The Investigation of Haematuria in the Young Military Population

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SUMMARY: The presentation of haematuria in the otherwise fit young adult is common in military practice. Controversy still exists as to how fully such patients should be investigated. The findings in 90 military patients under 40 are reported and a scheme to rationalise the investigation of haematuria is put forward.

Introduction

Haematuria (gross or microscopic) as the presenting symptom or sign in the young adult continues to be a problem in investigation decision-making. Many studies emphasise the necessity of full investigation of even the minimum number of red cells seen on microscopy of the urine. However, as the more sophisticated examinations are both expensive and invasive, with complications of their own, the very few positive results obtained in individuals can hardly justify blanket application to all.

In the Army the patient who presents with gross haematuria or who is found to have microscopic haematuria on routine examination is referred to physician, surgeon or urologist. The result has been in some cases incomplete investigation which misses a serious condition or conversely exhaustive tests which bring no positive results.

A study has been carried out of the patients under 40 years of age presenting with haematuria to the Army Urology Unit in the years 1980, 1981 and 1982. A flow chart of investigation is recommended.

Patients and Methods

The case notes of all those patients under 40 years of age who have presented to the Army urologists at the Queen Elizabeth Military Hospital Woolwich and the Cambridge Military Hospital Aldershot in the three years 1980 to 1982 with the sole symptom or sign of haematuria have been studied.

Results

Ninety such patients are fully documented with an age range of 8 to 40. Table I shows the relevant findings in these patients. In Table II the details of the 11 positive intravenous urograms (IVU) are listed and in Table III those of 19 positive cystoscopies. It should be pointed out that in addition to these two investigations the patients had the following performed: full blood count and ESR, urea and electrolytes, serum creatinine and three early morning urines for acid fast bacillus exclusion. These were without exception normal.

Selection for renal biopsy was made on the advice of the nephrologist at St Thomas' Hospital or at the Institute of Urology. It must be emphasised that other cases of haematuria.

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Table I

<table>
<thead>
<tr>
<th>Findings in Patients age 8 to 40</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>90</td>
</tr>
<tr>
<td>Age range</td>
<td>8–40</td>
</tr>
<tr>
<td>Gross; microscopic haematuria</td>
<td>64:26 (71%:29%)</td>
</tr>
<tr>
<td>Exercise related</td>
<td>19 (21%)</td>
</tr>
<tr>
<td>Known smoker</td>
<td>32 (35%)</td>
</tr>
<tr>
<td>Positive physical findings</td>
<td>18 (20%)</td>
</tr>
<tr>
<td>RBC's on microscopy on hospital MSU</td>
<td>54 (60%)</td>
</tr>
<tr>
<td>IVU performed</td>
<td>83 (90%)</td>
</tr>
<tr>
<td>Positive IVU</td>
<td>11 (13%)</td>
</tr>
<tr>
<td>Cystoscopy performed</td>
<td>75 (83%)</td>
</tr>
<tr>
<td>Positive cystoscopy</td>
<td>19 (25%)</td>
</tr>
<tr>
<td>Renal biopsy performed</td>
<td>5</td>
</tr>
<tr>
<td>Positive renal biopsy</td>
<td>4</td>
</tr>
<tr>
<td>Final Positive Diagnosis</td>
<td>51 (57%)</td>
</tr>
</tbody>
</table>

Table II

<table>
<thead>
<tr>
<th>IVU Positive Findings – II</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>*Stone at UO</td>
<td></td>
</tr>
<tr>
<td>*Retrocaval ureter</td>
<td></td>
</tr>
<tr>
<td>Dilated calyx on left</td>
<td></td>
</tr>
<tr>
<td>*Right hydronephrosis</td>
<td></td>
</tr>
<tr>
<td>Lateral displacement of kidney</td>
<td></td>
</tr>
<tr>
<td>Partial crossed renal ectopia</td>
<td></td>
</tr>
<tr>
<td>Distensible pelvis on right</td>
<td></td>
</tr>
<tr>
<td>*Stone in lower left calyx</td>
<td></td>
</tr>
<tr>
<td>*Stone in upper ureter</td>
<td></td>
</tr>
<tr>
<td>*Trabeculated bladder</td>
<td></td>
</tr>
<tr>
<td>Bifid right ureter</td>
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</tr>
</tbody>
</table>

