2) first evaluation at 1 to 3 months of life with confirmation of congenital solitary functioning kidney, and evaluation of possible associated congenital anomalies of the kidney and urinary tract by abdominal ultrasound, renal scintigraphy and cystography; and 3) absence of any condition potentially affecting renal function in the neonatal period as well as absence of renal injury at enrollment (1 to 3 months of life) confirmed by a normal estimated glomerular filtration rate, lack of proteinuria and hypertension. Followup of 306 patients was evaluated.RESULTSMedian followup was 7.2 years (range 1 to 23) and 1 or more signs of renal injury were found in 12 of 306 patients (3.9%). Considering the entire population the cumulative proportion of patients free from renal injury at 17 years old was 93.7%, vs 81.3% and 95.9% for subjects with and those without congenital anomalies of the kidney and urinary tract of congenital solitary functioning kidney ($p < 0.001$), respectively. Of congenital anomalies of the kidney and urinary tract, congenital solitary functioning kidney resulted in significant risk factors for renal injury (HR 8.75, 95% CI 2.77-27.65).CONCLUSIONSIn an evaluation of a large cohort of patients enrolled early with congenital solitary functioning kidney with a prenatal diagnosis, excluding those with neonatal onset of renal damage, the prevalence of renal damage was 3.9%. Among congenital anomalies of the kidney and urinary tract, congenital solitary functioning kidney represented the major risk factor.

Database: Medline

4. Life with one kidney

Author(s): Schreuder M.F.

Source: Pediatric Nephrology; May 2017 ; p. 1-10

Publication Date: May 2017

Publication Type(s): Article In Press

Available at Pediatric Nephrology - from SpringerLink

Abstract: Life with a solitary functioning kidney (SFK) may be different from that when born with two kidneys. Based on the hyperfiltration hypothesis, a SFK may lead to glomerular damage with hypertension, albuminuria and progression towards end-stage renal disease. As the prognosis of kidney donors was considered to be very good, having a SFK has been considered to be a benign condition. In contrast, our research group has demonstrated that being born with or acquiring a SFK in childhood results in renal injury before adulthood in over 50% of those affected. Most congenital cases will be detected during antenatal ultrasound screening, but up to 38% of cases of unilateral renal agenesis are missed. In about 25-50% of cases of antenatally detected SFK there will be signs of hypertrophy, which could indicate additional nephron formation and is associated with a somewhat reduced risk of renal injury. Additional renal and extrarenal anomalies are frequently detected and may denote a genetic cause for the SFK, even though for the majority of cases no explanation can (yet) be found. The ongoing glomerular hyperfiltration results in renal injury, for which early markers are lacking. Individuals with SFK should avoid obesity and excessive salt intake to limit additional hyperfiltration. As conditions like hypertension, albuminuria and a mildly reduced glomerular filtration rate generally do not result in specific complaints but may pose a threat to long-term health, screening for renal injury in any individual with a SFK would appear to be imperative, starting from infancy. With early treatment, secondary consequences may be diminished, thereby providing the optimal life for anyone born with a SFK.

Database: EMBASE

5. Evolution of blood pressure in children with congenital and acquired solitary functioning kidney.

Author(s): Lubrano, Riccardo; Gentile, Isotta; Falsaperla, Raffaele; Vitaliti, Giovanna; Marcellino, Alessia; Elli, Marco

Source: Italian journal of pediatrics; Apr 2017; vol. 43 (no. 1); p. 43

Publication Date: Apr 2017

Publication Type(s): Journal Article

PubMedID: 28449720

Available at Italian journal of pediatrics - from BioMed Central

Abstract:BACKGROUNDIt is not yet clear if blood pressure and renal function changes evolve differently in children with a congenital or acquired solitary functioning kidney. This study aims to assess if there are any differences between these two types of solitary kidney patients.METHODSCurrent research is a retrospective study assessing the evolution of glomerular filtration rate, proteinuria, and blood pressure in clinical records of 55 children with a solitary functioning kidney (37 congenital and 18 acquired). We used the medical records of children who had been assisted, in our unit of pediatric nephrology, for a period of 14 years (168 months), from the time of diagnosis, between January/1997 and December/2015.RESULTSDuring the study period, glomerular filtration rate (T0 128.89 ± 32.24 vs T14 118.51 ± 34.45 ml/min/1.73 m2, p NS) and proteinuria (T0 85.14 ± 83.13 vs T14 159.03 ± 234.66 mg/m2/die, p NS) demonstrated no significant change. However, after 14 years of follow-up 76.4% of patients had increased levels of arterial hypertension with values over the 90th percentile for gender, age, and height. Specifically, children

with an acquired solitary functioning kidney mainly developed hypertension [T0 2/17 (12%) vs T14 9/17 (52.9%) p < 0.025], whereas children with a congenital solitary functioning kidney mainly developed pre-hypertension [T0 3/38 (7.9%) vs T14 17/38 (44.7%) p < 0.0005].CONCLUSIONSThe renal function of children with solitary functioning kidneys remains stable during a follow-up of 14 years. However, these children should be carefully monitored for their tendency to develop arterial blood pressure greater than the 90th percentile for gender, age, and height.

Database: Medline

6. Outcome after prenatal diagnosis of congenital anomalies of the kidney and urinary tract.

Author(s): Nef, Samuel; Neuhaus, Thomas J; Spartà, Giuseppina; Weitz, Marcus; Buder, Kathrin; Wisser, Josef; Gobet, Rita; Willi, Ulrich; Laube, Guido F

Source: European journal of pediatrics; May 2016; vol. 175 (no. 5); p. 667-676

Publication Date: May 2016

Publication Type(s): Journal Article Observational Study

PubMedID: 26805407

Available at European journal of pediatrics - from SpringerLink

Available at European journal of pediatrics - from EBSCO (CINAHL with Full Text)

Available at European journal of pediatrics - from ProQuest (Hospital Premium Collection) - NHS Version

Abstract:UNLABELLEDCongenital anomalies of the kidney and urinary tract are common findings on fetal ultrasound. The aim of this prospective observational study was to describe outcome and risk factors in 115 patients born 1995-2001. All prenatally diagnosed children were stratified into low- and high-risk group and followed postnatally clinically and by imaging at defined endpoints. Risk factors were evaluated using odds ratios. Neonatal diagnosis included pelvi-ureteric junction obstruction (n = 33), vesicoureteral reflux (n = 27), solitary mild pelvic dilatation (postnatal anteroposterior diameter 5-10 mm; n = 25), and further diagnosis as primary obstructive megaureter, unilateral multicystic dysplastic kidney, renal dysplasia and posterior urethral valves. In 38 children with prenatal isolated hydronephrosis, ultrasound normalized at median age of 1.2 years (range 0.1-9). Surgery was performed in 34 children at median age of 0.4 years (0.1-10.8). Persistent renal anomalies without surgery were present in 43 children and followed in 36 for median time of 16 years (12.2-18). Oligohydramnios and postnatal bilateral anomalies were significantly associated with surgery and impaired renal function.CONCLUSIONThe majority of children had a favourable postnatal outcome, in particular children with prenatally low risk, i.e. isolated uni- or bilateral hydronephrosis. Oligohydramnios and postnatal bilateral anomalies were risk factors for non-favourable outcome.WHAT IS KNOWN• In congenital anomalies of the kidney and urinary tract significantly poorer outcome is known in patients with bilateral renal hypoplasia or solitary kidney associated with posterior urethral valves. • Other factors as proteinuria and vesicoureteral reflux were associated with a higher risk of progression to chronic renal failure in these patients. What is New: • Unlike other studies giving us above-mentioned information, we included all patients with any kind of prenatally diagnosed congenital anomalies of the kidney and urinary tract. Our study shows long-term follow up (median 16 years, range 12.2-18 years), especially in patients not needing surgery, but with persistent anomalies. • During postnatal long-term follow up (median 2.2 years, range 0.1-18 years) one third each showed normalization, need of surgery or persistence of anomalies without need of surgery. Our study revealed a good prognosis in the majority of these children, in particular with prenatally low risk, i.e. isolated uni- or bilateral hydronephrosis, and revealed oligohydramnios and postnatal bilateral anomalies as risk factors for a non-favourable

outcome, defined as need of surgery, persistent anomalies with impaired renal function, end stage renal failure or death.

Database: Medline

7. Long-term follow-up of blood pressure and glomerular filtration rate in patients with a solitary functioning kidney: a comparison between Wilms tumor survivors and nephrectomy for other reasons.

Author(s): Mavinkurve-Groothuis, Annelies M C; van de Kracht, Frank; Westland, Rik; van Wijk, Joanna A E; Loonen, Jacqueline J; Schreuder, Michiel F

Source: Pediatric nephrology (Berlin, Germany); Mar 2016; vol. 31 (no. 3); p. 435-441

Publication Date: Mar 2016

Publication Type(s): Comparative Study Journal Article

PubMedID: 26482253

Available at Pediatric nephrology (Berlin, Germany) - from SpringerLink

Available at Pediatric nephrology (Berlin, Germany) - from ProQuest (Hospital Premium Collection) - NHS Version

Abstract:BACKGROUNDChildren with unilateral Wilms tumor (WT) treated with chemotherapy and/or radiotherapy and nephrectomy have excellent survival rates. A solitary functioning kidney (SFK) is associated with progressive renal injury. This study aims to investigate the additional effect of Wilms tumor treatment on renal function compared with children with an SFK for non-oncological reasons.METHODSA single-center retrospective cohort study on the renal injury markers of 79 survivors of unilateral WT was performed and compared with a matched group of children with an SFK for non-oncological reasons. Mean age at follow-up was 12.4 (SD 5.9) years.RESULTSDuring follow-up, mean estimated glomerular filtration rate (eGFR) and blood pressure z-scores remained stable at an acceptable level. However, in the group of 31 WT patients with a follow-up of 15 years, 23% showed signs of renal injury. This proportion was smaller than the 54% in a group of SFK patients based on non-oncological causes (p = 0.004).CONCLUSIONSA significant proportion of WT survivors develop renal injury during follow-up. Our data may be an underestimation of the true frequency of progressive renal injury, due to a lack of information on proteinuria. As with patients with a non-oncological SFK, long-term follow-up is essential to monitor WT survivors.

Database: Medline

8. Is the presence of a solitary kidney an independent risk factor for acute kidney injury after contrast-enhanced CT?

Author(s): McDonald J.S.; McDonald R.J.; Williamson E.E.; Kallmes D.F.; Katzberg R.W.

Source: Radiology; Jan 2016; vol. 278 (no. 1); p. 74-81

Publication Date: Jan 2016

Publication Type(s): Article

PubMedID: 26523492

Abstract: Purpose: To determine whether patients with a solitary kidney are at higher risk for contrast material-induced acute kidney injury (AKI) than matched control patients with bilateral kidneys. Materials and Methods: This retrospective study was HIPAA compliant and approved by the institutional review board. Adult patients with bilateral kidneys or a solitary kidney from unilateral nephrectomy who underwent contrast material-enhanced computed tomography (CT) at this institution from January 2004 to August 2013 were identified. The effects of contrast material exposure on the rate of AKI defined as an increase in maximal observed serum creatinine (SCr) level of either (a) >=0.5 mg/dL (44.2 mmol/L) or (b) >=0.3 mg/dL (26.52 mmol/L) or 50% over baseline within 24-72 hours of exposure and 30-day post-CT emergent dialysis and death were determined after propensity score-based 1:3 matching of patients with solitary kidneys and control patients with bilateral kidneys. Differences in clinical characteristics and outcomes between the solitary and bilateral kidney groups were assessed by using the Wilcoxon rank sum test or Pearson x2 test prior to matching and by using conditional logistic regression after matching. Results: Propensity score matching yielded a cohort of 247 patients with solitary kidneys and 691 patients with bilateral kidneys. The rate of AKI was similar between the solitary and bilateral kidney groups (SCr >= 0.5 mg/dL AKI definition odds ratio = 1.11 [95% confidence interval {CI}: 0.65, 1.86], P = .70; SCr >= 0.3 mg/dL or 50% over baseline AKI definition odds ratio = 0.96 [95% CI: 0.41, 2.07], P = .99). The rate of emergent dialysis was rare and also similar between cohorts (odds ratio = 1.87 [95% CI: 0.16, 16.4], P = .61). Although the rate of mortality was higher in the solitary kidney group (odds ratio = 1.70 [95% CI: 1.06, 2.71], P = .0202), chart review showed that no death was attributable to AKI. Conclusion: Our study did not demonstrate any significant differences in the rate of AKI, dialysis, or death attributable to contrast-enhanced CT in patients with a solitary kidney versus bilateral kidneys.

