When is it Appropriate to Refer Patients with Chronic Kidney Disease for Evaluation?

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Early versus late referral

- Reduced mortality,
  - Odds ratio: 0.51 at 3 months and 0.45 at 5 years ($p<0.00001$)
- Initial hospitalisations
  - 8.8 days shorter ($p<0.00001$)
- Better uptake of home based therapies
- Earlier placed of AV fistulas

Winkelmeyer WA AJKD 2001

Factors Associated with late referral

- Older Age
- Comorbidities
- Socioeconomic Status
- Specialty / primary care versus general internist looking after patient
- Race
- Male gender
- Delayed recognition

Winkelmeyer WA AJKD 2001

Delayed recognition: The Patient with Low GFR

- Patients with kidney disease may have a variety of different clinical presentations.
- Symptoms signs directly referable to the kidney
- Extrarenal symptoms
- Many asymptomatic (Low GFR / eGFR)

Difficulty estimating renal function

- Serum creatinine 120umol/L
- eGFR 30mls/min
Measuring / Estimating GFR

- Inulin clearance, iothalamate clearance,
- Measured creatinine clearance
- Cockroft-Gault
- MDRD equation
- CKD-EPI (gender, age, race, creatinine)

Stages of CKD

- Stage I: Kidney Damage, normal kidney function
- Stage II: Kidney Damage, mild ↓ kidney function
- Stage III: Kidney Damage, moderate ↓ kidney function
- Stage IV: Kidney Damage, severe ↓ kidney function
- Stage V: Kidney Failure, death

Complications of CKD

- Kidney Failure
- Dialysis therapies
- Kidney transplantation

Case 1 – CKD

- M.T. 70 yo lady
- CVA December 2010
- Total hip replacement - December 2011 (NSAID use prior to this)
- Hypertension

Referred with a creatinine of 165umol/L
Case 2-
- J.N. 70 yo man
  - Type 2 DM x 25 years
  - IHD, PVD (c. BKA)
  - Referred with a creatinine 230, proteinuria

Case 3-
- CC 88 yo female
  - Progressively rising creatinine over 3-4 months (eGFR 29)
  - High potassium
  - Symptoms consistent with heart failure, Orthopnea, PND, Ankle oedema

Case 4-
- MG 80 yo female
  - Referred with reduced eGFR 44mls/min/1.73m2
  - Creatinine 107
  - Urine PCR 6
  - Cerebrovascular disease
  - Hypertension
  - Ischaemic Heart

Mortality and eGFR

Mortality and Albuminuria
Case 1:

- M.T.

**Significant NSAID use**: twice daily for a year
- BP 158/74; Urinalysis 3+ protein
- Repeat Creat: 132mmol/L (18-28)
- Urine P-E-CR: 228mg/mmol

**Dx:**
- NSAID nephropathy (2^nd 1925)
  + Ischaemic Nephropathy - intermediate to high risk for progression

**Plan**
- 24 hour BPM: Add ACEI / ARB
  - Avoid Nephrotoxins, renal US pending
Case 2 (2012)

- JN
  - Diabetic retinopathy
  - On Metformin, Glibenclamide – frequent hypos
  - Using occasional Difene
  - BP 170/95, Urinalysis 3+ protein
  - Creatinine 267umol/L (eGFR 21mls/min)
  - SPEP, C3, C4 – Normal, Urine PCR 623mg/mmol

Case 2

- Dx: Diabetic Nephropathy
  - Nephrotic Range Proteinuria
  - Stage 4 CKD
  - Poorly Controlled HTN

- Plan:
  - Stop Metformin / Daonil → Gliclazide
  - Add Frusemide, 24 hour BPM
  - Low clearance clinic
  - Vaccination – Hep B
  - Discuss renal replacement options

- Follow-up: Patient commenced PD July 2015

Case 3

- CC 88 yo female

- Rx:
  - Aldactone 25 mg OD, Bumetanide 0.5 mg OD, Ramipril 2.5 mg OD, Digoxin 62.5 mg OD, 2 other antihypertensives
  - PND, Orthopnea, Dyspnoea on minimal exertion, Ankle oedema

- Labs: Creatinine 152, eGFR 29, K 5.8, Fe 6, TSAT 10%, NT ProBNP 1656, Hb 11.6; Urine PCR - 10

- Chest X-ray: Pulm congestion

Case 3

- Dx:
  - Cardiorenal Syndrome (type II):
    - Increased Volume Status
    - Hyperkalemia
    - Iron deficiency

- Rx:
  - Increase Loop diuretics; stop spironolactone; dietary modifications
  - IV iron
  - Close monitoring; Advance care planning

Case 4

- MG 80 yo female

- Known Arteriopath

- Asymptomatic, Euvolaemic

- Labs: Creatinine 107, eGFR 44, Urine PCR - 16

- Low risk for progression

Summary

- Estimated GFR + e-alerts have increased awareness and referral for CKD
- Estimated GFR alone may be over sensitive
- All Stage IV / V CKD should be referred to a nephrologist
- Stage III CKD which is progressive or in presence of proteinuria / haematuria should be referred
- Progressive hereditary kidney disease should be referred
Thank you for your attention