Janet

Project Inspire 13 Dec

Nigel Fong

You are the MO in a busy polyclinic. Your clinic assistant, Janet, a 30-year-old Chinese lady, consults you complaining of ‘blood in urine’. A urine dipstick shows: blood 2+, proteins -, leukocytes -, nitrites -, leukocyte esterase -, glucose -.

Q1. Your next step includes all of the following EXCEPT

a) Take a sexual history

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c) Repeat urine dipstick after a course of ciprofloxacin.

d) Urine phase contrast microscopy.

e) Fasting blood glucose

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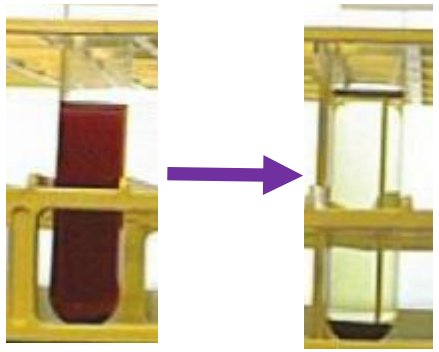
ISOLATED HAEMATURIA

1 **Confirm isolated haematuria**

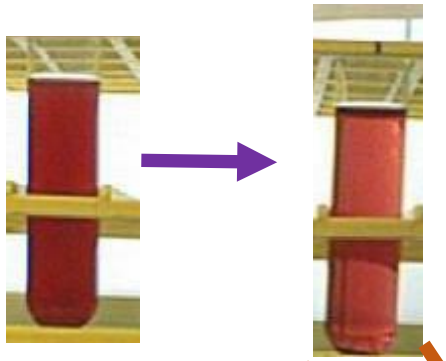
- UTI
- Confounders

- Menses
- Trauma (sport, sex)
- 'Tea coloured urine'
- Centrifuge urine

True hematuria

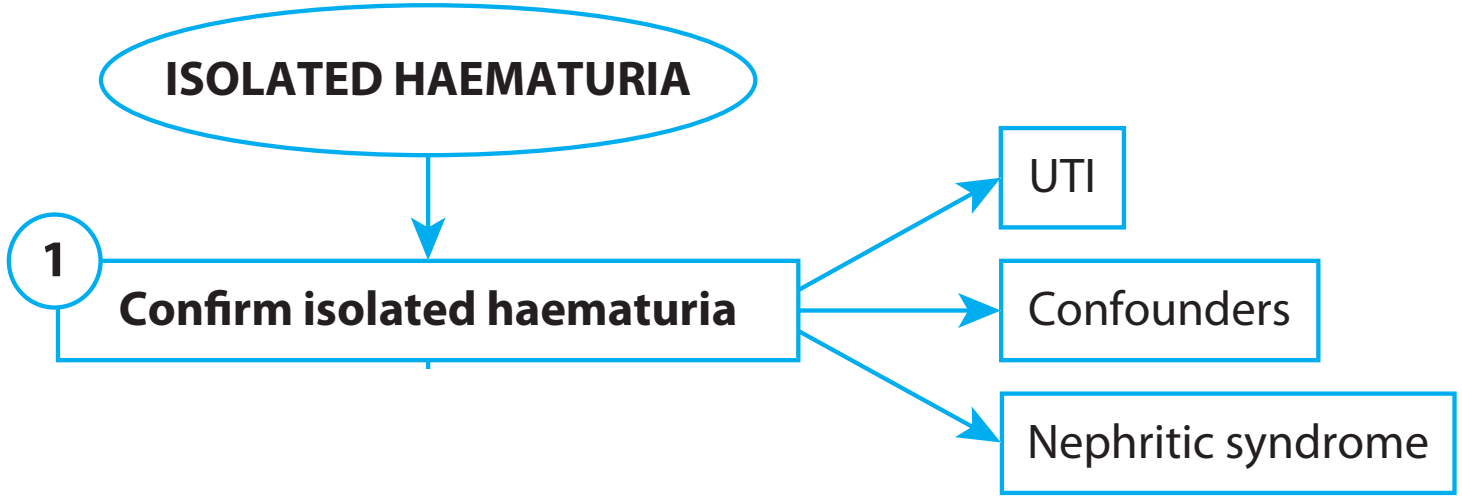


Not hematuria



Dipstick Hb +
Hemoglobinuria
Myoglobinuria

Dipstick Hb –
Porphyria
Red beets
Drugs (e.g. rifampicin)


ISOLATED HAEMATURIA
1
Confirm isolated haematuria
UTI
Confounders
Nephritic syndrome