Database: EMBASE

9. Incidence of renal carcinoma in non-functioning kidney due to renal pelvic stone disease.

Author(s): Zengin, Kursad; Tanik, Serhat; Sener, Nevzat Can; Albayrak, Sebahattin; Ekici, Musa; Bozkurt, Ibrahim Halil; Bakirtas, Hasan; Gurdal, Mesut; Imamoglu, Muhammed Abdurrahim

Source: Molecular and clinical oncology; Jul 2015; vol. 3 (no. 4); p. 941-943

Publication Date: Jul 2015

Publication Type(s): Journal Article

PubMedID: 26171211

Abstract: The objective of This study was to report our pathological findings in nephrectomy specimens from patients treated for non-functioning hydronephrotic kidney due to renal pelvic stone disease. A total of 97 patients who underwent nephrectomy for non-functioning hydronephrotic kidneys between January, 2011 and June, 2014 were retrospectively reviewed. A non-functioning kidney was defined as one having paper-thin parenchyma on urinary ultrasound or computed tomography, exhibiting no contrast visualization in the collecting duct system on intravenous urography and having a split renal function of <10% on nuclear renal function studies. Following pathological evaluation, 9 patients were diagnosed with xanthogranulomatous pyelonephritis, 9 with malignant tumors and 79 with chronic pyelonephritis. Of the patients with chronic pyelonephritis, 2 also had renal adenomas. The malignant tumors included 3 transitional cell carcinomas (TCC), 2 squamous cell carcinomas (SCC), 3 renal cell carcinomas (RCC) (1 sarcomatoid, 1 papillary and 1 clear cell RCC), whereas 1 patient had concurrent RCC and TCC. In conclusion, non-functioning kidneys, particularly those with kidney stones, should be managed as possible malignancies, due to the higher incidence of malignant tumors in such patients compared with the normal population.

Database: Medline

10. Renal damage frequency in patients with solitary kidney and factors that effect progression

Author(s): Basturk T.; Koc Y.; Ucar Z.; Sakaci T.; Ahbap E.; Kara E.; Bayraktar F.; Sevinc M.; Sahutoglu T.; Ozdemir A.; Akgol C.; Unsal A.; Sinangil A.

Source: Nephrology Dialysis Transplantation; May 2015; vol. 30

Publication Date: May 2015

Publication Type(s): Conference Abstract

Available at Nephrology Dialysis Transplantation - from Oxford Journals - Medicine

Available at Nephrology Dialysis Transplantation - from HighWire - Free Full Text

Abstract: Introduction and Aims: There is increasing evidence that either inherited, or acquired, nephron loss is associated with the increased risk of proteinuria and renal insufficiency. To assess renal damage incidence in patients with solitary kidney(SK) and to detect factors associated with progression Methods: Medical records of 75patients with SK, were investigated retrospectively, divided into two groups: unilateral nephrectomy(Group1), unilateral renal agenesis/ dysplasia(Group2) . According to the presence of kidney damage, each group was divided into two subgroups. Renal damage was defined as creatinine level >=1.4 mg/dl in men, >=1.3mg/dl in female or CCr=300mg/day. Results: Total 75patients who were taken into the study, 44patients comprised group1 with a mean age of 57.9+/-13years, follow-up duration of 43+/-35.3months; while 31patients comprised group2 with a mean age of 44.2+/-13.1years, follow-up duration of 42.6+/-31.4months. Patients in group1 were older than patients in group2(p=0.001). At presentation, 35 patients who comprise group1a had smaller kidney size(p:0.002) and higher uric acid (p:0.028) than group1b. In patients undergone nephrectomy, correlation analysis revealed positive relationship between presence of chronic renal disease and inital and last visit uric acid levels (p:0.004,0.019 and

r:0.485,0.365 respectively). In group2; 13patients showed normal renal function at presentation, whereas the remaining 18 cases, some of whom presented with renal insufficiency, had proteinuria. Group2a was compared with group 2b according to the presence of DM(p:0.038), HT (p:0.003), baseline proteinuria(p:0.014) and uric acid(p:0.032) levels and these variables were found higher in group2a . In patients witgh renal agenesis, there were positive correlations among presence of chronic renal failure and presence of DM and HT(p:0.039,0.003,r:0.373,0.392, respectively), higher initial and last visit proteinuria levels(p:0.014, 0.014,r:0.459, 0.460 respectively), higher baseline uric acid levels (p:0.047, r:0.385) Conclusions: The majority of patients with a SK showed renal damage at the time of the presentation. For early diagnosis of renal damage and reducing the risk of progression, patients should be referred to a nephrologist at early stages.

Database: EMBASE

11. Solitary functioning kidney in children--a follow-up study.

Author(s): Kolvek, Gabriel; Podracka, Ludmila; Rosenberger, Jaroslav; Stewart, Roy E; van Dijk, Jitse P; Reijneveld, Sijmen A

Source: Kidney & blood pressure research; 2014; vol. 39 (no. 4); p. 272-278

Publication Date: 2014

Publication Type(s): Research Support, Non-u.s. Gov't Journal Article

PubMedID: 25171427

Available at Kidney & blood pressure research - from ProQuest (Hospital Premium Collection) - NHS Version

Abstract:BACKGROUND/AIMSThis study aims to assess the cumulative incidence of elevated albuminuria, hypertension and decreased estimated glomerular filtration rate (eGFR) to identify possible renal injury in children with SFK.METHODSForty-two children with SFK (23 boys; 27 congenital) were included in a prospective follow-up study. Blood pressure, albuminuria and eGFR were assessed repeatedly and the cumulative incidence rate of various forms of renal injury, overall and by type of etiology, were evaluated. Finally, renal injury-free survival was analyzed.RESULTSMean follow-up was until age 11.3 years (SD 6.3 years). During follow-up, 16 (38.1%) patients met the criteria for renal injury, defined as hypertension (10; 23.8%), severely increased albuminuria (3; 7.1%) and a significantly impaired eGFR (<60 ml/min/1.73 m2) (5; 11.9%) and/or use of antihypertensive or antiproteinuric medication (11; 26.2%). Children with CAKUT in SFK had a significantly higher incidence of renal injury. The median time to develop renal injury was 12.8 years.CONCLUSIONA substantial proportion of children with SFK develop renal injury during childhood, especially those with CAKUT in the SFK. Therefore, close follow-up of albuminuria, blood pressure and eGFR are warranted to identify chronic kidney disease in its early stages.

Database: Medline

12. Risk of acute kidney injury in single kidney patients after cardiac surgery

Author(s): Reviriego Agudo L.; Ly Liu D.; Candela Toha A.; Gajate Martin L.; Elias E.; Parise D.

Source: European Journal of Anaesthesiology; Jun 2014; vol. 31 ; p. 199

Publication Date: Jun 2014

Publication Type(s): Conference Abstract

Abstract: Background and Goal of Study: Acute kidney injury (AKI) is common after cardiac surgery (CS). Single kidney (SK) patients develop compensatory hyperfiltration, and their renal functional reserve (RFR) is lost or attenuated. This fact may put them at risk of AKI after insults like CS. The aim of this study was to determine if SK patients are at increased risk of AKI during the first week after CS. Material and methods: By searching records in our prospectively collected Cardiac Anesthesia database (3783 mayor CS between 2002-2012), we identified 43 SK patients operated of mayor CS with cardiopulmonary bypass (CPB). Three patients were discarded due to lack of data. We tried to match each SK patient with one or more non SK cases for variables related to baseline renal function and known risk factors for AKI. Diagnosis of AKI was made with RIFLE and AKIN criteria. Odds ratio (OR) for AKI in SK patients was calculated with an ordered logistic regression model in which cases were clustered with their matched pairs. A p value < 0,05 was considered significant. Results and discussion: 35 patients with SK were matched with 170 non SK cases for baseline creatinine, weight, age and CPB time. Each SK patient was matched with 1 to 5 non SK cases. Groups were well balanced for other AKI risk factors like lef t ventricle ejection fraction, diabetes mellitus, ischemia time or complex surgery. Female gender was mismatched between groups (54,3% in SK vs 31,8% in non SK; p=0,011). In the SK group 8 (22,8%), and 24 (68,6%) patients developed AKI by RIFLE and AKIN criteria respectively. No statistical significant differences were found with the non SK group (18,8% for RIFLE and 54,7% for AKIN, p=0,58 and p=0,08 respectively). OR (95% confidence interval) for AKI development of any category in the SK group were 1,04 (0,9-1,02) for RIFLE definition and 1,14 for AKIN criteria (0,96-1,36). Conclusion: Despite hyperfiltration, SK patients were not at increased risk of developing AKI during the first week after CS in our sample. The limited number of cases precludes further statements. The results of this study warrant an assessment of the effect of reduced RFR in the setting of CS.

Database: EMBASE

13. Clinical implications of the solitary functioning kidney.

Author(s): Westland, Rik; Schreuder, Michiel F; van Goudoever, Johannes B; Sanna-Cherchi, Simone; van Wijk, Joanna A E

Source: Clinical journal of the American Society of Nephrology : CJASN; May 2014; vol. 9 (no. 5); p. 978-986

Publication Date: May 2014

Publication Type(s): Research Support, Non-u.s. Gov't Journal Article Review

PubMedID: 24370773

Available at Clinical journal of the American Society of Nephrology : CJASN - from Europe PubMed Central - Open Access

Abstract: Congenital anomalies of the kidney and urinary tract are the major cause of ESRD in childhood. Children with a solitary functioning kidney form an important subgroup of congenital anomalies of the kidney and urinary tract patients, and a significant fraction of these children is at risk for progression to CKD. However, challenges remain in distinguishing patients with a high risk for disease progression from those patients without a high risk of disease progression. Although it is hypothesized that glomerular hyperfiltration in the lowered number of nephrons underlies the

impaired renal prognosis in the solitary functioning kidney, the high proportion of ipsilateral congenital anomalies of the kidney and urinary tract in these patients may further influence clinical outcome. Pathogenic genetic and environmental factors in renal development have increasingly been identified and may play a crucial role in establishing a correct diagnosis and prognosis for these patients. With fetal ultrasound now enabling prenatal identification of individuals with a solitary functioning kidney, an early evaluation of risk factors for renal injury would allow for differentiation between patients with and without an increased risk for CKD. This review describes the underlying causes and consequences of the solitary functioning kidney from childhood together with its clinical implications. Finally, guidelines for follow-up of solitary functioning kidney patients are recommended.

Database: Medline

14. Is microalbuminuria a risk factor for hypertension in children with solitary kidney?

Author(s): Shirzai, Ayoub; Yildiz, Nurdan; Biyikli, Nese; Ustunsoy, Seyfettin; Benzer, Meryem; Alpay, Harika

Source: Pediatric nephrology (Berlin, Germany); Feb 2014; vol. 29 (no. 2); p. 283-288

Publication Date: Feb 2014

Publication Type(s): Journal Article

PubMedID: 24217782

Available at Pediatric nephrology (Berlin, Germany) - from SpringerLink

Available at Pediatric nephrology (Berlin, Germany) - from ProQuest (Hospital Premium Collection) - NHS Version

Abstract:BACKGROUNDThe correlations between ambulatory blood pressure measurements (ABPM) and serum cystatin C (Cys C), serum creatinine (Cr), microalbumin (MA), and β2-microglobulin (β2-MG) levels in 24 h (24-h) urine were analyzed in children with solitary kidney (SK) and compared to healthy children.METHODSFifty children with normal functioning SK and 25 controls were studied. The ABPM, serum Cys C, serum Cr, MA, and β2-MG levels in 24-h urine were measured in all children. Clinical symptoms and signs, laboratory results, urinary ultrasonography, voiding cystourethrography, and Dimercaptosuccinic acid (DMSA) scintigraphy results were recorded in the SK group. Four patients with Wilms' tumor and two with renal scarring were excluded from the study.RESULTSThe mean ages of the SK group and controls were 9.6 ± 3.6 and 9.3 ± 3.3 years, respectively. The serum Cys C and Cr levels, 24-h urinary β2-MG and MA levels were similar in both groups ($p > 0.05$). However, 24-h urinary MA excretion was higher in patients living with SK more than 5 years ($p = 0.01$). Standard deviation scores of ABPM parameters showed no significant correlation with serum Cr, serum Cys C, MA, and β2-MG in 24-h urine of both groups.CONCLUSIONSChildren with SK have increased 24-h urinary MA excretion in the long term, and need prolonged follow-up to detect early deterioration of renal function and to prevent end-organ damage later in life.

Database: Medline

15. Renal outcome of children with unilateral renal agenesis.

Author(s): Doğan, Çağla Serpil; Torun Bayram, Meral

Source: The Turkish journal of pediatrics; 2013; vol. 55 (no. 6); p. 612-615

Publication Date: 2013

Publication Type(s): Journal Article

PubMedID: 24577979

Available at The Turkish journal of pediatrics - from ProQuest (Hospital Premium Collection) - NHS Version

Abstract: The aim of this study was to evaluate associated urological anomalies and renal outcome in children with unilateral renal agenesis (URA). Medical records of 51 cases of URA followed at Şanlıurfa Children 's Hospital between January 2009 and December 2012 were reviewed retrospectively. In all patients, diagnosis was made by abdominal ultrasound (US) and confirmed by a radionuclide scan. The children were between 3 months and 17 years of age (median age: 5 years). There were 31 males (60.8%) and 20 females (39.2%). In 33 patients (67.3%), the left kidney was absent. Urological anomalies were found in 12/51 patients (23.5%), including ureterovesical junction obstruction in 4 (7.8%), bladder dysfunction in 2 (3.9%), and vesicoureteral reflux (VUR), ureteropelvic junction obstruction, ureterovesical and ureteropelvic junction obstruction, duplicated collecting system plus grade IV VUR, ectopic kidney plus grade V VUR, and ectopic kidney in 1 patient (2%) each. Chronic renal insufficiency (CRI) developed in 5/51 patients (9.8%) (stage III in 3 patients and stage IV in 2), 4 of whom had additional urological anomaly; in the remaining 1 patient, a 17-year-old female, imaging studies were normal except for a small and hyperechogenic solitary kidney determined on US. A total of 3 patients (5.8%) developed hypertension, and all except one had an associated urological anomaly. Proteinuria was seen in 2 patients (3.8%) with stage IV CRI, one of whom was also hypertensive. In conclusion, urological anomalies usually accompany URA and should be followed closely to decrease the risk of renal failure.

