The Management of Prostatic Haematuria


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Abstract

Background: Prostatic haematuria is a common clinical problem. In this report, we have reviewed the incidence, precipitating/co morbid factors, treatment and outcome of haematuria in patients with benign prostatic hyperplasia and prostate cancer

Methods: A two year prospective review of 37 patients who presented with haematuria associated with benign prostatic hyperplasia and prostate cancer. Each patient had full clinical assessment, including any associated precipitating or co morbid factors. All patients had urethral catheterization; and cystoscopy to exclude bladder tumours or bladder stones. Subsequent management depended on severity of bleeding; and consisted of one of the following: observation only, irrigation only, irrigation and blood transfusion and emergency prostatectomy. Upon stabilization, the definitive treatment in each patient was based on primary pathology.

Results: A total of 134 patients who had either benign prostatic hyperplasia or prostate cancer were treated. Thirty seven (27.6%) patients presented with haematuria. The incidences of haematuria in benign prostatic hyperplasia and prostate cancer were 26.7% and 29.2% respectively. Haematuria was precipitated in 17 (45.9%) patients; while nine (24.3%) patients had 12 associated co morbidities. Seventeen (45.9%) patients had blood transfusion. A total of 34 (91.8%) patients were managed conservatively. There were four (10.8%) deaths.

Conclusion: Prostatic haematuria is a common urologic challenge. In most cases conservative management is the key. In the absence of modern facilities, emergency open prostatectomy may be needed to control bleeding, in those in whom conservative approach has failed; or when specifically indicated based on the individual patient or as dictated by other local factors.

Keywords: haematuria, prostatic, common, conservative treatment.

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Introduction

As awareness of prostatic diseases increases in our environment, there is a corresponding increase in the number of patients seeking attention for symptoms attributable to prostate pathology. The common prostate pathologies seen in our practice are benign prostatic hyperplasia and prostate cancer. More often than not, patients present late; after complications have set in. One of such complications is prostatic haematuria.

Prostatic haematuria, especially when persistent or recurrent poses a challenging and sometimes frustrating clinical problem to the urologist; requiring hospitalization and oftentimes blood transfusions. The causes of prostatic haematuria are varied ranging from infectious to iatrogenic and benign to malignant; and commonly include benign prostatic hyperplasia, prostate cancer and radiation therapy for prostate cancer or other pelvic malignancies. Bleeding could be spontaneous or provoked. Before a diagnosis is made and treatment started, it is pertinent to rule out non prostatic causes of haematuria.

Neovascularization within the prostate and bladder neck has been associated with prostatic enlargement. Bleeding is thought to arise from these vessels either spontaneously following straining to micturate, or a sudden decrease in intravesical pressure following catheterization to relieve long standing urinary obstruction, referred to as ex vacuo. In this study we have prospectively reviewed the incidence, aetiology, precipitating factors, co morbidities and treatment/outcome of prostatic haematuria in our environment.

Patients and Methods

Between January 2006 and December 2007, 37 male patients who presented with prostatic haematuria (BPH n=23, prostate cancer n=14) and managed at the Jos University Teaching Hospital and the Rayfield Clinic both in Jos, were the subjects of this prospective review. Excluded were patients who were found to have bladder tumours (n=2) and bladder stones (n=2).
Each patient had detailed clinical assessment, to include precipitating and or co morbid factors. Urethral catheterization was instituted if the patient did not already have one, and continuous bladder irrigation started (except in three patients). Urine microscopy and culture, and biochemical (including serum PSA), haematological and clotting profiles were assessed. All patients had cystoscopy, and transperineal tru cut biopsy of the prostate where indicated, after stabilization. Blood transfusions were given as indicated; and the severity of bleeding was measured by transfusion requirements into mild (0-2 pints), moderate (3-4 pints) and severe (5 pints and above). Twenty eight patients were admitted for varying number of days depending on how long it took for bleeding to stop. Upon stabilization, admitted patients were discharged. The remaining nine patients were treated and discharged home same day. Four patients had emergency prostatectomy for various indications. Six patients with BPH received 5α-reductase inhibitors (Dutasteride n=5, Finasteride n=1) for six months. Subsequently treatment in each patient was based on primary pathology. Two patients who developed recurrent haematuria after discharge were readmitted and treated conservatively.

Results
A total of 134 patients were seen during the two-year period with benign prostatic hyperplasia (n=86, 64.2%) and prostate cancer (n=48, 35.8%). Of these, 37 (27.6%) presented with prostatic haematuria (BPH n=23, prostate cancer n=14). The mean age in both groups was 68.8 years (range 40-90): 54.6 years (range 40-84) for BPH and 74.4 years (range 65-90) for prostate cancer. The incidences of haematuria in patients with benign prostatic hyperplasia and prostate cancer were 26.7% and 29.2% respectively.