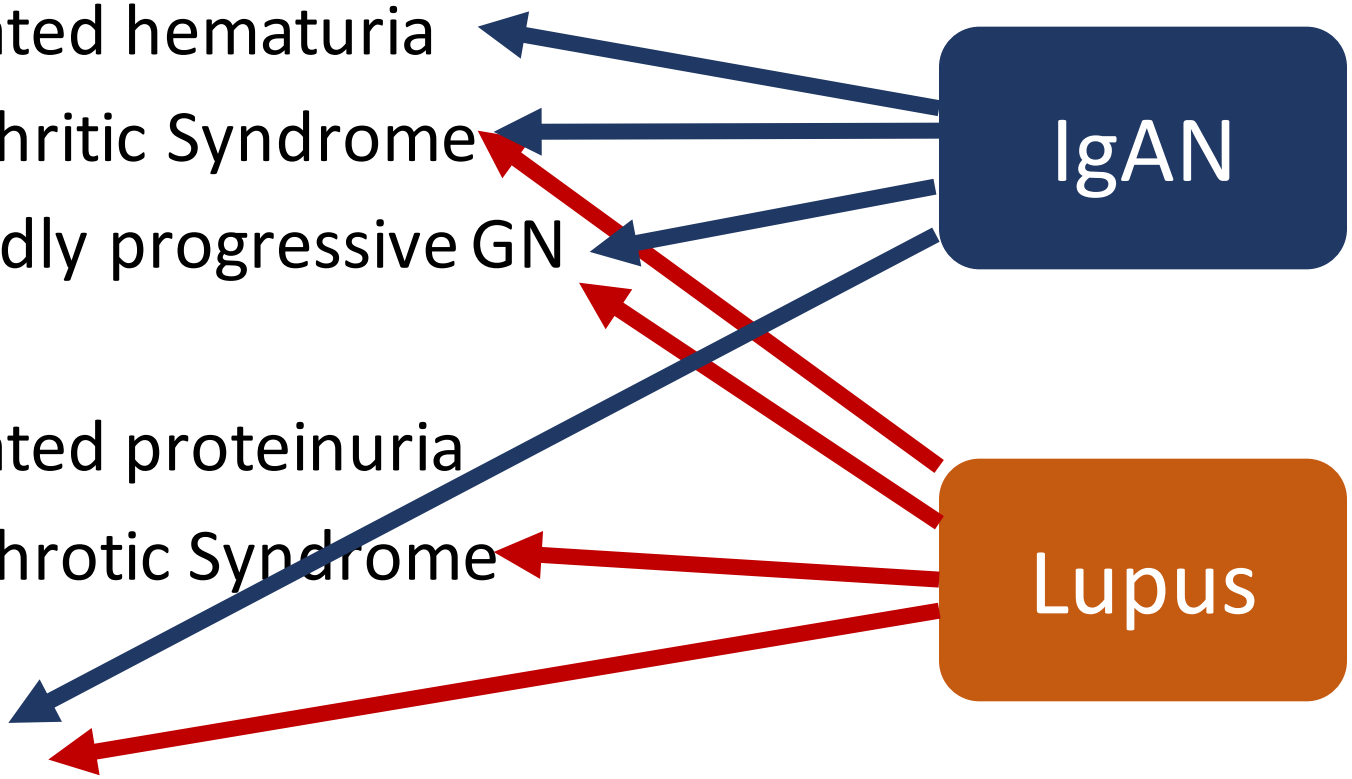
The Clinical Syndromes

1. Isolated hematuria
2. Nephritic Syndrome - hematuria + ↑ BP, ↑ Cr, +/- proteinuria
3. Rapidly progressive GN - nephritic + rapid course of AKI.

4. Isolated proteinuria
5. Nephrotic Syndrome - nephrotic range proteinuria (>3g/day)
   + ↓ albumin, edema, ↑ lipids.
6. CKD

Confusion (1)

1. Isolated hematuria
2. Nephritic Syndrome
3. Rapidly progressive GN
4. Isolated proteinuria
5. Nephrotic Syndrome
6. CKD