Database: Medline

16. Etiology & Prognostic factors of children with acute kidney injury: Single centre PICU exper ience

Author(s): Basu B.

Source: Critical Care Medicine; Dec 2013; vol. 41 (no. 12)

Publication Date: Dec 2013

Publication Type(s): Conference Abstract

Available at Critical Care Medicine - from Ovid (LWW Total Access Collection 2015 - Q1 with Neurology)

Abstract: Introduction: Acute kidney injury (AKI) is a catastrophic, life-threatening event in critically ill children. Despite significant developments in the management of AKI, the overall mortality rate of patients with AKI has not improved dramatically. Although a great deal of work has been published on AKI, relatively few studies have considered the etiologies & prognoses of pediatric AKI. Methods: To define the etiology & factors of prognostic importance for critically ill children (>1 month) with AKI, 350 children have been studied over two years period, admitted to the pediatric intensive care unit (PICU) of a tertiary care Govt. hospital in Kolkata, India. Modified Pediatric- RIFLE (pRIFLE) criteria was used to classify AKI. Only those children, who are in 'Risk'or 'Injury' or 'Failure' category were included in the study; and the children of last two categories of pRIFLE were excluded. Results: AKI patients represent 23.7% of all PICU admissions during the entire study period. The common medical conditions were acute glomerulonephritis (19%), acute tubular necrosis (18%), drug

poisoning & envenomation (12%), septicaemia (11%), post cardiac surgery (6%), vasculitis (6%), malignancy (5%), trauma (4%), haemolytic uremic syndrome (3%), hepatorenal (2%) and others (14%). Among all, 24 (6.8%) children died, all of whom developed multiple organ failure. Stepwise multiple regression analysis revealed the major independent risk factors, significantly related to mortality were need for mechanical ventilation [RR 15.21, 95% CI 7.48-71.72], arterial hypotension [RR 13.54, 95% CI 2.57-64.21], need for renal replacement therapy for more than seven days [RR 11.43, 95% CI 1.21-73.67] and association with MOF [RR 27.21, 95% CI 5.18-84.52]. Mortality among children of the 'Injury' category and 'Failure' category at baseline, were 2.7 times and 6.3 times higher respectively than the 'Risk' category. Conclusions: The data reported here on AKI in children of eastern India are similar with developed countries and likely to be reflective of changing patterns being seen in other developing countries also benefitting from improvements in the socioeconomic status of their citizens and being able to offer improved critical care services to ill children.

Database: EMBASE

17. Unilateral renal agenesis: a systematic review on associated anomalies and renal injury.

Author(s): Westland, Rik; Schreuder, Michiel F; Ket, Johannes C F; van Wijk, Joanna A E

Source: Nephrology, dialysis, transplantation : official publication of the European Dialysis and Transplant Association - European Renal Association; Jul 2013; vol. 28 (no. 7); p. 1844-1855

Publication Date: Jul 2013

Publication Type(s): Research Support, Non-u.s. Gov't Journal Article Review

PubMedID: 23449343

Available at Nephrology, dialysis, transplantation : official publication of the European Dialysis and Transplant Association - European Renal Association - from Oxford Journals - Medicine

Abstract:BACKGROUNDUnilateral renal agenesis (URA) is associated with other congenital anomalies of the kidney and urinary tract (CAKUT) and extra-renal anomalies. However, the reported prevalences of these anomalies are highly variable. We estimated the prevalence of associated CAKUT and extra-renal anomalies in patients with URA. Furthermore, we determined the prevalence of renal injury in URA patients.METHODSWe conducted a systematic review of English and non-English articles using PubMed and Embase.com. Included studies reported at least one of the following items: incidence of URA, gender, side of URA, prenatal diagnosis, performance of micturating cystourethrogram, associated CAKUT, urinary tract infection or extra-renal anomalies. Studies that described a mean/median glomerular filtration rate (GFR) and proportions of patients with hypertension, micro-albuminuria or a decreased GFR were also included.RESULTSAnalyses were based on 43 included studies (total number of patients: 2684, 63% male). The general incidence of URA was 1 in ~2000. Associated CAKUT were identified in 32% of patients, of which vesicoureteral reflux was most frequently identified (24% of patients). Extra-renal anomalies were found in 31% of patients. Hypertension could be identified in 16% of patients, whereas 21% of patients had micro-albuminuria. Ten per cent of patients had a GFR<60 mL/min/1.73 m2;.CONCLUSIONSThese aggregate results provide insight in the prevalence of associated anomalies and renal injury in patients with URA. Our systematic review implicates that URA is not a harmless malformation by definition. Therefore, we emphasize the need for clinical follow-up in URA patients starting at birth.

Database: Medline

18. Extrarenal complication and long-term renal outcome of the patients with congenital solitary kidney

Author(s): Okamoto S.; Sakama T.; Niimura F.; Nakamura S.

Source: Nephrology Dialysis Transplantation; May 2013; vol. 28

Publication Date: May 2013

Publication Type(s): Conference Abstract

Available at Nephrology Dialysis Transplantation - from Oxford Journals - Medicine

Abstract: Introduction and Aims: Patients with acquired solitary kidney due to nephrectomy are known to have satisfactory renal prognosis. However, according to some recent reports, renal outcome of the patients with congenital solitary kidney is not so good as has been previously recognized. So, we retrospectively reviewed the renal outcome and extrarenal complications in the patients with congenital solitary kidney. Methods: A total of ten patients comprised of 7 females and 3 males, who were diagnosed to have congenital solitary kidney in infancy, were reviewed. Median age at diagnosis is 0.06 year. Renal function at the latest follow-up and the extrarenal complication were reviewed. Median age at the latest follow-up is 5.07 years. Results: Solitary kidney was diagnosed by prenatal ultrasound in 4 cases, and by routine check-up ultrasound for infants in 4 cases. In one case, solitary kidney was found in the process of workup for hematuria. In the remaining one case, it was found during the investigation of VATER association. Three cases of syndromic solitary kidney include 22q.11.3 deletion syndrome, VATER association, and Herlyn-Welner-Wunderlich syndrome. In 7 cases, estimated GFR (eGFR) at the latest observation (median age, 11.5 years) was obtained. In two cases, eGFR was lower than 90 ml/min/1.73m2. In 6 cases, cystatin C was analyzed after the age of 3 years, and exceeded the cut-off level of 0.95 ng/ml in 2 cases. In all the 7 female cases, ultrasound study was conducted to evaluate the internal genital organs. Abnormal findings were recognized in 5 patients, including 2 cases of bicornuate uterus, 1 case of subseptate uterus, 1 case of vaginal hypoplasia, and 1 case of cystic dilatation of vagina. In the case of 22q.11.3 deletion syndrome, the chromosomal abnormality was confirmed at the age of 9 years when hypocalcemia due to pseudohypoparathyroidism developed during the long-term follow-up for the solitary kidney since her infancy. Conclusions: The background of congenital solitary kidney seems to be diverse. Long-term follow-up of the patients with congenital solitary kidney for renal function and electrolyte abnormality is warranted. Especially in the female patients, investigation of internal genital organs is of special importance.

Database: EMBASE

19. Risk factors for renal injury in children with a solitary functioning kidney.

Author(s): Westland, Rik; Kurvers, Roel A J; van Wijk, Joanna A E; Schreuder, Michiel F

Source: Pediatrics; Feb 2013; vol. 131 (no. 2); p. e478

Publication Date: Feb 2013

Publication Type(s): Research Support, Non-u.s. Gov't Journal Article

PubMedID: 23319536

Available at Pediatrics - from HighWire - Free Full Text

Available at Pediatrics - from Free Medical Journals . com

Abstract:OBJECTIVEThe hyperfiltration hypothesis implies that children with a solitary functioning kidney are at risk to develop hypertension, proteinuria, and chronic kidney disease. We sought to determine the presenting age of renal injury and identify risk factors for children with a solitary functioning kidney.METHODSWe evaluated 407 patients for signs of renal injury, defined as hypertension, proteinuria, an impaired glomerular filtration rate, and/or the use of renoprotective medication. Patients were subdivided on the basis of type of solitary functioning kidney and the presence of ipsilateral congenital anomalies of the kidney and urinary tract (CAKUT). The development of renal injury was analyzed with Kaplan-Meier analysis. Risk factors were identified by using logistic regression models.RESULTSRenal injury was found in 37% of all children. Development of renal injury increased by presence of ipsilateral CAKUT (odds ratio [OR] 1.66; P = .04) and age (OR 1.09; P < .001). Renal length was inversely associated with the risk to develop renal injury (OR 0.91; P = .04). In all patients, the median time to renal injury was 14.8 years (95% confidence interval 13.7-16.0 years). This was significantly shortened for patients with ipsilateral CAKUT (12.8 years, 95% confidence interval 10.6-15.1 years).CONCLUSIONSOur study determines independent risk factors for renal injury in children with a solitary functioning kidney. Because many children develop renal injury, we emphasize the need for clinical follow-up in these patients starting at birth.

Database: Medline

20. Renal function and solitary kidney disease: Wilms tumour survivors versus patients with unilateral renal agenesis.

Author(s): Stefanowicz, Joanna; Owczuk, Radosław; Kałużyńska, Bogna; Aleksandrowicz, Ewa; Owczarzak, Anna; Adamkiewicz-Drożyńska, Elżbieta; Balcerska, Anna

Source: Kidney & blood pressure research; 2012; vol. 35 (no. 3); p. 174-181

Publication Date: 2012

Publication Type(s): Comparative Study Journal Article

PubMedID: 22116374

Available at Kidney & blood pressure research - from ProQuest (Hospital Premium Collection) - NHS Version

Abstract:AIMSTo test the hypothesis that Wilms tumour survivors (WTs) experience increased disturbance in renal function, even after prompt treatment, compared to patients with unilateral renal agenesis (URA).METHODSTo assess the renal function of 30 WTs and 17 individuals with URA, the estimated glomerular filtration rate (eGFR) was calculated using the Schwartz and Filler formulas as well as the new Schwartz equation for chronic kidney disease. To measure kidney damage, serum levels and urine excretion of β(2)-microglobulin (B2M), cystatin C (Cys C), neutrophil gelatinase-associated lipocalin (NGAL) were tested, N-acetyl-β-glucosaminidase (NAG), and albumin urine excretion and urine sediment were examined. Blood pressure was measured.RESULTSNo differences were found between the groups in terms of eGFR, serum Cys C, B2M and NGAL concentrations. The urine excretion of Cys C, NGAL and NAG was similar in both groups. URA patients had higher B2M

excretion than WTs. Arterial hypertension was present in 7/30 (23%) WTs and 1/17 (6%) patients with URA.CONCLUSIONSWTs have similar eGFR to individuals with URA and are more likely to have arterial hypertension. The patients with URA have signs of tubular damage. This study demonstrates the need for nephrological monitoring of individuals with a single kidney.

Database: Medline

21. Validation of some pathophysiological mechanisms of the CKD progression theory and outcome prediction in IgA nephropathy.

Author(s): Bazzi, Claudio; Rizza, Virginia; Casellato, Daniela; Stivali, Gilda; Rachele, Gregorio; Napodano, Pietro; Olivieri, Giulia; Gallieni, Maurizio; D'Amico, Giuseppe

Source: Journal of nephrology; 2012; vol. 25 (no. 5); p. 810-818

Publication Date: 2012

Publication Type(s): Journal Article Validation Studies

PubMedID: 22252844

Abstract:BACKGROUNDThe "remnant kidney" chronic kidney disease (CKD) progression theory based on hemodynamic, proteinuric and inflammatory mechanisms consequent to nephron loss has not been confirmed in a human disease. The aim of this study was to evaluate whether some of these mechanisms are present in IgA nephropathy (IgAN) and predict functional outcome.METHODSIn 132 IgAN patients (68 untreated, 64 angiotensin-converting enzyme inhibitor [ACEi]-treated) fractional excretion of IgG (FEIgG) and α1-microglobulin, proteinuria/day and β-NAG excretion were divided by percentage of nonglobally sclerotic glomeruli ("surviving glomeruli" [SG]) to assess the effective glomerular loss and tubular load of proteins in surviving nephrons. Proteinuric markers were compared between 4 SG groups: group 1: ≤50%; group 2: >50% and <80%; group 3: ≥80% and <100%; and group 4: 100%. The outcome prediction (estimated glomerular filtration rate [eGFR] improvement and stability, progression) was assessed comparing low- and high-risk groups for each marker.RESULTSProteinuric markers showed increasing values in parallel with reduction of percentages of SG ($p<0.0001$). FEIgG/SG, 40-fold higher in patients with SG ≤50% vs. SG=100% (0.00040 ± 0.00039 vs. 0.00001 ± 0.00002, $p<0.0001$), was the most powerful outcome predictor: in ACEi-untreated patients, FEIgG/SG less or greater than 0.00010 predicted eGFR improvement and stability (88% vs. 12%, $p<0.0001$) and end-stage renal disease (ESRD) + eGFR reduction ≥50% (2% vs. 87.5%, $p<0.0001$); ACEi treatment reduced ESRD+eGFR reduction ≥50%: 36% vs. 87.5% ($p=0.002$). In patients with FEIgG/SG <0.00010 the eGFR increase is significantly higher in ACEi-treated for ≥70 months versus ACEi-untreated with follow up ≥70 months ($+35\% \pm 23\%$ vs. $+13\% \pm 8\%$, $p=0.004$).CONCLUSIONSIn IgAN, progressive nephron loss is associated with an increase of proteinuric markers of glomerular and tubular damage. FEIgG/SG is the best outcome predictor. These data represent the first validation in a human disease of some pathophysiological mechanisms of CKD progression theory.

