Chronic Kidney Disease of Uncertain Aetiology - Clinical Features

Dr. Tilak Abeysekera
Consultant Nephrologist
Geographical Distribution
Dry Zone
Factors Considered for the Diagnosis of CKDu

- >5 years stay in the endemic region
- Dipstick proteinuria + and above
- No known identifiable cause for CKD
- No H/O of diabetes / long standing uncontrolled hypertension
Prevalence of Non Communicable Diseases

- Community-based
- Apparently healthy
- Sinhala
- Males
- Age 20-70 yrs
- Living in endemic area for at least 10 yrs

43% of the apparently healthy population

Blood Pressure
- n=504
  - >140/90 mmHg
    - n=154

Dipstick test for proteinuria and glycosuria
- n=350
  - Proteinuria and/or glycosuria
    - n=24

HbA1c
- n=326
  - HbA1c >6.5%
    - n=17

SCr >1.2 mg/dl and/or A1M >15.5 mg/L
- n=309
  - SCr and A1M
    - n=23

Controls
- n=286
DIFFERENTIAL DIAGNOSIS IN RENAL HISTOLOGY
TEACHING HOSPITAL ANURADHAPURA
FROM JULY 2006 TO 2008 Jan (n=268)
Differential Diagnosis of Renal Biopsy in Giradurukotte 2006 (n=41)

- Chronic pyelonephritis: 1 case (3%)
- SLE: 2 cases (5%)
- Hypertensive vascular: 2 cases (5%)
- Minimal change: 1 case (3%)
- MPGN: 3 cases (7%)
- IgA: 5 cases (12%)
- FSGS: 8 cases (20%)
- Chronic interstitial nephritis: 16 cases (40%)
- Normal: 2 cases (5%)
Occupation – Farmers
Characteristics of CKDu

- Majority were males
- Between 40-70yrs
- Insidious onset
- Presented during late stages
Clinical Features

• Insidious onset

• Slowly progressive

• Asymptomatic until advanced stage

• Some present with backache, joint pains, abdominal (flank) pain, febrile feeling towards the end of the day, dysuria and feeling unwell.
Family History

14% have similarly affected first-degree relatives.
Evidence of tubular damage in the very early stage of chronic kidney disease of uncertain etiology in the North Central Province of Sri Lanka: a cross-sectional study
SLC13A3- Sodium dicarboxylate cotransporter 3

• **Location**: basolateral membrane of human renal proximal tubules, liver, brain, and placenta

• **Diabetic nephropathy**: one of the most likely genes to affect the renal function

• **Hypertension**: suggestive association with blood pressure

• **Renal fibrosis**: potentially useful molecular predictor of CKD progression
• ** KCNA10**- human voltage-gated K channel located in the heart, renal vasculature, and proximal tubular cells. Thus, it may have a role in regulation of blood pressure

• **LAMB2**- known to be associated with congenital nephrotic and nephritic syndromes

• **SLC39A8**- known to be involved in damage to the kidney tissue
Oedema

Oedema occurs at late stage of the disease
Hypertension

In early stages of disease hypertension is usually mild and labile. In advanced disease hypertension is frequent.
Anaemia

• Not different from anaemia of CKD
• Usually normocytic normochromic
• Mild in early disease
• Severity increases with progression of disease
Characteristics of CKDu ctd.

• No uroepithelial tumours as seen in Balkan Nephropathy

• No specific features seen in CVS, RS, CNS, GIT and skin to suggest an aetiology
Urine Analysis

• Minor and intermittent proteinuria

• Urinary sediment is normal
kD  Marker  1  2  3  4  5  6

250  150  100  75  50  37  25  15  10

95
67 albumin
53.7
45
32 α₁ microglobulin
24 Retinol binding Protein?
16.6 Protein 1?
Ultrasonography

- Smooth outline
- Bilateral small kidneys
- Loss of corticomedullary demarcation
- Echogenic
Pathological Changes

- Interstitial inflammation with tubulitis
- Periglomerular fibrosis
- Perivascular fibrosis
- Focal interstitial hypocellular fibrosis
- Tubular atrophy
- Glomerular sclerosis
Interstitial Inflammation with Tubulitis, Tubular Atrophy, Interstitial Fibrosis
Periglomerular Fibrosis
Focus of Tubular Atrophy
Sclerosed Glomeruli and Fibrosis
Dental Fluorosis
Skeletal Fluorosis
> 100,000 people are currently affected

Number of deaths secondary to CKD in the affected region currently approximates 5000/year
How We Screened

- **Standard Dipstick**
  - _ve
  - +ve

- **Recheck at periodic health evaluation**
- **Diagnostic Evaluation**
- **Treatment**
- **Consultation**

**Tests Performed**
- Urine Full Report
- Serum Creatinin
- Creatinin Clearence
- Serum Protein, Calcium, Phosphate
- Full Blood Count
- Ultra Sound Scan K.U.B
Future

• Microalbuminuria
• Alpha 1 Microglobulin
• Beta 2 Microglobulin
• Serum Creatinine/ Cystatin C
• A combination of tests?
Prevention of Further Progression

• Control of hypertension
• Restriction of dietary proteins
• Attention on drinking water – Fluoride filters
• Abstinence from smoking & alcohol
• Not to use drugs that can harm kidneys
• Early referral to nephrologist
• Regular medical attention
• Reduction of proteinuria
Management of ESRD

- Dialysis
- Kidney transplantation
Thank You