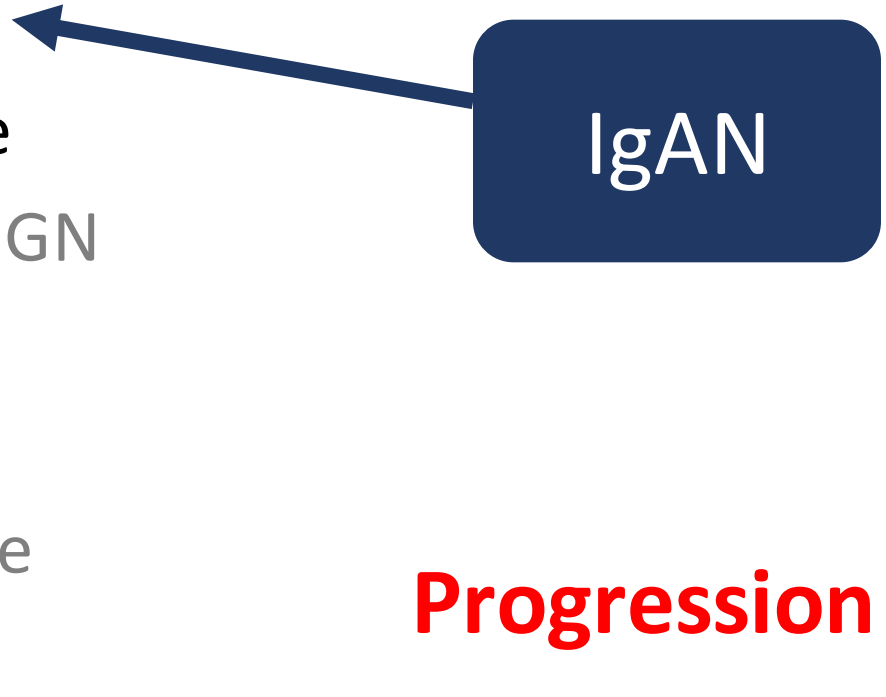
Same disease, different presentation

+

Overlaps

Confusion (2)

1. Isolated hematuria
2. Nephritic Syndrome
3. Rapidly progressive GN
4. Isolated proteinuria
5. Nephrotic Syndrome
6. CKD



Progression

The Clinical Syndromes

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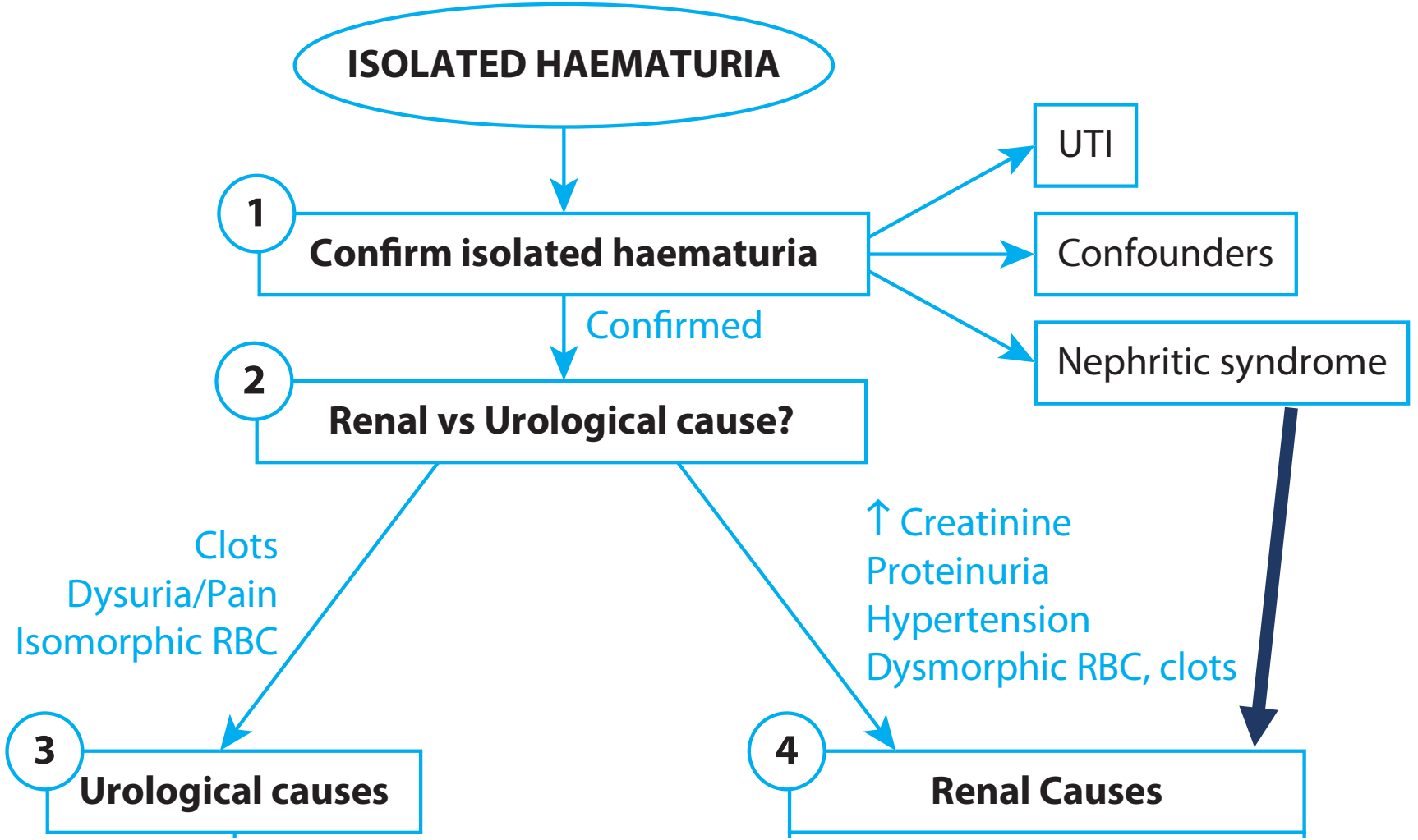
ISOLATED HAEMATURIA
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Confirm isolated haematuria
UTI
Confounders
Nephritic syndrome
Confirmed
2
Renal vs Urological cause?
Clots
Dysuria/Pain
Isomorphic RBC
↑ Creatinine
Proteinuria
Hypertension
Dysmorphic RBC, clots
3
Urological causes
4
Renal Causes