Database: Medline

22. Born with a single kidney versus nephrectomy: Similar end point, different mechanism of injury

Author(s): Wang X.; Johnson A.; Lee J.; Garrett M.R.; Solberg-Woods L.

Source: Hypertension; Sep 2012; vol. 60 (no. 3)

Publication Date: Sep 2012

Publication Type(s): Conference Abstract

Abstract:A relatively common abnormality of the urogenital tract in humans is the development of only a single kidney (1:500 to 1:1000). Clinical studies suggest that patients born with a single kidney can develop proteinuria, hypertension, and even renal failure later in life. In contrast, studies in children who undergo nephrectomy or adults who serve as kidney donors appear to exhibit little difference in renal function compared to two-kidney subjects. Invasive techniques such as nephrectomy or renal ablation have been used to generate animal models to recapitulate this human congenital disorder. The progression of injury in these models is attributed to hyperfiltration which refers to changes in hemodynamics that cause glomerular damage leading to hypertension. Recently, our lab developed a new genetic animal model [heterogeneous stock derived model of unilateral renal agenesis, (HSRA)] that develops with a single kidney in 50-75% of offspring. The model is characterized by reduced nephron number, kidney hypertrophy, and renal injury that leads to a decline in renal function. Time course evaluation of blood pressure, renal hemodynamics, and renal injury was performed in 4 groups; (1) HSRA-S (1-kidney), (2) HSRA-C (2-kidney littermates), (3) HSRA-UNX3 (uninephrectomy-week 3) and (4) HSRA-UNX8 (uninephrectomy-week 8). Nephrectomized animals demonstrated hyperfiltration, whereas single kidney animals (HSRA-S) did not. This suggests a different pathophysiological mechanism of injury between congenital and nephrectomized rats. At later time points, proteinuria for HSRA-UNX3 (82+/-22.9 mg/24h) and HSRA-UNX8 (46+/-18.1) were significantly higher than HSRA-C (11+/-6.4), while HSRA-S (109+/-15.7) demonstrated the highest proteinuria. GFR was lowest in HSRA-S (656+/-123.9 ul/min/gKW), followed by HSRA-UNX3 (1151+/-112.4), HSRA-UNX8 (1309+/-98.3) and HSRA-C (1544+/-111.7). Microarray studies have identified several developmental genes (Hox5b, Smoc2 and c-Kit) that may be linked to reduced nephron number and other structural changes that could predispose the HSRA-S to kidney injury later in life. These results demonstrate that rats born with a single kidney are more prone to renal injury than nephrectomized rats and the mechanism is likely different.

Database: EMBASE

23. Renal survival in children with a solitary functioning kidney-the kimono-study

Author(s): Rik W.; Van Wijk J.A.E.; Kurvers R.A.J.; Schreuder M.F.

Source: Pediatric Nephrology; Sep 2012; vol. 27 (no. 9); p. 1646-1647

Publication Date: Sep 2012

Publication Type(s): Conference Abstract

Available at Pediatric Nephrology - from SpringerLink

Available at Pediatric Nephrology - from ProQuest (Hospital Premium Collection) - NHS Version

Abstract: Introduction: Background. The hyperfiltration hypothesis implicates that children with a solitary functioning kidney (SFK) are at risk to develop hypertension, (micro)albuminuria and, eventually, chronic kidney disease. THE KIMONO-STUDY (=KIdney of MONOfunctional Origin) aims to determine the presenting age of renal injury in children with an SFK. Material and methods: 407 patients were evaluated on symptoms of renal injury during follow-up. We defined renal injury as hypertension and/or (micro)albuminuria and/or an impaired glomerular filtration rate and/or the use of renoprotective medication. Patients were subdivided in congenital or acquired SFK groups to study the differences between SFK-types. Ipsilateral renal anomalies (CAKUT) were noted as a discriminative risk factor for renal damage. Renal survival was analyzed using Kaplan-Meier-analysis. Results: Renal injury was found in 37 % of all children, with a higher incidence in acquired SFK patients (P=0.002). The risk of renal injury increased by age (odds ratio [OR] 1.07; P<0.001) and by the presence of CAKUT (OR 1.91; P<0.01). Children in the highest quartile of renal length were less likely to develop renal injury (OR 0.90; P<0.05). Survival analyses showed an overall median survival time of 14.8 (95 % confidence interval 13.7 - 16.0) years. Renal survival was independent from SFK-type but deteriorated when ipsilateral CAKUT was present. Conclusions: THE KIMONO-STUDY demonstrates that a large proportion of children with an SFK develop symptoms of renal injury over childhood. This shows the applicability of the hyperfiltration hypothesis in humans and emphasizes the need for clinical follow-up in all children with an SFK starting at birth.

Database: EMBASE

24. Is solitary kidney a condition at risk for hypertension? A follow up study in a pediatric population

Author(s): Vercelloni P.G.; Marra G.; Mastrangelo A.; Groppali E.; Felice Civitillo C.; Edefonti A.

Source: Pediatric Nephrology; Sep 2011; vol. 26 (no. 9); p. 1727

Publication Date: Sep 2011

Publication Type(s): Conference Abstract

Available at Pediatric Nephrology - from SpringerLink

Available at Pediatric Nephrology - from ProQuest (Hospital Premium Collection) - NHS Version

Abstract: Objectives: Clinical study of the assessment of hypertension in a population of children with congenital solitary kidney (SK) followed prospectively for 20 years. Methods: Patients were selected from a wider population of children with congenital uropathies, such as vescico-ureteral reflux and obstruction of the ureteropelvic junction, according to the following criteria: normal renal morphology with US and renal scan, GFR >90 ml/min/ 1.73 mq and follow up longer than ten years. A total of 88 patients was divided in two groups, one with SK (42) and the other (46) with patients with both kidneys (BK). Blood pressure was sistematically measured at every visit and ABPM was performed every 4 years or before in case of diagnosis of hypertension. Results: The rate of hypertension was 16,7% in the SK group and 6,5% in the BK group (p-value 0,034).There was a statistically significant difference in almost all the ABPM indices between the two groups SK(mean +/- SD) BK(mean SD) p-value 24 h DBP 0.16 0.87 -0.24 0.70 0.0178 24 h SBP 0.56 1.19 -0.58 0.76

0.0040 day DBP -0.27 0.79 -0.57 0.72 0.0687 (NS) day SDP 0.17 1.03 -0.26 0.86 0.0355 night DBP 0.58 0.82 0.13 0.77 0.0096 night SBP 1.03 1.24 0.44 0.84 0.0105 Conclusions: Solitary kidney represents a condition at risk for developing hypertension since childhood, therefore blood pressure monitoring is mandatory in this population.

Database: EMBASE

25. Renal damage in congenital single kidney

Author(s): Lega M.V.; La Scola C.; De Mutiis C.; Pugliese F.; Castiglioni L.; Mencarelli F.; Pasini A.; Marsciani M.; Montini G.; Tani G.

Source: Pediatric Nephrology; Sep 2011; vol. 26 (no. 9); p. 1715

Publication Date: Sep 2011

Publication Type(s): Conference Abstract

Available at Pediatric Nephrology - from SpringerLink

Available at Pediatric Nephrology - from ProQuest (Hospital Premium Collection) - NHS Version

Abstract: Introduction: Congenital single kidney is defined as structural or functional absence of a kidney from birth. Recently, some studies have highlighted a significant risk for these patients to develop proteinuria, hypertension and chronic renal damage, despite a long-established good prognosis. Aim of our study: To assess the occurrence of proteinuria (Pr-U/Cr-U> 0,5 0,2 for elders), hypertension (>95degree percentile for age, sex and height centile) and chronic kidney damage (eGFR <90 mL/min/ 1.73 m2) and their risk factors in patients with congenital single kidney. Methods and materials: Patients, aged between 0 and 18 years, with a diagnosis of unilateral renal agenesis, multicystic kidney or unilateral renal hypodysplasia confirmed by Tc-99m DMSA or Tc-99m MAG3 scintigraphy. Results: The cohort comprised 64 children with congenital single kidney (43 boys, median age: 2 years, range: 0-14 years). The median follow-up period was 1 years (range: 0.5-18 years) and the mean exposure time to single kidney was 6 years (+/-4.8). Proteinuria was present in 16% of patients; febrile urinary tract infections (p .04, OR 5.25 IC 0.93-29.44) and congenital anomalies of the remnant kidney and urinary tract (p .03, OR 4.4 IC 0.83-23.7) were significant risk factors. 9% of our cohort was hypertensive, and those with genetic syndromes (p .01, OR 12.6 IC 1.28- 124.51) or low birth weight (p .00, OR 38, IC 2.33-618.66) showed a higher risk. Chronic kidney failure was present in 9% of the patients, in association with posterior urethral valves (p .00, OR 14, IC 1.54-127.22) and congenital anomalies of the remnant kidney (p .02 OR 5.18, IC 0.76-35.02). Conclusions: A significant proportion of children with a congenital single kidney develop significant renal damage. This study highlights the importance of a long-term follow up.

Database: EMBASE

26. Congenital versus acquired solitary kidney: is the difference relevant?

Author(s): Abou Jaoudé, Pauline; Dubourg, Laurence; Bacchetta, Justine; Berthiller, Julien; Ranchin, Bruno; Cochat, Pierre

Source: Nephrology, dialysis, transplantation : official publication of the European Dialysis and Transplant Association - European Renal Association; Jul 2011; vol. 26 (no. 7); p. 2188-2194

Publication Date: Jul 2011

Publication Type(s): Comparative Study Journal Article

PubMedID: 21045075

Abstract:BACKGROUNDSerious concerns have risen during the last decades regarding the potential role of solitary kidney (SK) in promoting systemic hypertension, proteinuria and glomerulosclerosis. The aim of the study was to assess mid- and long-term outcome of children with SK, with special highlight on the differential functional outcome of congenital and acquired forms of SK.METHODSNinety-seven patients (43 females) aged from 2.9 to 25 years with radiologically normal SK were divided into two groups depending on whether they had a congenital (CSK, n = 44) or an acquired SK (ASK, n = 53). Mean follow-up time with SK was 8.3 ± 3.2 and 9.1 ± 4.4 years, respectively (P = NS). Blood pressure (BP), glomerular filtration rate (GFR) measured by inulin clearance, and microalbuminuria were assessed in all patients.RESULTSTwo children (2%), one in each group, had systemic hypertension confirmed by 24-h ambulatory BP monitoring, and 17 (17.5%) had a significant microalbuminuria (8 in CSK and 9 in ASK, P = NS). The overall mean GFR was 100.6 ± 15 mL/min/1.73 m(2) and was found to be inversely correlated with age and follow-up time. Seven children had a GFR <80 mL/min/1.73 m(2), all had been nephrectomized in early childhood. Interestingly, GFR was higher in CSK than in ASK group (107.2 vs. 95.2 mL/min/1.73 m(2), P < 0.01) and was negatively related to follow-up time only in the latter but not in the former group.CONCLUSIONSIn the light of these results, it appears that renal function in children with SK is well preserved in short and medium term, but it seems to decline gradually with longer periods of follow-up, particularly in ASK, thus assuming a better functional adaptation in CSK. Both conditions remain yet risky and predispose children to a greater incidence of hypertension and renal impairment in later life. Thereby, careful screening should be proposed throughout childhood to detect early signs of glomerular hyperfiltration and prevent its progression to more serious complications.

Database: Medline

28. Short-term outcome of solitary kidney patients undergoing on-pump cardiac surgery.

Author(s): Al-Sarraf, Nael; Thalib, Lukman; Hughes, Anne; Houlihan, Maighread; Tolan, Michael; Young, Vincent; McGovern, Eillish

Source: European journal of cardio-thoracic surgery : official journal of the European Association for Cardio-thoracic Surgery; May 2011; vol. 39 (no. 5); p. e97

Publication Date: May 2011

Publication Type(s): Journal Article

PubMedID: 21342770

Abstract:OBJECTIVEThe outcome of patients with solitary kidney undergoing on-pump cardiac surgery is unknown. We sought to assess the in-hospital mortality and complications in these patients compared with patients with normal renal function.METHODSThis is a retrospective review of prospectively collected data over an 8-year period of all patients who underwent cardiac surgery. Our cohort consisted of 3363 consecutive patients divided into: solitary kidney (n=31, 0.9%) and normal kidneys (n=3332, 99.1%). Postoperative complications and in-hospital mortality were analysed.RESULTSSolitary kidney patients had higher incidence of renal failure (26% vs 5%, p-value<0.001), higher incidence of gastrointestinal complications (10% vs 1%, p-value 0.009) and higher blood transfusions (74% vs 43%, p-value<0.001) compared with patients with normal kidneys. There was an increased length of both intensive care unit stay (3.8 vs 2.2 days, p-value 0.031) and hospital stay (15.6 vs 8.5 days, p-value 0.026) among patients with solitary kidney compared with normal kidney patients. Multivariate analysis showed that solitary kidney is an independent predictor of postoperative renal failure (odds ratio (OR) 7.1 (95%CI 3.1-16.6)), gastrointestinal complications (OR 8.5 (95%CI 2.5-29.4)) and blood transfusion (OR 3.8 (95%CI 1.6-9.0)) after adjusting for age and gender. In-hospital mortality, however, was similar in both groups.CONCLUSIONAlthough solitary kidney patients have similar short-term mortality as normal kidney patients, the rates of postoperative renal failure, gastrointestinal complications and blood transfusion are significantly higher among solitary kidney patients. Our findings have important clinical implications and prior knowledge of such entity with appropriate risk stratification at admission could help in reducing the risk of these potential complications.

