LAKIN Academy 2014

# AKI cases for acute physicians


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**Case 1**

A 54 year old woman, previously very fit and well, was transferred to the renal unit from A+E with SCr 807 µmol/L.

She had a 4 week history of malaise, nausea and then left loin pain which started 2 weeks prior to admission.

The GP treated her for presumed UTI with trimethoprim at that stage (2 weeks pre-admission). Symptoms persisted and after 4 days vomiting she presented to A+E.

On arrival at renal unit:
Malaise and continued left loin pain. Tender to palpation left loin.
Looked dehydrated. BP 121/68 T 36.9
Urinalysis revealed blood+++ prot+ nitrites+ leuc+
Creat 807 µmol/L, urea 22.5 mmol/L, K 5.9 mmol/L, Bicarb 16 mmol/L
Hb 10.5 WCC 8.6 Plts 323
CRP 178

U/S Right kidney slightly echogenic, otherwise unremarkable.

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## Q1. What are the possible causes of the AKI?

**(Is trimethoprim 'nephrotoxic'?)**

## Q2. What further investigations would you arrange?

## Q3. What would be your initial management?

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**She was treated with IV fluids and tazocin. Urine output satisfactory.**
**The following day: creat 680, urea 20.4, K 5.9. She felt a bit better. Same treatment continued.**
**One day later creat 736, urea 20.2, K 6.0**

## Q4. Would you continue with same management?

## Q5. What is your diagnosis now? Which investigations would you request (if you hadn't already)?

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ANCA +ve (MPO >100 U/mL)
GBM +ve

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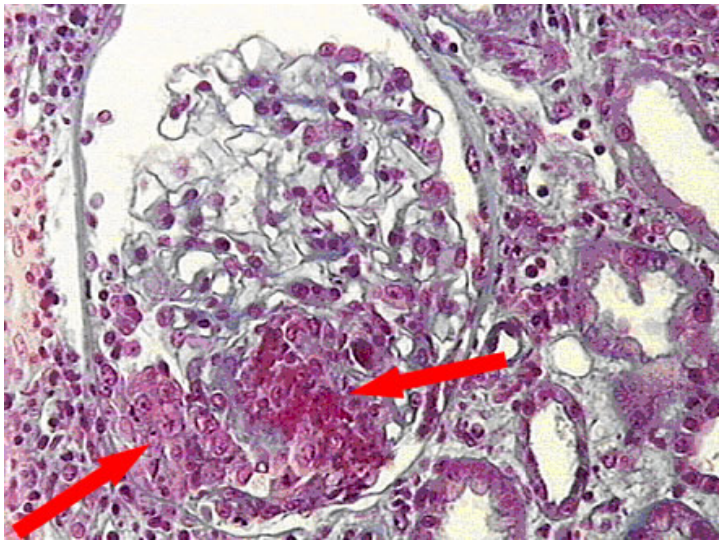
Right sided renal biopsy:



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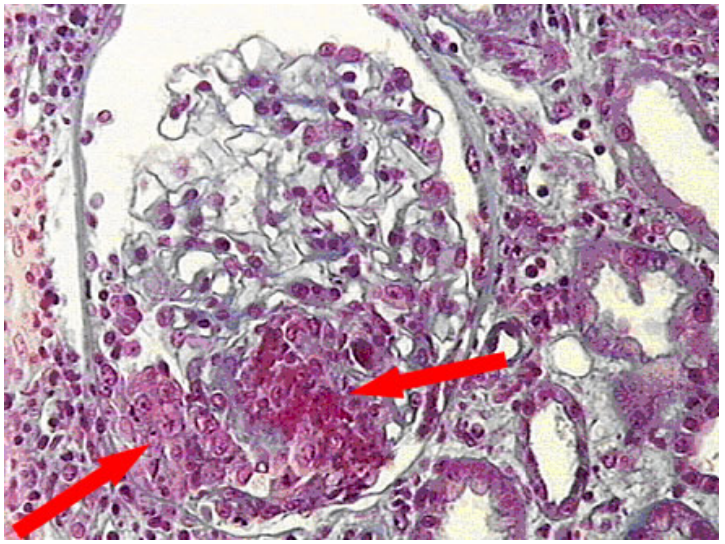