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a) Take a sexual history

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e) Fasting blood glucose

She gives a further history of intermittent episodes of haematuria in the last 1-2 years. She is otherwise asymptomatic, with no dysuria, loin pain, intercurrent upper respiratory tract symptoms, joint pains, or rash. She has no past medical history and takes no drugs. Her vitals are, BP 148/94 mmHg, HR 78, SpO2 98% on room air, and T 37.0C. Physical examination is unremarkable.

Blood tests reveal a creatinine of 103 umol/L, with normal full blood count, electrolytes, liver function, and clotting profile. Urine investigations show 35 red cells (75% dysmorphic) and 3 white cells per high powered field, with no casts, and a urine protein creatinine ratio of 0.2 g/mmol.

Q2. Which of the following is the MOST likely cause of her haematuria?

- Urological malignancy
- Urolithiasis
- IgA nephropathy
- Thin basement membrane disease
- Systemic vasculitis.

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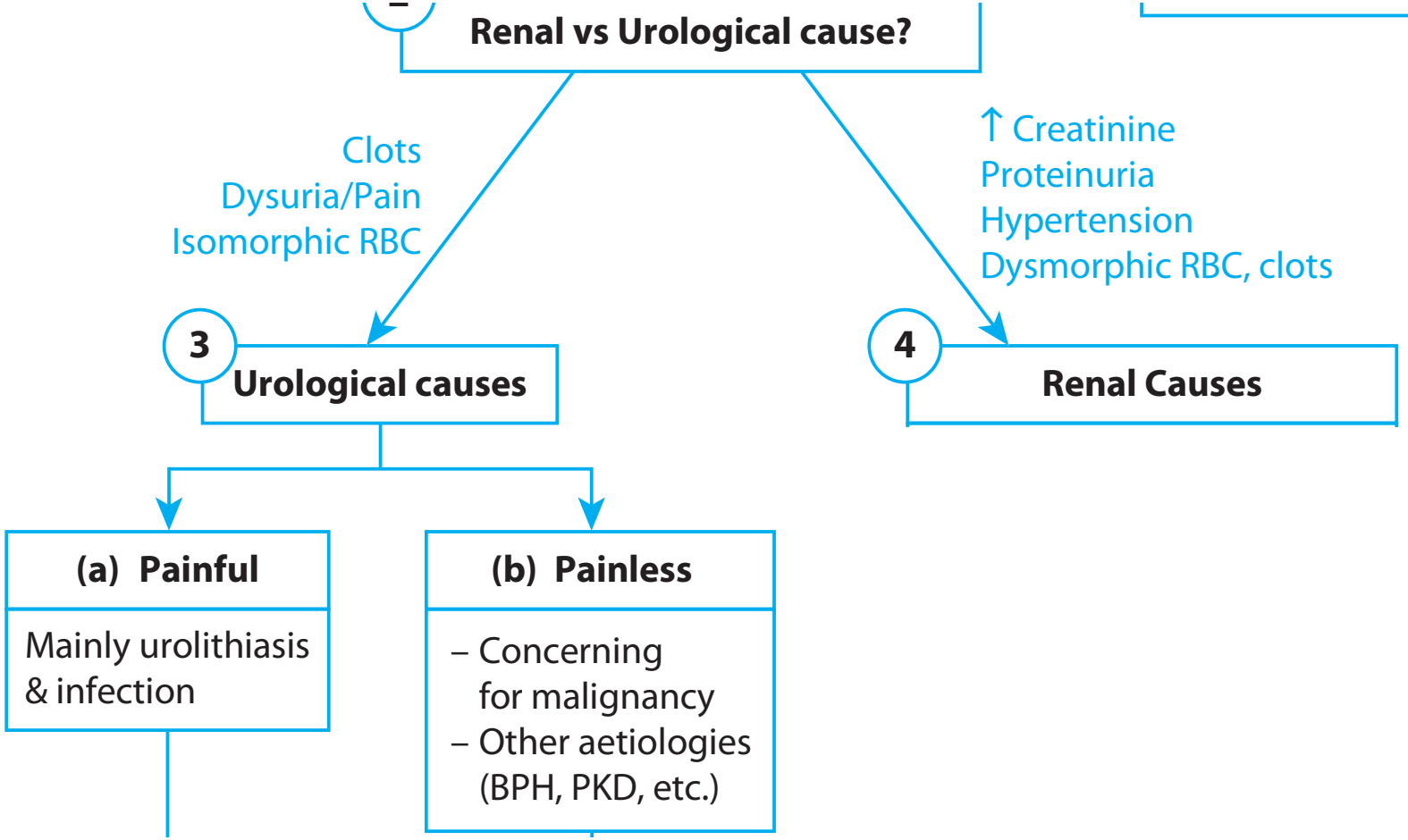
	24h urine*	**PCR** (mg/mmol^)
Microalbuminuria	30-300 mg/day	>2.5 (male), >3.5 (female)
Proteinuria	>0.3 g/day	>30
Nephrotic range	>3 g/day	>300