Database: Medline

29. Renal injury in children with a solitary functioning kidney--the KIMONO study.

Author(s): Westland, Rik; Schreuder, Michiel F; Bökenkamp, Arend; Spreeuwenberg, Marieke D; van Wijk, Joanna A E

Source: Nephrology, dialysis, transplantation : official publication of the European Dialysis and Transplant Association - European Renal Association; May 2011; vol. 26 (no. 5); p. 1533-1541

Publication Date: May 2011

Publication Type(s): Journal Article

PubMedID: 21427076

Abstract:BACKGROUNDChildren with a solitary functioning kidney (SFK) have an increased risk of developing hypertension, albuminuria and chronic kidney disease in later life. This renal injury is hypothesized to be caused by glomerular hyperfiltration that follows renal mass reduction in animal studies. Furthermore, children with an SFK show a high incidence of congenital anomalies of the kidney and urinary tract (CAKUT), which could further compromise renal function.METHODSA retrospective study of renal injury markers was performed in 206 children, divided into groups based on the origin of SFK [primary (congenital) SFK (n = 116) and secondary SFK (n = 90)]. Data on ipsilateral CAKUT were stratified separately. For blood pressure, albuminuria and glomerular filtration rate, longitudinal models were additionally developed using generalized estimated equation analysis.RESULTSRenal injury, defined as the presence of hypertension and/or albuminuria and/or the use of renoprotective medication, was present in 32% of all children with an SFK at a mean age of 9.5 (SD 5.6) years. Children with ipsilateral CAKUT had higher proportions of renal injury (48.3 versus 24.6%, $P < 0.05$). Furthermore, longitudinal models showed a decrease in glomerular filtration rate in both groups from the beginning of puberty onwards.CONCLUSIONSThis large cohort study demonstrates that renal injury is present in children with an SFK at a young age, whereas our longitudinal models show an increased risk for chronic kidney disease in adulthood. Renal injury is even more pronounced in the presence of ipsilateral CAKUT. Therefore, we underline that clinical follow-up of all children with an SFK is needed.

Database: Medline

30. The anomalies associated with congenital solitary functioning kidney in children.

Author(s): Akl, Kamal

Source: Saudi journal of kidney diseases and transplantation : an official publication of the Saudi Center for Organ Transplantation, Saudi Arabia; Jan 2011; vol. 22 (no. 1); p. 67-71

Publication Date: Jan 2011

Publication Type(s): Journal Article

PubMedID: 21196615

Available at Saudi journal of kidney diseases and transplantation : an official publication of the Saudi Center for Organ Transplantation, Saudi Arabia - from ProQuest (Hospital Premium Collection) - NHS Version

Abstract: The aim of this study was to determine the incidence of associated urological and non-urological anomalies as well as the renal outcome in patients with a congenital solitary func-tioning kidney (CSFK). A retrospective review of 30 consecutive cases of CSFK seen at the pediatric renal service at the Jordan University Hospital between 2004 and 2008 was performed. There were 20 males and 10 females, whose ages ranged from five days to 14 years. In 20 patients (67%), the left kidney was absent. Associated anomalies were detected in 23 (77%) of the 30 patients; urological anomalies accounted for 47% (14/30) and non-urological anomalies were found in 19/30 (53%) patients. The latter included anomalies of the ear, nose and throat (ENT) in 9/30 (30%), musculoskeletal system (one with hypermobile joints) in 8/30 (27%), gastrointestinal (GI) in 7/30 (23%), cardiovascular (CV) in 4/30 (13%) and dermatological with epidermolysis bullosa, endocrine (euthyroid goiter) and gynecological (cervical cyst) in one patient each (3%). Proteinuria was seen in 6/30 (20%) and hypertension in 2/30 (7%) patients. Chronic renal failure (CRF) was seen in 6/30 (20%) patients, of whom three had end-stage renal failure (ESRF). CRF was seen mainly in patients with more than two associated urological anomalies. Idiopathic hyperuricosuria was found in five of the six tested patients (83%). In our study, the most common associated anomalies with CSFK were urological. The presence of more than two associated urological anomalies increased the risk of CRF.

Database: Medline

31. Analysis of factors associated with renal function in Chinese adults with congenital solitary kidney.

Author(s): Wang, Yingyu; Wang, Zhaohui; Wang, Weiming; Ren, Hong; Zhang, Wen; Chen, Nan

Source: Internal medicine (Tokyo, Japan); 2010; vol. 49 (no. 20); p. 2203-2209

Publication Date: 2010

Publication Type(s): Research Support, Non-u.s. Gov't Journal Article

PubMedID: 20962438

Abstract:BACKGROUNDPatients with congenital solitary kidney have an increased risk of developing hypertension, proteinuria and renal insufficiency. However, the specific factors associated with the progression of renal function in adults with congenital solitary kidney remain still unclear. The purpose of this study was to identify factors that are independently associated with renal function progression in patients with congenital solitary kidney.METHODSSixty-five Chinese adults with congenital solitary kidney (48 patients with unilateral renal agenesis and 17 with severe unilateral renal dysplasia) were recruited into our study retrospectively. Clinical data were analyzed.RESULTSOf sixty-five patients with congenital solitary kidney, the prevalence of hypertension, proteinuria and renal insufficiency was 36.9%, 35.4% and 38.5%, respectively. There was no significant difference in the glomerular filtration rate (GFR) between patients with and without hypertension, whereas GFR in patients with proteinuria was significantly lower than in those without proteinuria ($p<0.05$). While

there was no statistically significant difference in prevalence of hypertension between patients with and without renal insufficiency, the prevalence of proteinuria in patients with renal insufficiency was significantly higher than in those without renal insufficiency ($p<0.05$). Logistic regression analysis revealed that kidney length and proteinuria were independently associated with the progression of renal function (OR=0.20, 95%CI 0.05-0.79, and OR=8.30, 95%CI 2.30-29.96, respectively).CONCLUSIONHypertension, proteinuria or renal insufficiency was present in approximately one-third of adults with congenital solitary kidney. Those with a kidney length of less than 120 mm or proteinuria had a much higher risk of renal insufficiency.

Database: Medline

32. Are children with congenital solitary kidney at risk for lifelong complications? A lack of prediction demands caution.

Author(s): Zaffanello, Marco; Brugnara, Milena; Zuffante, Michele; Franchini, Massimo; Fanos, Vassilios

Source: International urology and nephrology; 2009; vol. 41 (no. 1); p. 127-135

Publication Date: 2009

Publication Type(s): Journal Article Review

PubMedID: 18690548

Available at International urology and nephrology - from SpringerLink

Available at International urology and nephrology - from ProQuest (Hospital Premium Collection) - NHS Version

Abstract: Congenital solitary functioning kidney (CSFK), which develops during embryo or fetal life, means having either one anatomical/functional kidney or two kidneys, one of which does not function. Similar anomalies have been seen in every other organ system and involve a large percentage of newborns. Still, prediction of long-term renal morbidity in congenital functioning solitary kidney is complicated by the great variability of renal and extrarenal phenotypes. Classification of different solitary renal types, whether or not a syndrome, may help to predict the possible evolution of complications; this may be hindered, however, by the gene-environment role during kidney development. Since the risk of renal failure in children with CSFK depends on several variables, it is always advisable to have a precise clinical description at diagnosis. This condition often requires long-term follow-up into adulthood.

Database: Medline

33. Renal outcome in patients with congenital anomalies of the kidney and urinary tract.

Author(s): Sanna-Cherchi, Simone; Ravani, Pietro; Corbani, Valentina; Parodi, Stefano; Haupt, Riccardo; Piaggio, Giorgio; Innocenti, Maria L Degli; Somenzi, Danio; Trivelli, Antonella; Caridi, Gianluca; Izzi, Claudia; Scolari, Francesco; Mattioli, Girolamo; Allegri, Landino; Ghiggeri, Gian Marco

Source: Kidney international; Sep 2009; vol. 76 (no. 5); p. 528-533

Publication Date: Sep 2009

Publication Type(s): Research Support, Non-u.s. Gov't Journal Article

PubMedID: 19536081

Abstract: Congenital Anomalies of the Kidney and Urinary Tract (CAKUT) are a major cause of morbidity in children. We measured the risk of progression to end-stage renal disease in 312 patients with CAKUT preselected for the presence of anomalies in kidney number or size. A model of dialysis-free survival from birth was established as a function of the renal CAKUT categories of solitary kidney; unilateral and bilateral hypodysplasia; renal hypodysplasia associated with posterior urethral valves; and multicystic and horseshoe kidney. Cox regression analysis took into account the concomitant presence of vesicoureteral reflux, year of diagnosis, and time-varying values of serum creatinine, proteinuria, and hypertension. By 30 years of age, 58 patients had started dialysis, giving a yearly incidence of 0.023 over a combined 2474 patient risk years. The risk for dialysis was significantly higher for patients with a solitary kidney or with renal hypodysplasia associated with posterior urethral valves (hazard ratios of 2.43 and 5.1, respectively) compared to patients with unilateral or bilateral renal hypodysplasia, or multicystic or horseshoe kidney, and was independent of other prognostic factors. Our study shows that sub-clinical defects of the solitary kidney may be responsible for a poorer prognosis compared to more benign forms of CAKUT. Prospective studies are needed to validate these results.

Database: Medline

34. Kidney function and volume progression in unilateral autosomal dominant polycystic kidney disease with contralateral renal agenesis or hypoplasia: a case series.

Author(s): Poster, Diane; Kistler, Andreas D; Krauer, Fabienne; Blumenfeld, Jon D; Rennert, Hanna; Weishaupt, Dominik; Wüthrich, Rudolf P; Serra, Andreas L

Source: American journal of kidney diseases : the official journal of the National Kidney Foundation; Sep 2009; vol. 54 (no. 3); p. 450-458

Publication Date: Sep 2009

Publication Type(s): Research Support, Non-u.s. Gov't Research Support, N.i.h., Extramural Comparative Study Case Reports Journal Article

PubMedID: 19515475

Abstract:BACKGROUNDThe occurrence of unilateral autosomal dominant polycystic kidney disease (ADPKD) with absence of the contralateral kidney has been described only rarely in the literature. Whether unilateral ADPKD is associated with faster disease progression is not known.STUDY DESIGNCase series.SETTING & PARTICIPANTSIn a prospective cohort of 182 patients with ADPKD, we identified 3 patients with ADPKD and unilateral renal agenesis (2 patients) or severe hypoplasia (1 patient).MEASUREMENTS & OUTCOMESGenetic analysis of the PKD1 and PKD2 genes was performed for all 3 patients. Serum creatinine levels and kidney volumes based on magnetic resonance imaging were determined twice, with a 6-month interval between measurements. Characteristics of the 3 patients were compared with age- and sex-matched controls from the full cohort.RESULTSGenotyping of the 3 patients indicated that each had a different [corrected]

mutation in the PKD1 gene that is predicted to cause frameshift and/or truncation of the protein product. [corrected] All 3 patients with unilateral ADPKD had renal volumes and progression rates greater than the mean values of their matched control groups. However, their glomerular filtration rates were well preserved, with estimated single-kidney creatinine clearances much greater than their controls.LIMITATIONSThe number of cases in this study is small and time of follow-up was limited.CONCLUSIONSUnilateral renal agenesis or hypoplasia in patients with ADPKD might not be as rare as previously thought. Glomerular filtration rate was preserved despite unilateral renal absence, suggesting that renal compensatory mechanisms are well conserved in patients with ADPKD.

Database: Medline

35. When is one kidney not enough?

Author(s): Chevalier R.L.

Source: Kidney International; Sep 2009; vol. 76 (no. 5); p. 475-477

Publication Date: Sep 2009

Publication Type(s): Note

PubMedID: 19680254

Available at Kidney International - from ProQuest (Hospital Premium Collection) - NHS Version

Abstract: Most renal failure in children results from congenital anomalies of the kidney and urinary tract (CAKUTs). Sanna-Cherchi et al. predict that by 30 years of age, nearly 50% of patients with a solitary kidney would be receiving dialysis. This outcome differs markedly from that of renal-transplant donors, who have no increased risk for renal failure. Because morbidity from CAKUTs may not develop until adulthood, these patients should be closely followed throughout life. © 2009 International Society of Nephrology.

Database: EMBASE

36. Renal agenesis and unilateral nephrectomy: what are the risks of living with a single kidney?

Author(s): Hegde, Shivaram; Coulthard, Malcolm G

Source: Pediatric nephrology (Berlin, Germany); Mar 2009; vol. 24 (no. 3); p. 439-446

Publication Date: Mar 2009

Publication Type(s): Journal Article Review

PubMedID: 18612657

Available at Pediatric nephrology (Berlin, Germany) - from SpringerLink

Available at Pediatric nephrology (Berlin, Germany) - from ProQuest (Hospital Premium Collection) - NHS Version

Abstract: The long-term outlook for patients with unilateral renal agenesis or following unilateral nephrectomy in childhood is controversial. Animal studies suggest that the resultant compensatory increase in glomerular filtration might lead to progressive damage to the remaining renal tissue and may generate hypertension. Human studies addressing these concerns are limited in number and are difficult to interpret because they are small, retrospective, or cross sectional with significant variations in duration and completeness of follow-up. The published studies suggest that renal function remains stable for several decades in the majority of subjects. The clinical significance of mild-grade proteinuria and hypertension seen in some patients is unknown. Longitudinal studies are needed to understand the long-term effect and significance of the several pathophysiological changes observed in the solitary kidney.