Haematuria was spontaneous in 54.1% (n=20) of patients and precipitated in the remaining 45.9% (n=17) as shown in table 1. The precipitating factors were urethral catheterization (n=11), cystoscopy with or without prostate biopsy (n=3), suprapubic cystostomy (n=2), and prostatectomy (n=1). Sixteen patients (43.2%) had positive urine cultures. There were 12 co morbidities in nine patients (table 2): hypertension (n=7), bleeding disorder (n=3) and diabetes mellitus (n=2).

Seventeen (45.9%) patients had 61 pints of blood transfused giving an average transfusion rate (among those who needed transfusion) of 3.6 units of blood. The transfusion groups were 4 patients (1-4 units), 9 patients (3-4 units) and 4 patients (5 units and above) (table 2). Twenty eight patients were admitted, while nine were treated on out patient basis. Three patients stayed 1-7 days in hospital, while 25 stayed more than one week. Specific treatment consisted of observation only (n=3), bladder irrigation only (n=16), bladder irrigation and blood transfusion (n=15) and emergency prostatectomy (n=3). These are shown in table 3. There was a mortality rate of 10.8% (n=4)

Table I: Precipitating and co morbid factors in 37 patients with prostatic haematuria

<table>
<thead>
<tr>
<th>Bleeding episode</th>
<th></th>
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<tbody>
<tr>
<td></td>
<td>Spontaneous</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Precipitated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Catheterization</td>
<td>17</td>
<td>45.9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Prostate biopsy</td>
<td>17</td>
<td>45.9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Suprapubic cystostomy</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Prostatectomy</td>
<td>1</td>
<td>2.7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Negative culture</td>
<td>21</td>
<td>56.8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Positive culture</td>
<td>16</td>
<td>43.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No co morbid factor</td>
<td></td>
<td>28</td>
<td>75.7</td>
</tr>
<tr>
<td></td>
<td>Co morbid factor present</td>
<td></td>
<td>9</td>
<td>24.3</td>
</tr>
<tr>
<td></td>
<td>Hypertension</td>
<td>2</td>
<td>5.4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bleeding disorder</td>
<td></td>
<td>8</td>
<td>21.6</td>
</tr>
<tr>
<td></td>
<td>Diabetes mellitus</td>
<td></td>
<td>7</td>
<td>19.5</td>
</tr>
</tbody>
</table>

* Nine patients had 12 co morbid factors

Table II: Admission and blood transfusion requirements in 37 patients

<table>
<thead>
<tr>
<th>Admission (days)</th>
<th>Frequency (n)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>3</td>
<td>24.3</td>
</tr>
<tr>
<td>1-5</td>
<td>1</td>
<td>7.4</td>
</tr>
<tr>
<td>6-7</td>
<td>2</td>
<td>5.4</td>
</tr>
<tr>
<td>8+</td>
<td>25</td>
<td>67.6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Blood transfusion (units)</th>
<th>Frequency (n)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>20</td>
<td>54.1</td>
</tr>
<tr>
<td>1-2</td>
<td>4</td>
<td>10.8</td>
</tr>
<tr>
<td>3-4</td>
<td>9</td>
<td>24.3</td>
</tr>
<tr>
<td>5+</td>
<td>4</td>
<td>10.8</td>
</tr>
</tbody>
</table>

Table III: Treatment modalities in 37 patients with prostatic haematuria

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Frequency (n)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observation only</td>
<td>3</td>
<td>8.1</td>
</tr>
<tr>
<td>Irrigation only</td>
<td>16</td>
<td>43.2</td>
</tr>
<tr>
<td>Irrigation and blood transfusion</td>
<td>15</td>
<td>40.5</td>
</tr>
<tr>
<td>Emergency prostatectomy (open)</td>
<td>3</td>
<td>8.1</td>
</tr>
</tbody>
</table>

Discussion
Prostatic haematuria is a common clinical problem in patients with benign prostatic hyperplasia and prostate cancer; affecting about a third of our patients. Specifically, the incidences of haematuria associated with benign prostatic hyperplasia and prostate cancer were 26.7% and 29.2% respectively. These figures are higher than the reported incidences of 20% and 0.7% for benign prostatic hyperplasia and prostate cancer respectively. This may not be unrelated with the fact that our patients would normally present after seeking medical attention elsewhere notably traditional/herbal medical practitioners. Others may not seek attention for early clinical features of bladder outflow obstruction.
because of financial constraints; until haematuria occurs which signifies danger. Three of these patients had
cystoscopy and prostate biopsy out of the 14 who had
prostate cancer (21.3%). Djavan et al⁶ reported a 0.7%
incidence of severe haematuria in the immediate period
following prostate biopsy, while Rodriguez and Terris⁷
reported an incidence of 47.1% after the same procedure.
An incidence of 5% or less has been reported in patients
with prostate cancer treated with external beam
radiation⁸. We have had no experience with patients in
this category as this modality of treatment for prostate
cancer is not readily available to our patients.