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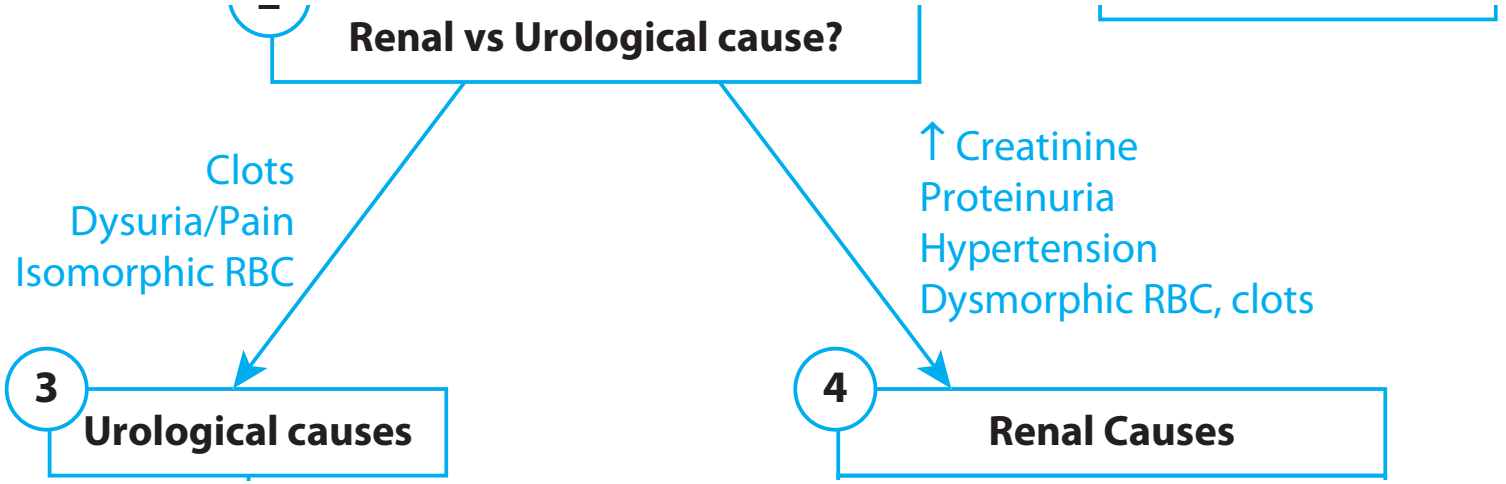

Nephritic Syndrome

History of infection

- IgA nephropathy / Henoch-Schonlein Purpura
- Infection-Associated GN (post-Strep GN)
- Subacute bacterial endocarditis

Systemic

- SLE
- ANCA vasculitis
- Goodpasture's (anti-GBM)
- Alport's

Isolated

- IgA
- Others

Thin basement membrane : usually isolated hematuria, benign course.

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Q3. Your next course of action will be:

- Order X-ray KUB; review in 1 week.
- Send Hepatitis B, C, HIV, anti-nuclear antibody; review in 1 week.
- Routine referral to nephrology.
- Urgent / fast-track referral to nephrology.
- Admit via A&E.

Janet is seen in the Renal SOC 2 weeks later.
A repeat creatinine is 168 umol/L, and her BP is now 156/90 mmHg.

Q4. Regarding further workup, which of the following statements is INCORRECT?

- Useful serologic studies include ANA, dsDNA, ENA profile, and complement levels.
- Dyspnoea or haemoptysis increases the suspicion of anti-GBM disease or ANCA vasculitis.
- CT urogram is not of diagnostic utility in her case.
- Renal biopsy can be deferred as it does not change management.
- She should be counselled on fluid restriction and low-potassium diet.