Database: Medline

37. Renal outcome of children with one functioning kidney from birth. A study of 99 patients and a review of the literature.

Author(s): Vu, Kieu-Hanh; Van Dyck, Maria; Daniels, Hans; Proesmans, Willem

Source: European journal of pediatrics; Aug 2008; vol. 167 (no. 8); p. 885-890

Publication Date: Aug 2008

Publication Type(s): Journal Article Review

PubMedID: 17940797

Available at European journal of pediatrics - from SpringerLink

Available at European journal of pediatrics - from ProQuest (Hospital Premium Collection) - NHS Version

Abstract: In patients with a single functioning kidney, renal function was assessed at regular intervals over a period of 10 years. Serum creatinine, glomerular filtration rate (GFR), blood pressure, and urinary protein-creatinine ratio were assessed at the age of 2, 5 and 10 years. Between January 1980 and December 2005, 99 such patients were diagnosed in the first year of life. They were divided into three groups: A, patients with multicystic kidney disease and a normal contralateral kidney (n = 36); B, patients with a normal solitary kidney without uropathy (n = 20); and C, patients with obstructive uropathy and one nonfunctioning kidney (n = 43). Serum creatinine levels increased significantly with increasing age in every group. In group C, serum creatinine was significantly elevated compared with group A in all age categories (p = 0.043, p = 0.019, p = 0.001 respectively). Median figures of GFR remained within normal limits over the 10-year period. GFR was significantly lower in group C compared with group A (p = 0.001, p = 0.009, p = 0.019 respectively) and B in all age categories (p = 0.013, p = 0.002, p = 0.016 respectively). There were no changes in blood pressure over time and no differences among the three groups were observed. At the age of 10 years, the patients in group C had a significantly higher median urinary protein-creatinine ratio (p = 0.022) than those in groups A and B. There was also an increasing level of proteinuria with increasing age in group C (p = 0.002). In conclusion, renal function was stable over time in all patients, but children with obstructive uropathy have a lower median GFR and higher serum creatinine level for the whole study period. Hypertension was exceptionally observed in group C, with obstructive uropathy, as was an elevated urinary protein-creatinine ratio.

Database: Medline

38. Hypertension and microalbuminuria in children with congenital solitary kidneys.

Author(s): Schreuder, Michiel F; Langemeijer, Millie E; Bökenkamp, Arend; Delemarre-Van de Waal, Henriette A; Van Wijk, Joanna A E

Source: Journal of paediatrics and child health; Jun 2008; vol. 44 (no. 6); p. 363-368

Publication Date: Jun 2008

Publication Type(s): Journal Article

PubMedID: 18476930

Available at Journal of paediatrics and child health - from Wiley Online Library Medicine and Nursing Collection 2017 - NHS

Abstract:AIMAccording to the hyperfiltration hypothesis, a low nephron endowment will lead to hyperfiltration in the remaining glomeruli and is associated with systemic hypertension, proteinuria and glomerulosclerosis. Being born with one functioning kidney instead of two, for instance because of unilateral renal agenesis or multicystic dysplastic kidney, is a cause of congenital renal mass reduction.METHODSIn order to study the effect of congenital renal mass reduction on renal function and blood pressure, a retrospective chart review of 66 patients at the Pediatric Renal Center of the VU University Medical Center was performed. As intrauterine growth restriction is associated with a low nephron endowment, the additional effect of birthweight was also studied.RESULTSA total of 50% of patients with congenital renal mass reduction is found to be hypertensive, using anti-hypertensive drugs, and/or having microalbuminuria (>20 mug/min). Patients born small for gestational age have significantly smaller kidneys and lower estimated glomerular filtration rate than patients with a normal birthweight.CONCLUSIONSWe conclude that microalbuminuria and/or hypertension is present in 50% of patients with congenital solitary kidneys, which warrants a systematic follow-up of blood pressure, proteinuria and renal function in all patients with congenital solitary functioning kidneys, especially in patients with a low birthweight.

Database: Medline

39. Acute renal failure and outcome of children with solitary kidney undergoing cardiac surgery.

Author(s): Abou El-Ella, Raja S; Najm, Hani K; Godman, Michael; Kabbani, Mohamed S

Source: Pediatric cardiology; May 2008; vol. 29 (no. 3); p. 614-618

Publication Date: May 2008

Publication Type(s): Journal Article

PubMedID: 18084811

Available at Pediatric cardiology - from SpringerLink

Abstract: The aim of this study was to investigate the risk of acute renal failure (ARF), the need for renal replacement therapy, and the outcome of children with a solitary functioning kidney undergoing open heart surgery. The study was performed retrospectively on all children diagnosed with solitary functioning kidney and who required open heart surgery between January 2003 and January 2007. Demographic, perioperative renal function and intensive care course data were documented. Eight patients (six females) fulfilled the study criteria and were included in the study. Their median age and weight were 4.5 months and 3.6 kg, respectively. Their mean +/- standard deviation (SD) preoperative blood urea nitrogen (BUN) and creatinine levels were 3.7 +/- 1.6 mmol/L and 55 +/- 10 micromol/L, respectively. Postoperatively, the mean BUN and creatinine levels peaked on the first postoperative day to reach 7.8 +/- 2.6 mmol/L and 76 +/- 22 micromol/L, respectively, before starting to return to their preoperative values. Two out of eight patients (25%) developed ARF after surgery, but only one of them (12.5%) required renal replacement therapy. Open heart surgery on bypass can be performed safely for children with solitary functioning kidney with a good

outcome. ARF requiring renal replacement therapy might occur temporarily after bypass surgery in a minority of cases.

Database: Medline

40. Blood pressure, renal function, and proteinuria in children with unilateral renal agenesis.

Author(s): Seeman, Tomás; Patzer, Ludwig; John, Ulrike; Dusek, Jirí; Vondrák, Karel; Janda, Jan; Misselwitz, Joachim

Source: Kidney & blood pressure research; 2006; vol. 29 (no. 4); p. 210-215

Publication Date: 2006

Publication Type(s): Research Support, Non-u.s. Gov't Journal Article

PubMedID: 16960459

Available at Kidney & blood pressure research - from ProQuest (Hospital Premium Collection) - NHS Version

Abstract:BACKGROUND/AIMUnilateral renal agenesis (URA) is a model for a reduced nephron number that is believed to be a risk factor for blood pressure (BP) elevation and reduced renal function. The aim of the study was to investigate BP and renal function in children with URA.METHODSData on children with URA from two pediatric nephrology centers were firstly retrospectively reviewed (renal ultrasound and scintigraphy, clinical BP, creatinine clearance, urinalysis). Children with normal renal ultrasound and scintigraphy were thereafter investigated using ambulatory BP monitoring.RESULTSTwenty-nine children with URA were investigated--14 children with an abnormal kidney (mostly scarring) and 15 children with healthy kidneys. Hypertension was diagnosed on the basis of clinical BP in 57% of the children with abnormal kidneys and on the basis of ambulatory BP monitoring in 1 child (7%) with healthy kidneys. The mean ambulatory BP in children with normal kidneys was not significantly different from that in controls. Forty-three percent of the children with abnormal kidneys had a reduced renal function, but none of children with normal kidneys.CONCLUSIONSChildren with abnormalities of a solitary kidney have often hypertension, proteinuria, or a reduced renal function. In contrast, children with healthy solitary kidneys have BP and renal function similar to those of healthy children.

Database: Medline

41. Severe renovascular hypertension in an infant with congenital solitary pelvic kidney

Author(s): Peco-Antic A.; Djukic M.; Kruscic D.; Krstic Z.; Sagic D.

Source: Pediatric Nephrology; Mar 2006; vol. 21 (no. 3); p. 437-440

Publication Date: Mar 2006

Publication Type(s): Article

PubMedID: 16382321

Available at Pediatric Nephrology - from SpringerLink

Available at Pediatric Nephrology - from ProQuest (Hospital Premium Collection) - NHS Version

Abstract: Renal artery stenosis (RAS) is one of the most common causes of severe arterial hypertension in infants. Its management is very difficult, especially when present in a single kidney. We report a case of severe hypertension caused by RAS of congenital single pelvic kidney in a 4-month-old boy. The patient presented with cardiorespiratory insufficiency that was first treated as acute fulminate myocarditis. Medical treatment of arterial hypertension was disappointing, as it had to be balanced between congestive cardiac failure and acute renal failure. Percutaneous

transluminal angioplasty (PTA) done by coronary balloon dilatation catheters through the left axillary access was successful. Following dilatation of the renal artery, blood pressure decreased and its good control was possible by only one drug. With improved medical blood pressure control and normal growth development, the reassessment of clinical therapy options adjusted to a larger vessel size would be possible. Renovascular hypertension due to RAS in infants with a solitary kidney is difficult to control by medical treatment alone. PTA should be considered as a viable option in infants with refractory hypertension due to renal artery stenosis in a solitary kidney, since it has the potential of improving hypertension while preserving renal function. © IPNA 2005.

Database: EMBASE

42. Factors influencing the progression of renal damage in patients with unilateral renal agenesis and remnant kidney.

Author(s): González, Ester; Gutiérrez, Eduardo; Morales, Enrique; Hernández, Eduardo; Andres, Amado; Bello, Ignacio; Díaz-González, Rafael; Leiva, Oscar; Praga, Manuel

Source: Kidney international; Jul 2005; vol. 68 (no. 1); p. 263-270

Publication Date: Jul 2005

Publication Type(s): Journal Article

PubMedID: 15954916

Available at Kidney international - from ProQuest (Hospital Premium Collection) - NHS Version

Abstract:BACKGROUNDAlthough some studies have shown that the risk to develop proteinuria and renal insufficiency is increased in patients with a remnant kidney (RK) or unilateral renal agenesis (URA), other patients maintain normal renal function and negative proteinuria, and the reasons to explain these different outcomes are not known.METHODSWe performed a retrospective study of 54 patients with a severe reduction in renal mass (33 patients with URA and 21 with RK). Follow-up was 100 +/- 72 months.RESULTSTwenty patients (group 1) showed normal renal function at presentation, whereas the 34 remaining (group 2) had proteinuria, and some of them renal insufficiency. Group 2 patients were older and had a higher blood pressure and BMI than group 1 patients. Eleven patients of group 1 remained normal throughout follow-up (group 1A), whereas the remaining 9 developed proteinuria/renal insufficiency (group 1B). BMI at presentation was significantly higher in group 1B: 27 +/- 3.6 kg/m(2) versus 21.6 +/- 2.6 kg/m(2), and BMI was the only factor statistically associated with the risk to develop proteinuria/renal insufficiency in group 1. Among group 2 patients, renal function remained stable in 20 (group 2A), and deteriorated (>50% increase of baseline serum creatinine) in the remaining 14 patients (group 2B). BMI at presentation and treatment with ACEI during follow-up were the only factors statistically associated with the risk for renal failure progression among group 2 patients.CONCLUSIONOverweight plays a fundamental role in the appearance of proteinuria and renal damage in patients with severe renal mass reduction.

Database: Medline

43. Gestational hypertension and preeclampsia associated with unilateral renal agenesis in women with uterine malformations

Author(s): Heinonen P.K.

Source: European Journal of Obstetrics Gynecology and Reproductive Biology; May 2004; vol. 114 (no. 1); p. 39-43

Publication Date: May 2004

Publication Type(s): Article

PubMedID: 15099869

Abstract: Objective: To evaluate the possible connection between gestational hypertensive disorder and unilateral renal agenesis in women with congenital uterine anomalies. Study design: Thirty-three (16%) out of 206 women with uterine anomalies had unilateral renal agenesis. Nineteen of them had delivered and comprised the study group. The control group consisted of 44 women among the 206 with similar uterine malformations who had normal bilateral kidneys and matched in age and parity with the study group. Retrospective analysis considered the presence of gestational hypertension, proteinuria, preeclampsia, perinatal outcomes and manifestations of hypertension and renal disease during the follow-up period in both groups. The median follow-up was 166 months (range 24-372 months). Results: Women with unicornuate uterus most frequently (25%) evinced unilateral renal agenesis. Eight (42%) out of 19 women with malformed uterus and unilateral renal agenesis had in at least one pregnancy gestational hypertension, preeclampsia or gestational proteinuria compared to 8 (18%) out of 44 women with two kidneys (relative risk, RR 2.33, 95% CI 1.02, 5.29). Seventeen (35%) out of all 49 pregnancies in the study group were complicated by gestational hypertensive disorder or proteinuria as against 10 (11%) out of 90 pregnancies in the control group (RR 3.12, 95% CI 1.55, 6.28). Perinatal outcomes were similar in both groups. During follow-up none had diagnosed proteinuria or chronic renal disease, but two out of 19 women (11%) with unilateral renal agenesis had commenced medication for chronic hypertension. Conclusion: Unilateral renal agenesis predisposes women with uterine anomalies to preeclampsia.