* Likely cause of haematuria.
Flow Chart for the Investigation of Haematuria

Gross Haematuria or Positive Dipstix

If exercise induced MSU after exercise

No more haematuria in 3 month follow-up

Stop

All normal

Recurrent Haematuria

Red Cells present

Abnormal RBC’s

Protein Negative
‘Collecting System’

Abnormal IVU
(Clinical Direction)

USS CAT Scan
Arteriography
Cytology
AAF B Exclusion

Normal RBC’s

Protein Culture

Fresh
Microscopy
/Protein
/Culture

Applicable Ethnic
Origin
Sickle Test HB
Electrophoresis

Phase contrast
microscopy

Abnormal RBC’s
Casts/Protein pos
‘Glomerular’

Pure Exercise
Induced

Stop

Not exercise
induced

Full blood count
ESR, Urea & Elecs
Creatinine, IVU

Basic ‘Nephropathy’ Tests

Negative

Positive

Renal
Biopsy

Bleeding from
one Ureter

Ureteric Urine Cytology
Ascending Pyelogram
Ureteropyeloscopy
Arteriography
Renal Biopsy
Exploration Pyeloscopy

Normal IVU

Arteriography
Renal Biopsy
Exploration
/Pyeloscopy

No more bleeding

Stop

Recurrent
Haematuria

Normal

Urethrocystoscopy
haematuria during this period will have been investigated and treated by our physician colleagues without referral to a urologist.

Table IV gives the positive final diagnoses.

<table>
<thead>
<tr>
<th>Table IV</th>
<th>Positive Final Diagnosis – 51</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urinary stones (Kidney/ureter)</td>
<td>4</td>
</tr>
<tr>
<td>‘Nephropathy’ (IgA, Post-streptococcal, Glandular fever)</td>
<td>7</td>
</tr>
<tr>
<td>GU trauma in past</td>
<td>3</td>
</tr>
<tr>
<td>Lower tract inflammation (Cystitis, urethritis, prostatitis)</td>
<td>14</td>
</tr>
<tr>
<td>Minor trauma</td>
<td>9</td>
</tr>
<tr>
<td>Pure exercise induced</td>
<td>8</td>
</tr>
<tr>
<td>B-thalassaemia trait (Negro)</td>
<td>1</td>
</tr>
<tr>
<td>Crossed renal ectopia</td>
<td>1</td>
</tr>
<tr>
<td>TCC (Pis) of bladder</td>
<td>1</td>
</tr>
<tr>
<td>Bladder neck stenosis</td>
<td>2</td>
</tr>
<tr>
<td>Loin pain/haematuria syndrome</td>
<td>1</td>
</tr>
</tbody>
</table>

Discussion

There is no doubt that haematuria can be the first sign of a potentially life-threatening disease of the urinary tract. Previous series suggest that the under-40 age group is considerably less at risk in this regard. The present study bears this out. However, investigation of the patient must be thorough enough reasonably to exclude serious pathology. In the Service this is not only important for the health of the patient but also for decisions on future employability.

The majority of the young people in this series, having been referred to a urologist, had the basic investigations of MSU, blood count, serum biochemistry, IVU and cystoscopy. Nine were subsequently referred for consideration of renal biopsy after full ‘nephropathy’ screening, five biopsies being performed. Only 57% of the patients have a positive diagnosis (only five with a condition of any importance) even after such an investigation policy which includes an expensive X-ray series and a general anaesthetic.

The time has come for a generally agreed standard investigation procedure for all cases of ‘isolated haematuria’ in the Service, which can be followed by primary-care doctor, physician and surgeon. Such a procedure should cover all reasonable possibilities, but prevent the involvement of invasive, expensive or time-consuming examinations where these can reasonably be expected to be non-contributory.

Confidence has been expressed in the reliability of phase-contrast microscopy in separating ‘glomerular’ from ‘collecting system’ bleeding. We consider however that the results do not yet justify basing investigation decisions entirely on phase-contrast findings.

After discussion with all relevant authorities an investigation flow-chart as set out in the Figure is recommended for general adoption by the Army Medical Services.

REFERENCES

7. JONES, N F. Personal communication, 1982.