Nephritic Syndrome

History of infection

- IgA nephropathy / Henoch-Schonlein Purpura
  - ASOT, ↓ C3, normal C4
- Infection-Associated GN (post-Strep GN)
  - No serology available
- Subacute bacterial endocarditis
  - Blood c/s, 2DE

Systemic

- SLE
  - ANA, dsDNA, ENA, ↓ C3, ↓ C4
- ANCA vasculitis
  - ANCA +++
- Goodpasture's (anti-GBM)
  - Anti-GBM
- Alport's

Isolated

- IgA
- Others

Clinical Picture **

Other tests

- Hep B, C, HIV
- Renal ultrasound
- **Biopsy ****

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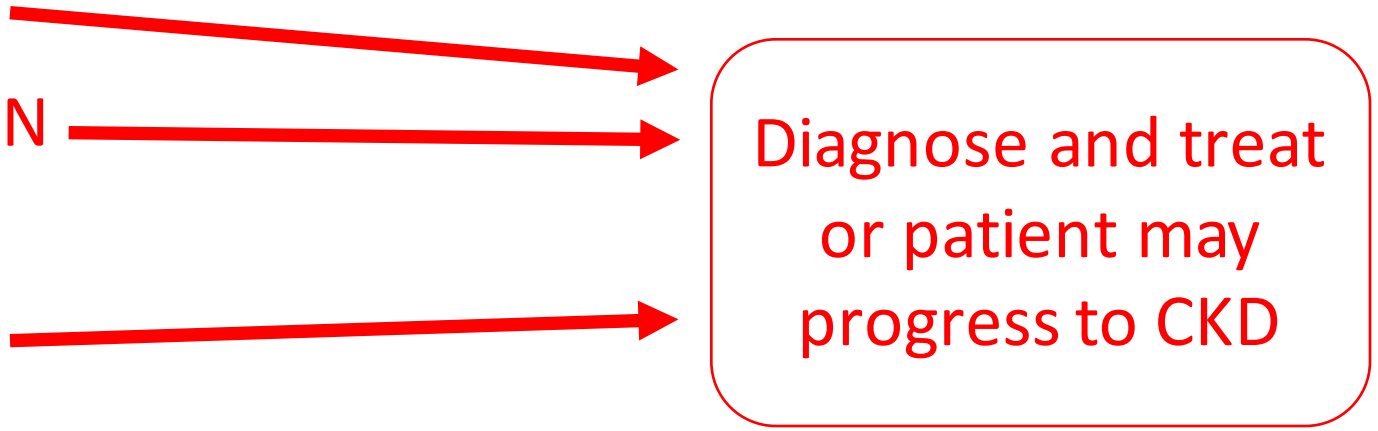
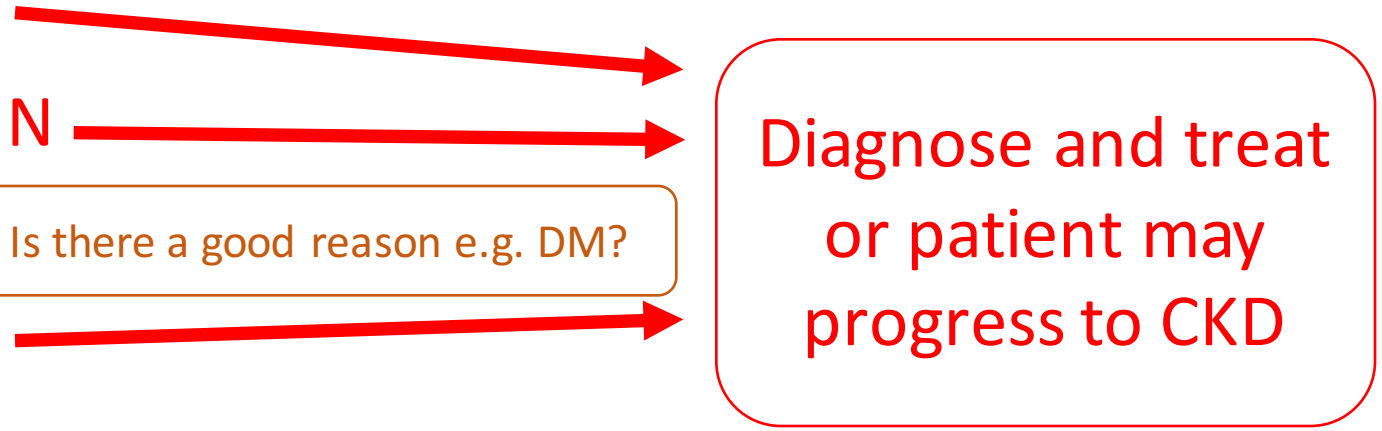
When does renal biopsy change management?

1. Isolated hematuria
2. Nephritic Syndrome
3. Rapidly progressive GN
4. Isolated proteinuria
5. Nephrotic Syndrome
6. CKD



When does renal biopsy change management?

1. Isolated hematuria — Can wait and watch?
2. Nephritic Syndrome
3. Rapidly progressive GN
4. Isolated proteinuria — Is there a good reason e.g. DM?
5. Nephrotic Syndrome
6. CKD — May be too late!



Renal biopsy reveals mesangial proliferative changes with ‘full house’ complement staining (IgG, IgM, IgA, C3 and C1q), consistent with lupus nephritis. ANA, dsDNA is positive.

Q5. Which of the following treatments is the most appropriate?

- IV Cyclophosphamide + ACE inhibitors
- Hydroxychloroquine + Azathioprine + ACE inhibitors
- ACE inhibitors alone.
- Counsel for dialysis initiation.