Database: EMBASE

44. Associated urologic anomalies in children with solitary kidney.

Author(s): Kaneyama, Kazuhiro; Yamataka, Atsuyuki; Satake, Shouei; Yanai, Toshihiro; Lane, Geoffrey J; Kaneko, Kazunari; Yamashiro, Yuichirou; Miyano, Takeshi

Source: Journal of pediatric surgery; Jan 2004; vol. 39 (no. 1); p. 85-87

Publication Date: Jan 2004

Publication Type(s): Journal Article

PubMedID: 14694378

Abstract:PURPOSEThe aim of this study was to investigate the incidence, nature, surgical treatment, and outcome of associated urologic anomalies (AUA) in children with anatomic or functional solitary kidney (SK).METHODSIn this study, SK was defined as the kidney that is present in cases of unilateral renal agenesis (RA), or the kidney that is contralateral to a kidney that is nonfunctional secondary to either noncystic dysplastic kidney disease (NCDK), or multicystic dysplastic kidney disease (MCDK). Fifty-seven consecutive patients with SK (17 owing to RA, 10 owing to NCDK, 30 owing to MCDK) were reviewed.RESULTSA total of 23 of 57 (40%) had AUA in the SK (11 of 17 [65%] of RA cases; 7 of 10 [70%] of NCDK cases; and 5 of 30 [17%] of MCDK cases). The incidence of AUA in MCDK was significantly lower than that in RA or NCDK ($p < .01$: Mann-Whitney U test). Surgery was performed on 20 of 23 (87%) for vesicoureteric reflux (VUR) in 13, pelviureteric junction stenosis in 3, and

ureterovesical junction stenosis in 4. Surgery was not performed in 3 of 16 with VUR because the VUR that was present was of low grade. AUA-related symptoms such as urinary tract infection and abdominal mass were seen in 15 of 23; the remaining 8 were asymptomatic. Mean age at surgery was 4.8 years. There were no operative or postoperative complications, and all cases are well without impaired renal function or hypertension after a mean follow-up period of 5.3 years.CONCLUSIONSIn patients with SK, 40% had AUA in the renal collecting system of the SK. All children with SK should undergo a screening voiding cystourethrography (VCUG) even in the absence of hydronephrosis or UTI, and early recognition and treatment are imperative to decrease the long-term risk for renal damage.

Database: Medline

45. The congenital and acquired solitary kidney.

Author(s): Shapiro, Ellen; Goldfarb, David A; Ritchey, Michael L

Source: Reviews in urology; 2003; vol. 5 (no. 1); p. 2-8

Publication Date: 2003

Publication Type(s): Journal Article

PubMedID: 16985610

Abstract: The embryonic insult that results in unilateral renal agenesis may involve not only the ureteral bud but also other mesonephric duct derivatives, including the seminal vesicles, vas deferens, and epididymis; in the female with a solitary kidney, müllerian duct anomalies frequently occur. Normal renal development depends upon a normal ureteral bud, which undergoes orderly branching and penetrates the metanephric blastema at about the fifth week of gestation. Ureteral and kidney development are thought to be interdependent, and when there is failure of the ureteral bud to form or absence of the nephrogenic ridge, the kidney does not develop normally. Unilateral renal agenesis is compatible with normal longevity and does not predispose the contralateral kidney to greater-than-normal risk; nevertheless, patients should have annual surveillance, including a blood pressure measurement, serum creatinine if not initially normal, and urinalysis to detect proteinuria. Removal of one kidney leads to structural and functional changes by the remaining kidney, including increased filtration of the remaining glomeruli. These functional changes have generally been considered beneficial because they mitigate the reduction in the total glomerular filtration rate that would otherwise occur, but experimental evidence suggests that these changes may have an adverse effect on the remaining kidney. Clinical evidence shows that these changes do not lead to renal deterioration in kidney donors because the renal function of kidney donors is well preserved in over 20 years of follow-up after donor nephrectomy.

Database: Medline

46. Outcome of patients with continent urinary reconstruction and a solitary functioning kidney.

Author(s): Shaaban, A A; Mosbah, A; Abdel-Latif, M; Mohsen, T; Mokhtar, A A

Source: BJU international; Dec 2003; vol. 92 (no. 9); p. 987-992

Publication Date: Dec 2003

Publication Type(s): Journal Article Evaluation Studies

PubMedID: 14632861

Abstract:OBJECTIVETo evaluate the outcome of patients with continent urinary diversions who had a solitary functioning kidney at the time of surgery.PATIENTS AND METHODSIn all, 62 patients with continent urinary reservoirs and a solitary functioning kidney were reviewed (51 men and 11 women). The indications for surgery were bladder cancer in 54 and a contracted bladder in eight. The surgical procedures included an orthotopic ileal neobladder in 36 patients, a continent cutaneous ileal reservoir in 13 and rectal diversion in 13. Kidneys were evaluated using serum creatinine level, ultrasonography, intravenous urography and other radiological studies.RESULTSThe follow-up was 6-173 months; 44 renal units (71%) remained stable during this period. Serum creatinine was increased in four patients with an orthotopic neobladder, with no evidence of obstruction or reflux, in one with preoperative renal impairment and one with voiding dysfunction, reflux and bacteriuria. Six renal units deteriorated because of uretero-intestinal strictures; of these patients, two were treated endoscopically, two with open ureteric reimplantation, one with conversion from a rectal reservoir to an ileal loop conduit, and one was maintained on JJ stenting. Six patients with a rectal diversion had renal deterioration because of chronic pyelonephritis.CONCLUSIONSA regular follow-up of renal function is mandatory in patients with a continent urinary diversion. Rectal diversion is associated with a higher risk of renal deterioration (54%) than are orthotopic (28%) and cutaneous reservoirs (8%).

Database: Medline

47. Single kidney outcome and management in persons with spinal cord injury.

Author(s): Stover, S L; Wiggins, K C

Source: The journal of spinal cord medicine; 2000; vol. 23 (no. 1); p. 2-5

Publication Date: 2000

Publication Type(s): Research Support, U.s. Gov't, Non-p.h.s. Case Reports Journal Article Research Support, U.s. Gov't, P.h.s.

PubMedID: 10752866

Abstract: This case study examined the outcomes of persons with spinal cord injury (SCI) who had a single kidney. A Urologic Database, including 1655 persons with SCI between 1969 and 1997, was examined and 22 persons were identified with single kidneys. Twenty persons had adequate follow-up. Renal function was measured by total and individual kidney effective renal plasma flow (ERPF). Of 11 persons who had a single kidney prior to injury or as a result of an associated injury, all maintained a normal ERPF for an average of 8.6 years. Of 9 persons who had removal of a kidney following their injury for other diseases or urinary complications, 3 were deceased, but 2 had a normal ERPF in the remaining kidney prior to death. One with vesicoureteral reflux had decreased renal function in the remaining kidney. Recurrent renal calculi in a single kidney carries risks for decreasing renal function, urosepsis, and death.

Database: Medline

48. Proteinuria, hypertension and chronic renal failure in X-linked Kallmann's syndrome, a defined genetic cause of solitary functioning kidney

Author(s): Duke V.; Woolf A.S.; Quinton R.; Bouloux P.M.G.; Gordon I.

Source: Nephrology Dialysis Transplantation; Aug 1998; vol. 13 (no. 8); p. 1998-2003

Publication Date: Aug 1998

Publication Type(s): Article

PubMedID: 9719154

Available at Nephrology Dialysis Transplantation - from Oxford Journals - Medicine

Available at Nephrology Dialysis Transplantation - from HighWire - Free Full Text

Abstract: Background. Anosmia and hypogonadotrophic hypogonadism are the classic features of X-linked Kallmann's syndrome, a disorder caused by mutations of KAL, a gene expressed during kidney and brain development. About a third of patients have a solitary functioning kidney, but little is known about their renal morbidity. Methods. We studied seven patients aged 22-35 years with X-linked Kallmann's syndrome and a solitary functioning kidney. Results. Two patients developed significant proteinuria associated with mild to moderate arterial hypertension in the second to third decades of life. In one, proteinuria and renal impairment preceded the appearance of hypertension, and the disorder progressed to chronic renal failure. The remaining five patients had normal plasma creatinine concentrations and no significant proteinuria although four had borderline systolic and/or diastolic hypertension. In two sets of patients from the same kindreds, there was a striking discordance for the occurrence of renal morbidity. Conclusions. All patients with X-linked Kallmann's syndrome should be screened for renal malformations, and those with solitary kidneys require life-long follow-up to detect hypertension, proteinuria and renal failure.

Database: EMBASE

49. The hyperfiltration theory: a paradigm shift in nephrology.

Author(s): Brenner, B M; Lawler, E V; Mackenzie, H S

Source: Kidney international; Jun 1996; vol. 49 (no. 6); p. 1774-1777

Publication Date: Jun 1996

Publication Type(s): Journal Article Review

PubMedID: 8743495

Abstract: Experimental studies incriminate glomerular hypertension in mediating progressive renal damage after any of a variety of initiating injuries. Prevention of glomerular hypertension by dietary protein restriction or antihypertensive therapy lessens progressive glomerular damage in several experimental models of chronic renal disease. Glomerular hypertension and hyperfiltration also occur in humans with diabetes mellitus, solitary or remnant kidneys, and various forms of acquired renal disease. Clinical studies indicate that dietary protein restriction and antihypertensive therapy also slow progression in many of these disorders. Large multicenter trials confirm the beneficial effects of these therapeutic maneuvers on the rate of progression of chronic renal disease.

Database: Medline

50. Renal reserve is normal in adults born with unilateral renal agenesis and is not related to hyperfiltration or renal failure.

Author(s): De Santo, N G; Anastasio, P; Spitali, L; Santoro, D; Capodicasa, D; Cirillo, E; Capasso, G

Source: Mineral and electrolyte metabolism; 1997; vol. 23 (no. 3-6); p. 283-286

Publication Date: 1997

Publication Type(s): Research Support, Non-u.s. Gov't Controlled Clinical Trial Clinical Trial Journal Article

PubMedID: 9387134

Abstract: This study was carried out to examine the renal hemodynamic response in adult patients with single kidneys born with unilateral renal agenesis. A group of 21 patients with unilateral renal agenesis were divided into three groups according to their glomerular filtration rate (GFR): 112 +/- 3 ml/min x 1.73 m2 in group A, 68 +/- 3.2 ml/min x 1.73 m2 in group B, and 40.7 +/- 3.3 ml/min x 1.73 m2 in group C. Mean arterial blood pressure was significantly higher in the patients of group C who were also proteinuric. The renal hemodynamic response to an oral protein load (2 g/kg of protein as beefsteak) was normal in all groups and unrelated to hyperfiltration or to renal failure and proteinuria. The study indicates that in patients with renal agenesis, the hemodynamic response to a protein challenge is similar to that of kidney donors, renal transplant recipients and uninephrectomized patients. The paper also demonstrates that the renal response to a protein challenge is inadequate to identify patients with renal agenesis who are at risk of developing renal disease. Finally, in renal agenesis with renal disease, creatinine clearance overestimated the GFR by an average of 32.7%.

Database: Medline

51. Renal reserve in patients with solitary kidneys.

Author(s): Rugiu, C; Oldrizzi, L; Maschio, G

Source: Seminars in nephrology; Sep 1995; vol. 15 (no. 5); p. 468-474

Publication Date: Sep 1995

Publication Type(s): Journal Article Review

PubMedID: 8525150

Abstract: The first part of this article focuses on the risk of functional deterioration in subjects with solitary kidneys; the long-term clinical outcome of various subgroups of patients is reviewed. Thereafter, the pathophysiology of the renal functional reserve in subjects with a 50% reduction in renal parenchyma and the results coming from studies eliciting the renal reserve in these subjects are summarized. Finally, the clinical significance of the renal functional reserve and its usefulness in clinical practice are critically discussed.

Database: Medline

52. Single kidney - Long term sequelae in humans

Author(s): Rahman M.; Ahmed S.; Khan M.F.; Alam M.R.

Source: Bangladesh Renal Journal; 1992; vol. 11 (no. 1); p. 7-12

Publication Date: 1992

Publication Type(s): Article

Database: EMBASE

53. Dynamic evaluation of renal function in subjects with solitary kidneys.

Author(s): Oldrizzi, L; De Biase, V; Rugiu, C; Maschio, G

Source: Contributions to nephrology; 1992; vol. 98 ; p. 142-148

Publication Date: 1992

Publication Type(s): Journal Article

PubMedID: 1493726

Database: Medline

54. Prognosis of patients with unilateral renal agenesis.

Author(s): Argueso, L R; Ritchey, M L; Boyle, E T; Milliner, D S; Bergstralh, E J; Kramer, S A

Source: Pediatric nephrology (Berlin, Germany); Sep 1992; vol. 6 (no. 5); p. 412-416

Publication Date: Sep 1992

Publication Type(s): Journal Article

PubMedID: 1457321

Available at Pediatric nephrology (Berlin, Germany) - from SpringerLink

Abstract: The clinical course was reviewed in 157 patients with unilateral renal agenesis and a normal contralateral kidney for the purpose of establishing a prognosis. There were 85 males (54%) and 72 females (46%). The mean age at diagnosis of unilateral renal agenesis was 37 years. The mean years at risk was 56. Proteinuria (> 150 mg/24 h) was found in 19% of the 37 patients tested (P < 0.001), hypertension developed in 47% of the 47 patients tested (P = 0.010), and renal function (adjusted for age and sex) was decreased in 13% of the 32 patients tested (P = 0.001). An increased filtration fraction was found in 7 (54%) of 13 patients evaluated. At the completion of this study, 114 patients (73%) were alive, and the survival rate was similar to that of age-, sex-matched United States life tables. Forty-three patients (27%) died; 6 deaths (4%) were caused by renal failure. Our review indicates that patients with unilateral renal agenesis and a normal solitary kidney are at increased risk of proteinuria, hypertension, and renal insufficiency. Therefore, it is essential to have prolonged and careful follow-up and to employ strategies that maximize renal preservation.