In more than half (54.1%) of our patients bleeding was
unprovoked (spontaneous). The main precipitating factor
in our patients was urethral catheterization for the relief of
urinary retention. While some of these patients started
bleeding immediately after the catheter was passed,
others went home and presented a few days after.
Catheterization may precipitate bleeding in two ways:
direct trauma from an over sized catheter or unmettulous
procedure; and introduction of urinary tract infection.
This calls to question the practice of leaving an indwelling
catheter after relief of acute urinary retention in every
patient as practiced by many physicians; urologists
inclusive. More than a third of our patients had positive
urine cultures and were treated accordingly. It is difficult to
say whether urinary tract infection was merely a
passenger or indeed the driver in precipitating bleeding;
as all patients had initial urethral catheterization before
the urine samples were obtained for evaluation. It was
therefore impossible to assert that UTI was a precipitating
factor.

The most predominant co morbid factor was
hypertension, followed by bleeding disorders and
diabetes mellitus in that order. Two patients had more than
one co morbidity. The presence of hypertension did
not significantly affect the severity of bleeding probably
because the patients were well controlled before and
during the bleeding episodes. One of the patients with a
bleeding disorder bled severely following cystoscopy and
prostate biopsy, had emergency prostatectomy and was
transfused six units of blood altogether. Another patient, a
controlled diabetic developed diabetic ketoacidosis
during a bleeding episode.

Treatment in these patients consisted mainly of
continuous bladder irrigation (both external and auto
irrigation) only, or in combination with blood transfusions.
Continuous catheter drainage is postulated to minimize
exposure of the bleeding sites to urokinases⁹, while forced
diuresis (auto irrigation) ensures prompt dilution of any
blood in the bladder in the event of external influences
on the irrigating fluid. Combination of continuous
bladder irrigation (CBI) and blood transfusion was able
to control bleeding in more than a third of patient. About
a quarter of those transfused, needed up to five or more
units of blood. Emergency prostatectomy was indicated
in three patients. One patient had a rare blood group.
Prostatectomy was deemed fit in the early stages to
avoid the possibility of running out of appropriate and
compatible blood for transfusion should he need
multiple transfusions. Another patient had recurrent
episodes of clot retention. Emergency open
prostatectomy was deemed necessary to avoid the
known complications of sepsis and possible bladder
rupture following repeated irrigation⁸. The third patient
had re exploration, clot evacuation and removal of
residual prostatic tissue following prostatectomy in a
 peripheral hospital. It is worthy of note that more than
90% of our patients responded to conservative
measures. There are anecdotal reports to suggest that
addition of medications to the irrigation fluid improve
the chances of controlling bleeding by conservative
means. Such substances include alum (as aluminum
ammonium sulfate or aluminum potassium sulfate⁹),
silver nitrate, phenol and formalin¹⁰; and amino caproic
acid which could be administered orally, parenterally or
intravesically¹¹. These substances, which are more
useful in controlling haematuria of bladder origin, are
not without side effects; notably, microcytic
hypochronic anaemia, osteomalacia, dementia and
even renal failure¹₂. In none of our patients were any of
these substances used to control bleeding.

5a-reductase inhibitors have been shown to
successfully treat prostatic haematuria when it is
caused by benign prostatic hyperplasia. They are
thought to act by causing a reduction in prostatic blood
flow in the first two weeks of use¹³. Their use has also
been noted to induce a reduction in prostatic size
following 6 months usage¹⁴. These drugs were not
primarily employed in our patients during the bleeding
period to control bleeding. Six elderly patients with
benign prostatic hyperplasia, considered to be high risk
for surgical intervention, were placed on Dutasteride
and Finasteride after control of bleeding, for six months.
There was relief of both obstructive and irritative
symptoms, urethral catheters were removed after three
months of therapy, and there has been no recurrence of
haematuria in this cohort of patients.

Other methods of controlling refractory or persistent
bleeding, but that are not available in our setting include
endoscopic fulguration or resection of the prostate¹⁶.
and selective arterial prostatic embolization (SAPE). Where available, their use has been found to eliminate the need for open prostatectomy for benign prostatic hyperplasia.

There were four deaths (mortality of 10.8%). One was the patient with an abnormal clotting profile who developed severe haematuria after cystoscopy and biopsy. Conservative measures failed, he had emergency prostatectomy and died of sepsis. One other patient, a controlled diabetic, went into diabetic ketoacidosis during conservative management and died. The remaining two patients, also on conservative management died of pulmonary embolism.

Prostatic haematuria is a common urologic challenge. Conservative measures should be the first line of management. In the absence of endoscopic methods of controlling bleeding, open prostatectomy is safe for patients in whom the conservative approach has failed; or where there is inadequate back up of transfusion facilities. We would also recommend the use of 5α-reductase inhibitors for the control of persistent haematuria in elderly patients with benign prostatic hyperplasia, and those at risk of surgery; since there is evidence in the literature to suggest that these agents reduce prostatic blood flow within two weeks.

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