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For discussion: What are the other tenets of management?

- Treat underlying disease
  - Immunosuppression
- Treat complications
  - Complications of CKD
  - Check for + treat other organ involvement
- Prevent further renal injury
  - Optimise BP and glucose
  - ACE inhibition for proteinuria
  - Avoidance of nephrotoxins
- Supportive management
  - Patient education
  - Vaccinations
  - Pregnancy?

Practical approach to CKD

1. **How bad is the CKD?**
2. **Why does this patient have CKD?**
3. **How can I retard disease progression?**
4. **What complications do I have to manage?**
   - A: Anaemia
   - B: Blood pressure
   - C: Calcium / Phosphate
   - D: Vitamin D / PTH / Bone disease
   - E: Electrolytes - Hyperkalaemia
     - Acidosis
   - F: Fluid overload

Anaemia in CKD

- Anemia in CKD should be investigated before concluding that it is due to renal disease alone.
- Target Hb: 10-11.5 (avoid <9 or >13)

Management

1. Ensure adequate iron stores – PO or IV
   (Aim ferritin >500, transferrin saturation >30%)
2. Prescribe erythropoietin stimulating agent
   Beware risks: HTN, risk of thrombolic event

Blood pressure in CKD

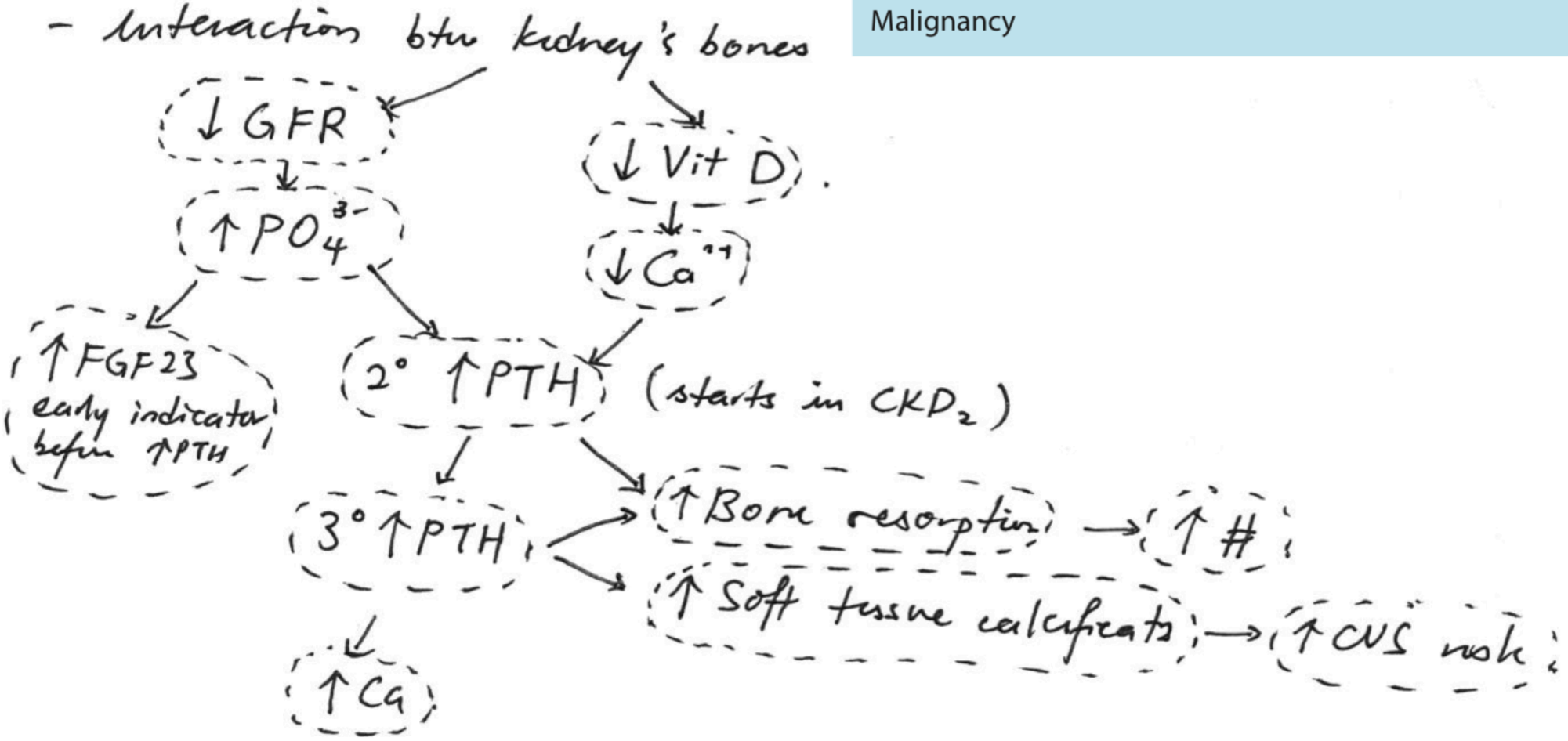
- Most guidelines: aim <140/90
  (KDIGO guideline: <130/80 for proteinuric CKD)