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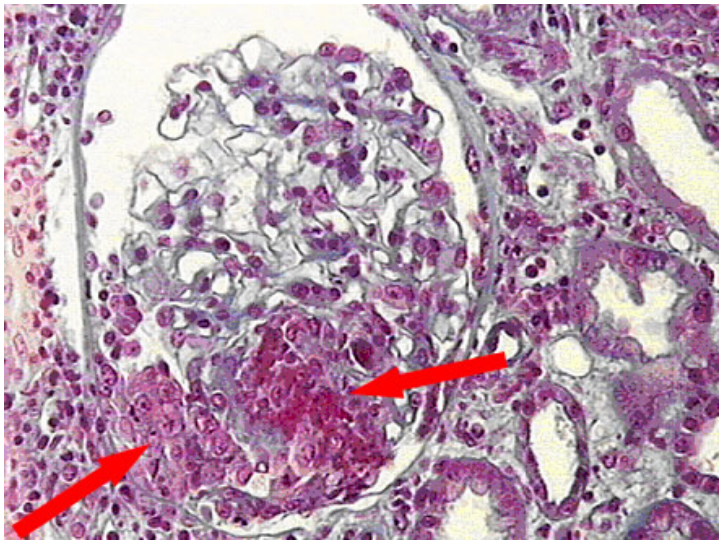

Biopsy complicated by perinephric bleed → CT Scan

Right sided haematoma
+
Left renal vein thrombosis

## Case 1 management?

- Plasma exchange + cyclophosphamide

- Anticoagulation – approx 6/12 then re-imaging of renal vein

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**Case 1 outcome:**

- GFR approx 40 mL/min after 2 years
- Resolution of thrombus; perfusion of both kidneys

**Case 1 learning points:**

- Was the sepsis severe enough to account for severe stage 3 AKI?
- Why did renal function not continue to improve with IV fluid + Abs?
- SCr is not an accurate measure of renal function and can be affected by dilution

**Case 2**

A 69 year old man is referred by the cardiologists with cardiac failure attributed to chemotherapy to treat CLL.

He has increasing oedema and ascites despite increasing doses of diuretics:

IV furosemide 500mg (infusion) per day; metolozone 2.5mg alt days; spironolactone 25mg od; losartan 100mg od

Baseline GFR (3 months previously) approx 45-50 mL/min (SCr approx 140 umol/L).

Progressive worsening of biochemistry over 2/52:

K 6.0mmol/L, Urea 58 mmol/L, SCr 310 umol/L (GFR 19 mL/min), alb 29g/L, Hb 108g/L.

Recent echo: poor RV function, moderately impaired LV function.

Coronary angiogram – no significant CA disease.

**O/E**

BP 118/58, gross leg + abdominal wall oedema; ascites. chest clear.

## Q1. What are the possible causes of the AKI?

## Q2. Would you make any changes to his medical management? (what is 'diuretic resistance'?)

**Case 2**

Losartan discontinued

Metolozone increased to 2.5mg od

Fluid restriction of 750 mL/day

Dietary salt restriction.

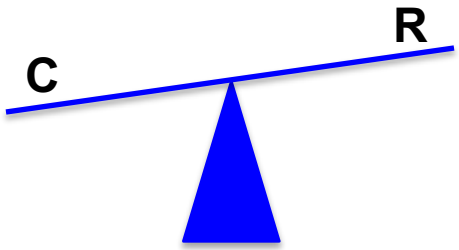
2 days later: K 5.6mmol/L, Urea 64 mmol/L, SCr 330 umol/L

## Q3. What are the management options now?

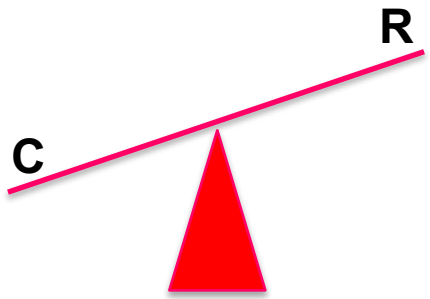
## Q4. Would your management be different if the patient had biventricular failure secondary to triple vessel coronary artery disease?

