CHRONIC KIDNEY DISEASE IN JAMAICAN CHILDREN

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Jamaica Kidney Kids Foundation/ International Paediatric Nephrology Association
1st Jamaican Paediatric Nephrology Conference
October 4th 2014
Jamaica Conference Centre
Chronic kidney disease in Jamaican Children

- 6 yearly review:
- Incidence and aetiology of chronic kidney disease (CKD) in Jamaica children
- Assess the size of the problem
- Enable forward planning
- Assess trends and determine interventions
- International comparisons
Chronic kidney disease in Jamaican children 2007-2012 - M. Miller, J. Williams

- Patients newly diagnosed CKD across Jamaica
- All children < age 12 GFR < 60ml/min/1.73m²* (Schwartz formula)
  - At least 3 months
  - < 3 months evidence of chronicity at presentation with renal failure

- In infants
  - GFR as % of normal for age
  - Duration of < 3 months if irreversible pathology at presentation

- Medical records:
  - Bustamante Children’s Hospital (BCH)**
  - University Hospital of the West Indies (UHWI)
  - Paediatric nephrology notes (UHWI)
Chronic kidney disease in Jamaican Children 2007-2012 (Miller and Williams)

- **Demographic data- 2001 census**
  - Cumulative annual incidence / million child population < age 12 years
  - Cumulative annual incidence / million population
  - Using population estimates for mid study year of 2009
  - Annualized incidence / million age related population

- **Limitations** -
  - likely underestimated - missing records
Patients

- Age, sex, parish of origin
- Date of diagnosis of renal disease
- Date of diagnosis of CKD (GFR < 60ml/min/1.73m²)
- Aetiology of renal disease
- Outcome: Dialysis, Death
CKD in Jamaican Children

- 2007-2012
- 27 children (17 M 10 F) (1.7:1)
- Age
  - Mean age at diagnosis of renal disease 4.1 years (range birth – 9.2 years)- antenatal in some
  - Mean age at diagnosis at CKD 4.3 yr (range birth -10.2 years)
Demographics*

27 children – 17 male : 10 female

Parish information in 25 children*
INCIDENCE
Annualized incidence of CKD in Jamaican Children 2007-2012

Incidence per million population
Incidence per million population < age 12 yrs
Patient number
Worldwide incidence of childhood CKD per million age related population*

Variations in: definition of “childhood”, definition of CKD,
AETIOLOGY
Urological (48%)

<table>
<thead>
<tr>
<th>Aetiology</th>
<th>%</th>
<th>Age &lt; 6 yrs</th>
<th>Age &gt; 6 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urological</td>
<td>13 (48%)</td>
<td>13</td>
<td>0</td>
</tr>
<tr>
<td>PUV +/- VUR +/- dysplasia</td>
<td>7</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Dysplasia isolated</td>
<td>5</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Dysplasia VUR</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>
## Glomerular (25%)

<table>
<thead>
<tr>
<th>Aetiology</th>
<th>%</th>
<th>Age&lt; 6 yrs</th>
<th>Age &gt;6 years</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Glomerulonephritis</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post infectious</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HIV</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dengue*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SLE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSGS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Congenital NS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>25</td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

| **Hereditary**          | 8  |            |              |
| Bartet Beidl s.         |    |            |              |
| ARPKD                   |    |            |              |

| **Miscellaneous**       | 19 |            |              |
| Ischaemic*              |    |            |              |
| Trauma                  |    |            |              |
| Wilm's                  |    |            |              |
| Unknown                 |    |            |              |

* Denotes more than one example in the category.
Urological causes vs. age at CKD diagnosis 1985-2012
Glomerular causes 1985-2012

- Dengue: 2007-2012 total 7
- HIV: 2001-2006 total 6
- MPGN: 1985-2000 total 17
Glomerular vs. urological disease
Aetiology vs. country

Syria 2002-2003 (55)*
NAPRTCS 2011
Italy 1995-2000 (1197)*
S. Thailand 1982-2005 (101)
Nigeria 1997-2002 (24)
Nigeria 2000-2009 (154)
Nigeria 1985-2000 (45)
Venezuela 1998 (59)
Jamaica 2007-2012 (27)

0 20 40 60 80 100

Glomerular
Congenital urological
OUTCOME
# Outcome

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<thead>
<tr>
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</thead>
<tbody>
<tr>
<td><strong>TOTAL</strong></td>
<td>34</td>
<td>18</td>
<td>27</td>
</tr>
<tr>
<td>Local dialysis</td>
<td>9%</td>
<td>28%</td>
<td>41%</td>
</tr>
<tr>
<td>Dialysis not offered</td>
<td></td>
<td></td>
<td>2 cases (CP, Metastatic Wilm's)</td>
</tr>
<tr>
<td>Death</td>
<td>65%</td>
<td>44%</td>
<td>37% (10)</td>
</tr>
<tr>
<td>ESRD mortality</td>
<td>65%</td>
<td>28% (2)</td>
<td>7% (2)</td>
</tr>
<tr>
<td>Transplanted</td>
<td>0</td>
<td>1 (age 9)</td>
<td>0</td>
</tr>
<tr>
<td>Other causes of death</td>
<td></td>
<td>Hypertension Sepsis HIV cardiomyopathy</td>
<td>SLE complications (1) Interdialytic fluid overload (2) Line sepsis (1) Pneumonia (1) Dengue related (infant)</td>
</tr>
</tbody>
</table>
SUMMARY
What are we observing?

- More children with CKD each year
- Earlier diagnosis of CKD and urological disease.
- Fewer children with GN in ESRD at presentation
- More children with PUV / dysplasia
  - diagnosed earlier (UTI investigation policy, antenatal US)
  - Still early CKD
  - how many have been saved by early detection
- Antenatal screening – earlier diagnosis – not foolproof
- No other causes of obstruction – Antenatal US / UTI policy?
- No meningomyelocele – neonatal referral
What are we observing?

- No CKD from late treatment of glomerular disease MPGN
- Less HIV – better treatment protocols
- Dengue as a cause of CKD and death
  - Nephropathy / ATN
What are we observing?

- Virtually all Jamaican children receive dialysis
  - Thailand – none
  - Parts of Nigeria – none
Preventive measures

- Antenatal screening
- No change in investigation policy for UTI yet
- Study needed to guide practice
  - Objective data on number of cases of obstructive uropathy diagnosed on MCUG and US done for UTI
- Continue policies already implemented
OUR CHALLENGES
Challenges - background

University Hospital of the West Indies

- Fee paying hospital
- Not Government run
- Chronic paediatric dialysis program

- No user fees
- Government run
- No chronic paediatric dialysis program
Challenges

- Children kept alive by donations from charitable organizations e.g.
- Jamaica Kidney Kids Foundation
- Issa Trust Foundation
- Bridge of Life - DaVita Medical Missions
Challenges

Transplantation:

- Possible at Government funded hospitals (Adults)
- Costs prohibitive at UHWI
- Possible transplantation program at BCH in 2014
- But the dialysis unit and paediatric CKD team are at UHWI
- Shortage of paediatric nephrologists
Solutions

• Training of Paediatric Nephrologists
  Jamaica Kidney Kids Foundation / Montreal Children’s collaboration / Hospital for Sick Kids Toronto – collaboration
  • For BCH
  • For Western Jamaica – Cornwall Regional
  • Central Jamaica – Mandeville
  • UHWI
• Funding now totally donations and concessions
• Expensive
• Local training in the future
Solutions

There must be dialogue between the Government

And the paediatric nephrologists

Caring for the children

To formulate a National Policy
The children are our future
They are our responsibility!

Thanks for your attention!