Haematuria and Bladder Cancer

Dr Pardeep Kumar
Consultant Urological Surgeon
The Royal Marsden
Haematuria
Haematuria

Macroscopic vs Microscopic

Painful vs Painless

Concurrent abdo pain/urinary symptoms

Previous testing?

Dipstick testing

• Equivalent to microscopy if ++
• If dipstick trace or + then consider microscopy
# Haematuria

## Causes of Haematuria

<table>
<thead>
<tr>
<th>CAUSES OF HAEMATURIA</th>
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<tbody>
<tr>
<td>Urological malignancy</td>
<td>A cyst bleed in ADPKD</td>
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<tr>
<td>(BLADDER, prostate and kidney)</td>
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<tr>
<td>Urinary Tract Infection</td>
<td>Trauma (causing haematuria or myoglobinuria)</td>
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<tr>
<td>Renal stone disease</td>
<td>Exercise-induced haematuria (more common in patients with IgA nephropathy)</td>
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<tr>
<td>Benign prostatic disease (including prostatitis, BPH)</td>
<td>Renal infarction (rare)</td>
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<tr>
<td>Non-infected inflammatory cystitis</td>
<td>Tuberculosis of renal tract</td>
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<td>Glomerulonephritis &amp; other renal conditions</td>
<td>Uncontrolled systemic anticoagulation</td>
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</table>
## Haematuria

<table>
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<tr>
<th>Benign conditions that may discolour the urine</th>
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<tr>
<td>Mensturation</td>
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<tr>
<td>Jaundice</td>
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<td>Ingestion of foodstuffs (beetroot, red cabbage)</td>
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<td>Dyes (paprika, other food colourings)</td>
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<tr>
<td>Drugs (rifampicin, metronidazole, nitrofurantoin, warfarin, phenytoin)</td>
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<td>Some gram negative bacteria (possessing indoxyl sulphatase)</td>
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<tr>
<td>Rhabdomyolysis</td>
</tr>
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<td>Rare metabolic disorders (porphyria, alkaptonuria)</td>
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Is cancer the commonest cause of haematuria?

Analysis of 1,930 patients attending a haematuria clinic

1,194 Men, 736 Women
Age 17 - 96 years (mean 58 years)

61% No cause for haematuria found

12% Bladder cancer
13% UTI
2% stones

Investigate haematuria

Khadra et al. J Urol 2000
Is there a difference in cancer pick up between Macro and Micro haematuria?

Analysis of 4,020 patients attending a haematuria clinic

2,627 Men, 1,393 Women

Even split of Macro and Micro Haematuria

- Macroscopic - 19% malignancy
- Microscopic - 5% malignancy

Intensify macroscopic haematuria workup

Edwards et al. BJU Int. 2006
Does UTI at the time of haematuria reduce the chance of a cancer diagnosis?

Analysis of 1740 patients attending a haematuria clinic

1,067 men, 673 women

161 had positive MSU

20% malignancy pick up with UTI

1249 with no UTI history and a negative MSU

24% malignancy pick up with no UTI

Investigate haematuria even in those with a UTI

Vasdev et al. Urol Oncol. 2013
Haematuria and women

2009-2010

920 patients bladder cancer

398 patients renal cancer

252 (27%) female

164 (42%) female

Women 3+ consultations more often than men before referral

3.29 higher odds (2.06-5.25, p<0.001) for bladder cancer

1.90 higher odds (1.06-3.42, p=0.031) for renal cancer

Each year approx. 700 women in UK with either bladder or renal cancer experience delayed diagnosis

Lyratzopoulos G et al. BMJ 2013
Bladder and kidney cancer in numbers

53% blood in pee is a key symptom in 53% of bladder cancer patients

7600 people in England who die from bladder or kidney cancer each year

18% blood in pee is a key symptom in 18% of kidney cancer patients

17450 people in England diagnosed with bladder or kidney cancer each year

90%+ More than 90% of people diagnosed with bladder or kidney cancer are 50 or over

If you notice blood in your pee, even if it’s ‘just the once’, tell your doctor.

It could be an early sign of kidney or bladder cancer. Finding it early means it’s treatable, so tell your doctor straight away.

National ‘blood in pee’ campaign
13 October–23 November 2014

‘Blood in pee’ campaign
15 February – 31 March 2016

Noticed blood in your pee? Tell your doctor straight away.