Database: Medline

55. Long-term follow-up after partial removal of a solitary kidney.

Author(s): Novick, A C; Gephardt, G; Guz, B; Steinmuller, D; Tubbs, R R

Source: The New England journal of medicine; Oct 1991; vol. 325 (no. 15); p. 1058-1062

Publication Date: Oct 1991

Publication Type(s): Journal Article

PubMedID: 1891007

Available at The New England journal of medicine - from ProQuest (Hospital Premium Collection) - NHS Version

Abstract:BACKGROUNDThe removal of more than one kidney in animals leads to proteinuria and progressive renal failure due to focal segmental glomerulosclerosis. This injury may be the result of chronic glomerular hyperfiltration. The purpose of this study was to determine the effect of a reduction in renal mass of more than 50 percent on residual renal function and morphology in humans.METHODSWe evaluated long-term renal function in 14 patients with a solitary kidney who had undergone partial nephrectomy for renal-cell or transitional-cell carcinoma. In 12, the first

kidney had been removed 2 months to 21 years previously for the same type of cancer; in 2, the other kidney was congenitally atrophic. Before surgery, no patient had clinical or histopathological evidence of primary renal disease. All 14 patients underwent partial nephrectomy to remove a localized tumor, with 25 to 75 percent of the solitary kidney being excised. They were evaluated 5 to 17 years after surgery (mean, 7.7).RESULTSTwelve patients had stable postoperative renal function, and end-stage renal failure developed in two. There were no changes in blood pressure in any patient during follow-up. Nine patients had proteinuria, which was mild (0.15 to 0.8 g of urinary protein per day) in five. The extent of proteinuria was inversely correlated with the amount of remaining renal tissue (P = 0.0065) and directly correlated with the duration of follow-up (P = 0.0005). Four patients with moderate-to-severe proteinuria had renal biopsies, which revealed focal segmental glomerulosclerosis in three patients and global glomerulosclerosis in one.CONCLUSIONSLong-term renal function remains stable in most patients with a reduction in renal mass of more than 50 percent. These patients are, however, at increased risk for proteinuria, glomerulopathy, and progressive renal failure.

Database: Medline

56. Renal function after tumor enucleation in a solitary kidney.

Author(s): Lhotta, K; Eberle, H; König, P; Dittrich, P

Source: American journal of kidney diseases : the official journal of the National Kidney Foundation; Mar 1991; vol. 17 (no. 3); p. 266-270

Publication Date: Mar 1991

Publication Type(s): Journal Article

PubMedID: 1996567

Abstract: Whether extensive ablation of renal mass in humans leads to progressive glomerulosclerosis, proteinuria, and hypertension, as it does in animal models, is a matter of controversy. We have studied kidney function in six patients who underwent enucleation of a renal cell carcinoma in a solitary kidney. Four patients had previously had a nephrectomy. The two others each had one atrophic, nonfunctioning kidney. Serum creatinine levels before surgery were within the normal range (mean, 99.9 mumol/L [1.13 mg/dL]). Two weeks after tumor enucleation, creatinine levels were significantly higher than the preoperative values (mean, 124.6 mumol/L [1.41 mg/dL]). The follow-up period varied from 10 to 23 months. In all patients, kidney function improved during the following months. Serum creatinine levels nearly reached preoperative values in all patients (mean, 105.2 mumol/L [1.19 mg/dL]). None of the patients showed a progressive deterioration in renal function or proteinuria. We found a modest increase in blood pressure in two patients who had been normotensive before surgery. In conclusion, tumor enucleation in a solitary kidney did not cause significant renal injury to the remnant kidneys in our patients, at least in the short term.

Database: Medline

57. Kidney function in adults born with unilateral renal agenesis or nephrectomyzed in childhood

Author(s): Wikstad I.; Celsi G.; Larsson L.; Herin P.; Aperia A.

Source: Pediatric Nephrology; 1988; vol. 2 (no. 2); p. 177-182

Publication Date: 1988

Publication Type(s): Article

PubMedID: 3153008

Available at Pediatric Nephrology - from SpringerLink

Abstract: We have evaluated the long-term prognosis in an unselected group of adult patients either uni-nephrectomized in childhood because of hydronephorosis or born with unilateral renal agenesis. Thirty-six patients aged 7-47 years were followed for 7-40 years. In 23 control subjects aged 20-47 years the glomerular filtration rate (GFR) and the p-aminohippuric acid clearance (C(PAH)) did not change significantly with age. In patients with a single kidney the size of that kidney was larger and GFR and C(PAH) were higher than single kidney values in control subjects. However, in patients with a single kidney since childhood the GFR and the C(PAH) declined slowly but significantly during the follow-up period. Significantly microalbuminuria occurred in 47% of the patients with a single kidney and was more frequent with a longer follow-up period. No patient had renal insufficiency or a marked increase in arterial blood pressure. We conclude that in patients with a single kidney since childhood the long-term prognosis is good, but the late decrease in GFR and increase in albumin excretion may indicate a moderate risk for premature renal damage.

Database: EMBASE

58. Single kidney function: effect of acute protein and water loading on microalbuminuria.

Author(s): Amore, A; Coppo, R; Roccatello, D; Martina, G; Rollino, C; Basolo, B; Novelli, F; Amprimo, M C; Cavalli, G; Piccoli, G

Source: The American journal of medicine; Apr 1988; vol. 84 (no. 4); p. 711-717

Publication Date: Apr 1988

Publication Type(s): Journal Article

PubMedID: 3041809

Abstract: The hyperfiltration induced by an acute response to an oral protein and water load was investigated to ascertain whether it can modify the urinary albumin excretion (UAE) in the microalbuminuric range by further increasing the glomerular filter permeability. To this end, six patients with a single kidney selected as having microalbuminuria on a regular diet without the clinical or laboratory data of overt renal disease and eight healthy subjects received a short-term protein and water load (150 g of meat-derived protein and 1 liter of water). In patients with one kidney, mean basal UAE values were significantly higher than in control subjects (p less than 0.006), whereas endogenous creatinine clearance values were only slightly lower (p greater than 0.05). One hour after the protein and water load, an abrupt increase in microalbuminuria levels was found in patients with one kidney and mean UAE values were significantly higher than in control subjects (p less than 0.002), whereas mean creatinine clearance values were significantly lower in patients than in control subjects (p less than 0.01). High UAE (p less than 0.002) and low creatinine clearance (p less than 0.002) values were maintained over the following four hours in patients with one kidney. These data suggest that in the single kidney with reduced renal functional reserve, an oral protein and water load magnifies the pre-existing loss of glomerular permselective properties due to chronic hyperfiltration as manifested by a further increase in microalbuminuria.

Database: Medline

59. Focal glomerulosclerosis and proteinuria in patients with solitary kidneys

Author(s): Gutierrez-Millet V.; Nieto J.; Praga M.

Source: Archives of Internal Medicine; 1986; vol. 146 (no. 4); p. 705-709

Publication Date: 1986

Publication Type(s): Article

PubMedID: 3963952

Abstract: We have studied ten normotensive patients (nine male and one female, aged between 28 and 51 years) who each had a solitary functioning kidney and proteinuria. Six had undergone unilateral nephrectomy, and four unilateral renal agenesis. In each case, intravenous pyelography revealed only one functioning kidney with compensating hypertrophy. Mild to moderate chronic renal failure was present in six, and microhematuria in two. Proteinuria ranged from 1.10 to 4.10 g/24 hr, being in the nephrotic range in three patients. In seven patients, a renal biopsy showed focal glomerulosclerosis. Immunofluorescence studies demonstrated granular deposits of IgM in three and C3 in six cases, over the sclerotic areas. We suggest that the appearance of proteinuria and focal glomerulosclerosis in a patient with a solitary kidney could be due to chronic glomerular hyperfiltration.

Database: EMBASE

60. Clinical features of patients with solitary kidneys

Author(s): Rugiu C.; Oldrizzi L.; Lupo A.

Source: Nephron; 1986; vol. 43 (no. 1); p. 10-15

Publication Date: 1986

Publication Type(s): Article

PubMedID: 3517662

Abstract:A clinical study was performed in 2 groups of patients with solitary kidneys, followed for 11-146 months. Group 1 had 9 patients (7 males and 2 females, aged between 23 and 68 years) with unilateral renal agenesis. Group 2 had 13 patients (9 females and 4 males, aged between 27 and 70 years) who underwent unilateral nephrectomy for the following reasons: hydronephrosis secondary to ureteropelvic junction stenosis, 7 patients; renal trauma, 4 patients; benign neoplasia, 2 patients. During the follow up, urinary protein excretion of more than 300 mg/day was observed in 9 patients, 3 in group 1 and 6 in group 2. Eleven patients, 8 in group 1 and 3 in group 2, were hypertensive (diastolic blood pressure higher than 95 mm Hg). Hyperuricemia was observed in 14 patients, 10 in group 1 and 4 in group 2. Seven patients, 4 in group 1 and 3 in group 2, had a significant deterioration of renal function. Neither proteinuria nor renal failure were observed before at least 10 years had elapsed since the anatomic condition of solitary kidney had been established. A surgical renal biopsy was performed in 1 patient with unilateral renal agenesis and showed focal glomerular sclerosis. This study adds support to the view that the reduction of 50% of the renal tissue may be a risky situation in humans as well as in animals.

Database: EMBASE

Strategy 283830

#	Database	Search term	Results
1	Medline	((solitary OR single) ADJ2 kidney).ti,ab	4196
2	Medline	("Renal agenesis" OR "kidney agenesis").ti,ab	1814
3	Medline	(1 OR 2)	5919
4	Medline	exp "KIDNEY DISEASES"/	463030
5	Medline	(3 AND 4)	2687
6	Medline	(prognos*).ti,ab	480492
7	Medline	exp PROGNOSIS/	1357877
8	Medline	(6 OR 7)	1590385
9	Medline	(3 AND 4 AND 8)	579
10	Medline	(outcome* OR prognosi*).ti	307005
11	Medline	(3 AND 4 AND 10)	141
12	Medline	((solitary OR single OR nonfunction* OR "non function*") ADJ2 kidney).ti	1830
13	Medline	("Renal agenesis" OR "kidney agenesis").ti	756
14	Medline	(12 OR 13)	2578
15	Medline	(4 AND 14)	1322
16	Medline	(outcome* OR prognos*).ti,ab	1674228
17	Medline	(8 OR 16)	2464665
18	Medline	(15 AND 17)	280

19	Medline	("renal function").ti,ab	71257
20	Medline	(14 AND 19)	307
21	Medline	exp "HYPERTENSION, RENAL"/	19061
22	Medline	("renal impairment").ti,ab	9527
23	Medline	exp PROTEINURIA/	36005
24	Medline	(21 OR 22 OR 23)	63363
25	Medline	(14 AND 24)	136
26	EMBASE	exp "SOLITARY KIDNEY"/co,si	36
27	EMBASE	exp "KIDNEY AGENESIS"/si,co	89
28	EMBASE	((solitary OR single OR nonfunction* OR "non function*") ADJ2 kidney).ti	1787
29	EMBASE	("Renal agenesis" OR "kidney agenesis").ti	825
30	EMBASE	*"SOLITARY KIDNEY"/	1093
31	EMBASE	*"KIDNEY AGENESIS"/	1216
32	EMBASE	(28 OR 29 OR 30 OR 31)	3576
33	EMBASE	exp "KIDNEY FUNCTION"/	163795
34	EMBASE	exp PROGNOSIS/ OR exp "DISEASE COURSE"/	2776614
35	EMBASE	(33 OR 34)	2907464
36	EMBASE	(32 AND 35)	777
37	EMBASE	*"KIDNEY FUNCTION"/	25506
38	EMBASE	(30 AND 37)	81

39	EMBASE	exp "FOLLOW UP"/	1220117
40	EMBASE	(32 AND 39)	443
41	EMBASE	exp "HYPERTENSION, RENAL"/	21008
42	EMBASE	exp PROTEINURIA/	87479
43	EMBASE	exp "KIDNEY DISEASE"/	817740
44	EMBASE	(41 OR 42 OR 43)	859230
45	EMBASE	(32 AND 44)	3137
46	EMBASE	exp "RISK FACTOR"/	839420
47	EMBASE	(45 AND 46)	67
48	EMBASE	(32 AND 46)	80
49	EMBASE	*"RENOVASCULAR HYPERTENSION"/	12091
50	EMBASE	*PROTEINURIA/	12649
51	EMBASE	(49 OR 50)	24661
52	EMBASE	(32 AND 51)	83
53	EMBASE	(complication*).ti	144934
54	EMBASE	(32 AND 53)	16
55	Medline	(" remnant kidney").ti,ab	744
56	Medline	(4 AND 8 AND 55)	20
57	Medline	(10 AND 55)	3
58	Medline	(8 AND 55)	25
59	Medline	((solitary OR single) ADJ2 kidneys).ti	152

60	Medline	exp "KIDNEY FUNCTION TESTS"/	71186
61	Medline	(3 AND 60)	699