Solitary functioning kidney in paediatrics – assessment of renal impairment

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Introduction

Growing with a solitary functioning kidney (SFK) is no longer considered a benign condition. The resulting glomerular hyperfiltration is reflected by the development of hypertension, proteinuria and decreased renal function. Surveillance and protection of renal function should be maintained throughout life, particularly when renal loss occurs at an early age.

Methods

Retrospective analysis

Paediatric Nephrology Unit of a tertiary hospital

Study interval: 2012-2016

Hypertension

- Task Force 2004

Chronic Kidney Disease

- GFR <60 ml/min/1.73m²

Obesity

- >P97 WHO curves

SPSS® v22

Results

Total = 167

- 63% M
- 37% F

Aetiology

- Adquired: n=32 (19.2%)
- Congenital: n=134 (80.2%)

- Tumor: n=12 (37.5%)
- VUR: n=9 (28.1%)
- Obstructive: n=6 (18.7%)
- Trauma: n=2 (6.3%)
- Other: n=3 (9.4%)

- Multicystic dysplastic kidney: n=66 (49.2%)
- Agenesis: n=44 (32.8%)
- Other: n=23 (17.2%)
- Antenatal diagnosis: n=89 (66.4%)
- Polymalformative syndrome: n=17 (12%)

Conditions associated with poor prognosis

<table>
<thead>
<tr>
<th>Condition</th>
<th>n</th>
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</thead>
<tbody>
<tr>
<td>CAKUT¹</td>
<td>19</td>
</tr>
<tr>
<td>Polymalformative syndrome</td>
<td>17</td>
</tr>
<tr>
<td>Recurrent UTI</td>
<td>9</td>
</tr>
<tr>
<td>Obesity</td>
<td>20</td>
</tr>
<tr>
<td>Prematurity</td>
<td>19</td>
</tr>
<tr>
<td>Low birth weight for gestational age</td>
<td>28</td>
</tr>
</tbody>
</table>

¹condition associated to renal impairment (p<0.001)

Type of renal impairment

- Proteinuria: 10
- Hypertension: 6
- Decreased GFR: 6
- Total: 21²

²one patient had proteinuria and hypertension

Patients with decreased GFR hadn’t previous proteinuria or hypertension

CAKUT was the only factor associated to any kind of renal impairment (p<0.001)

Discussion

This study highlights the relevance of follow-up of SFK soon after diagnosis, with monitoring of indicators of renal impairment. We emphasized that renal function impairment may not be preceded by hypertension or proteinuria; therefore, it’s necessary to evaluate other glomerular hyperfiltration factors, like obesity or prematurity and coexistence of other congenital genitourinary anomalies.