Blood in your pee could be an early sign of bladder or kidney cancer, even if it only happens once. Finding it early makes it more treatable.
Blood in pee campaign

Increase in TWR referrals
- 26% - 2013
- 34% - 2014

Increase in renal cancer diagnosis 2013 & 2014

Increase in bladder cancer diagnosis 2013 only

In early 2014:
- Increase in lower stage bladder cancer
- Decrease in advanced bladder cancer
- Increase in lower stage renal cancer
- Limited reduction advanced renal cancer
What happens in a haematuria clinic?
Haematuria

What if investigations are normal?

Management of co-existing symptoms

Nephrology referral considered:

- Proteinuria
- eGFR < 60
- Imaging suggestive of renal disease
Bladder Cancer
Bladder Cancer

- 2014
  - 10,063 new diagnoses
  - 25% invasive disease
  - 5,369 deaths
  - 10th most common cancer
  - Most expensive cancer to treat overall
  - This may change with immunotherapy
Bladder Cancer (C67): 2012-2014

Average Number of New Cases Per Year and Age-Specific Incidence Rates per 100,000 Population, UK

Prepared by Cancer Research UK - original data sources are available from http://www.cancerresearchuk.org/cancer-info/cancerstats/
Bladder anatomy

**Good**
- Globular shape
- Maximum capacity
- Watertight
- ‘Independent’

**Not so Good**
- Central position
- Vulnerability to DXT
- Dysfunction difficult to manage
- LUTS
- UTI
- Obstruction
Bladder position in the pelvis
Bladder anatomy

- **Perivesical fat**
  - ‘Fat outside the bladder’
  - ~20-30 mm thick

- **Detrusor muscle**
  - ‘Muscular layer of bladder’
  - ~10 mm thick

- **Urothelium**
  - ‘Watertight layer of bladder’
  - ~3 mm thick

NOT TO SCALE
Bladder cancer - Stage

MIBC
- Perivesical fat
  - T3a micro invasion of fat
  - T3b macro invasion of fat
- Detrusor muscle
  - T2a invasion into inner half
  - T2b invasion into outer half

NMIBC
- Urothelium
  - Divided by Lamina Propria

NOT TO SCALE
Bladder cancer - Stage

- **Urothelium (~ 3 mm)**
- **Ta** inner layer of urothelium only
- **T1a** contact with lamina propria
- **T1b** through lamina propria

NOT TO SCALE
Bladder cancer - Diverticulum

‘Pulsion type’ diverticulum

No detrusor muscle

T1 disease treated as muscle invasive

NOT TO SCALE
Augmented Cystoscopy - Narrow Band imaging
TransUrethral Resection of Bladder Tumour
Non-invasive Bladder Cancer

Diverse spectrum of disease

G1pTa vs. G3pT1
<1% mortality vs. 15% mortality

Carcinoma *in situ* (misnomer)

Recurrence and progression
Non-invasive Bladder Cancer

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*Recurrence and progression*
Non-invasive Bladder Cancer

Diverse spectrum of disease

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Carcinoma \textit{in situ} (misnomer)

Recurrence and progression

45 \% G3pT1 have progressed by 5 years to muscle invasive or metastatic disease
Non-invasive Bladder Cancer

Diverse spectrum of disease

G1pTa vs. G3pT1
<1% mortality vs. 15% mortality

Carcinoma in situ (misnomer)

Recurrence and progression
Carcinoma *in situ*
Intravesical Mitomycin C

- Streptomyces derivative
- DNA crosslinker
**Intravesical Bacillus Calmette-Guérin**

- Attenuated live bovine tuberculosis bacillus
- Pearl 1929
- Coe and Feldman 1966
- Morales 1976
- Lamm 1980
- Intact immune system, fibronectin
- Schedules vary
Non-invasive Bladder Cancer summary

• Low grade pTa disease is a nuisance
  - Endoscopic control
  - MMC

• Anything else requires evaluation and planning
  - BCG with maintenance therapy
  - Consider cystectomy early

• Continuity is the key
Cystectomy
Indications for cystectomy

Cancer

• Muscle invasive bladder cancer
• High risk non-invasive bladder cancer
• Other pelvic cancers
  – Colorectal, Gynae, Sarcoma

Functional

• Obstruction
• Fistula
Cystectomy

Fig. 451.—The female pelvis. Anterior aspect.
From a specimen in the museum of the Royal College of Surgeons of England.
Cystectomy
Cystectomy

- Route: Open, Lap, Robotic
- Lymphadenectomy
- Diversion type
Urinary diversion
Urinary diversion
Urinary diversion
Urinary diversion
Questions?