Management

1. Use an ACE/ARB
2. Adjust dry weight
3. Add antihypertensives as needed to meet target

Ca/PO4

Aetiology	Ca^{2+}	PO_4^{3-}	PTH
Primary hyperparathyroidism (e.g., parathyroid adenoma)	↑	↓	↑
Secondary hyperparathyroidism	↓	↑	↑
Tertiary hyperparathyroidism	↑	↑	↑
Malignancy	↑	Variable	↓



Ca/PO4 / Bone disease in CKD

- Importance: phosphate is a modifiable risk factor in vasculopathy and cardiovascular death.

Management: stepwise

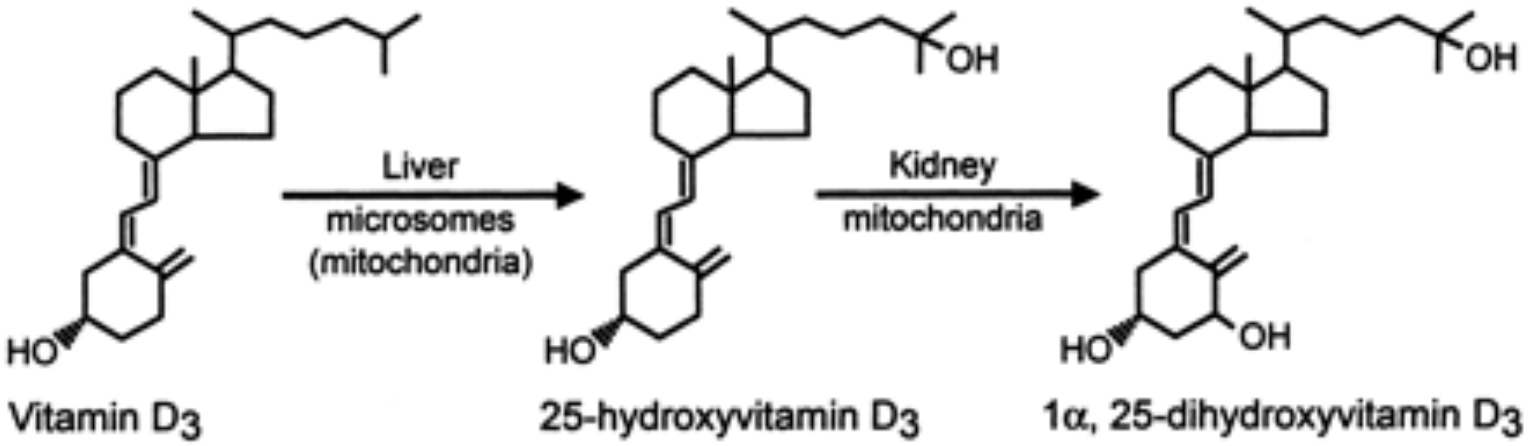
1. Bring down the phosphate
   - Diet: phosphate restriction
   - Phosphate binder
     > Calcium-based initially
     > Non-calcium based if hypercalcemia

2. When phosphate controlled, supplement vitamin D

Ca/PO4 / Bone disease in CKD

Management: stepwise

1. Bring down the phosphate
2. When phosphate controlled, supplement vitamin D
   - Need an activated form of vitamin D.
   - Note the difference between
     > Ergocalciferol / cholecalciferol
     > One alpha calcidol --- the one for CKD
     > Calcitriol



Vitamin D_3 | 25-hydroxyvitamin D_3 | 1α, 25-dihydroxyvitamin D_3

Ca/PO4 / Bone disease in CKD

Management: stepwise

1. Bring down the phosphate
2. When phosphate controlled, supplement vitamin D
3. If becomes hypercalcaemic, patient may have developed tertiary hyperparathyroidism. Options:
   - Cinacalcet
   - Parathyroidectomy.

Electrolytes & Fluid in CKD

Hyperkalaemia

- Diet
- Resonium

Acidosis:

- Usually NAGMA initially, then NAGMA + HAGMA
- Associated with mortality
- Give sodium bicarbonate tab to keep bicarb in normal range

Fluid status:

- Fluid restrict
- Furosemide

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     - Acidosis
   - F: Fluid overload
5. **Is it time to start renal replacement therapy?**
6. **If on RRT, what are the issues with RRT?**
7. **What are the comorbids?**

Long Case Scenarios

Diagnostic

1. Hematuria
2. Bubbly urine
3. Leg swelling

Management / Complications

1. ESRF patient presents with SOB…
2. Patient with ESRF from DM nephropathy presents with giddiness…
3. T2DM patient has rapidly worsening renal function…