Case 2

## Cardiorenal syndrome




morbidity




mortality

Case 2

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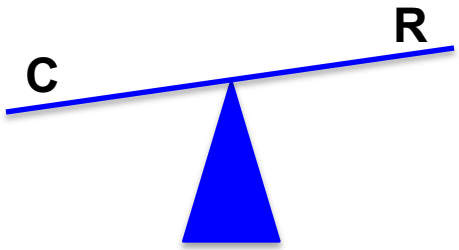


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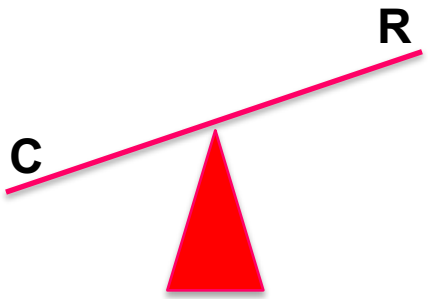


mortality

## (Renal) Management

- Medical – not just pharmacological
- ?? Ultrafiltration/Renal Replacement Therapy
- Palliative

## NICE CG 187 Acute Heart Failure (Oct 2014)
## (not AKI or CKD)

**Do not routinely offer ultrafiltration to people with acute heart failure.**

**Consider ultrafiltration for people with confirmed diuretic resistance.**

**Diuretic resistance is defined as dose escalation beyond a person's previously recognised dose ceiling or a dose approaching the maximum recommended daily dose without incremental improvement in diuresis.**

***From 'diuretics and ultrafiltration in acute decompensated heart failure' (Felker and Mentz 2012).***

**Q5**
**What factors would you take into account when considering UF/RRT?**

**What modalities are available?**

**What are the potential disadvantages?**

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- You are likely to have to accept a compromise between fluid status and degree of ‘uraemia’
- Prognosis is likely to be determined by cardiac status and potential for improvement.
- UF/RRT is probably only appropriate if there is a realistic chance of improvement in cardiac status
- Palliative care is often forgotten or delayed

**Case 3**

A 76 year old man with an 8 year history of prostate cancer, treated medically, is referred to EAU by his GP after presenting with malaise, nausea, anorexia and mild weight loss. GP had checked some blood tests: SCr 452 umol/L, K 5.4 mmol/L, Hb 98 g/L.

Baseline SCr 4 months previously was 142 umol/L.

PMH included hypertension treated with amlodipine but nothing else of note.

## Q1 What else would you like to know from the history?

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## Q1 What else would you like to know from the history?

Longstanding nocturia x2-3; no obvious reduction in U/O
No new medicines

O/E
Thin, BP 164/78, slightly dry. Bladder not palpable.
Urinalysis: trace blood, protein +

## Q2 What initial investigations would you arrange?

**Case 3**

U/S KUB
Right kidney 9.5 cm, slight thinning of cortex
Left kidney 10.5 cm, no obvious abnormality
No hydronephrosis

**Q3 What is your differential diagnosis?**

**Q4 What further investigations and management would you arrange?**

Case 3

# Differential diagnosis?

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## Differential diagnosis?

# 1. Obstruction

Case 3

## Differential diagnosis?

1. Obstruction

2. Obstruction

Case 3

**Differential diagnosis?**

1. **Obstruction**
2. **Obstruction**
3. **Something else**

Case 3

# Non dilated obstructive uropathy

- ? 5-10% of obstructive uropathy
- Hypovolaemia
- Early obstruction
- Reduced compliance of perirenal tissue
    - retroperitoneal fibrosis
        - cancer: prostate, bladder, colon, cervical
        - lymphoma

Case 3

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- High index of suspicion
- No hydronephrosis does not mean no obstruction
- Consider CT, urology ref (retrograde studies)
- Early decompression where possible