ORIGINAL ARTICLE

The Management of Prostatic Haematuria

Ramyil V M *BMBCh, FMCS, FWACS, Cert. Urol,* **Dakum N K** *MBBS, FWACS, FMCS, Dip. Urol,* **Liman H U** *BMBCh, FWACS,* **Udeh E I** *MBBS*

Urology Unit, Department of Surgery, Jos University Teaching Hospital

Abstract

Background: *Prostatic haematuria s 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.*

Date accepted for publication 30th August 2008
Nig J Med 2008; 439-442

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[1]. 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[2]. Bleeding is thought to arise from these vessels either spontaneously following straining to micturate[3], or a sudden decrease in intravesical pressure following catheterization to relieve long standing urinary obstruction, referred to as ex vacuo[4].

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).

Correspondence to ***Dr VM Ramyil***

Each patient had detail 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

Bleeding episode		
Spontaneous	20	54.1
Precipitated:	17	45.9
Catheterization (n=11)		
Prostate biopsy (n=3)		
Suprapubic cystostomy (n=2)		
Prostatectomy (n=1)		
Urine culture		
Negative culture	21	56.8
Positive culture	16	43.2
Co morbidity		
No co morbid factor	28	75.7
Co morbid factor present	9*	24.3
Hypertension (n=7)		
Bleeding disorder (n=3)		
Diabetes mellitus (n=2)		

* Nine patients had 12 co morbid factors

Table II: Admission and blood transfusion requirements in 37 patients

Admission (days)	Frequency (n)	%
0	9	24.3
1-5	1	2.7
6-7	2	5.4
8+	25	67.6
Blood transfusion (units)		
0	20	54.1
1-2	4	10.8
3-4	9	24.3
5+	4	10.8

Table III: Treatment modalities in 37 patients with prostatic haematuria

Treatment	Frequency (n)	%
Observation only	3	8.1
Irrigation only	16	43.2
Irrigation and blood transfusion	15	40.5
Emergency prostatectomy (open)	3	8.1

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[5]. 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 al[6] reported a 0.7% incidence of severe haematuria in the immediate period following prostate biopsy, while Rodriguez and Terris[7] 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 radiation[8]. 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 unmeticulous 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 urokinases[1], 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 irrigation[1]. 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 sulfate)[9-11], silver nitrate, phenol and formalin[12]; and amino caproic acid which could be administered orally, parenterally or intravesically[13]. These substances, which are more useful in controlling haematuria of bladder origin, are not without side effects; notably, microcytic hypochromic anaemia, osteomalacia, dementia and even renal failure[10-12]. In none of our patients were any of these substances used to control bleeding.

5α-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 use[14]. Their use has also been noted to induce a reduction in prostatic size following 6 months usage[15]. 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 prostate[16]

and selective arterial prostatic embolization (SAPE)[17]. 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 conservation 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.

References

1 Rastinehad AR, Ost MC, VanderBrink BA, Siegel DN, Kavoussi LR. Persistent Prostatic Haematuria. Nat Clin Pract Urol. 5(3):, ©2008 Copyright © 2008 Medscape

2 Foley SJ et al. A prospective study of the natural history of haematuria associated with benign prostatic hyperplasia and the effect of finasteride. J Urol 2000, 163: 496-498.

3 Wein AJ, Rovner ES: Benign prostatic hyperplasia. In: Hanno PM, Malkowicz SB, Wein AJ (eds.): Clinical Manual of Urology, 3rd ed., New Delhi: McGraw-Hill Medical Publishing Division, 2001, pp 437-470

4 Shinghal J, Payne CK: Emergency Room Urology. In: Hanno PM, Malkowicz SB, Wein AJ (eds.): Clinical Manual of Urology, 3rd ed., New Delhi: McGraw-Hill Medical Publishing Division, 2001, pp 253-270

5 Han M et al. Association of haemospermia with prostate cancer. J Urol 2005, 172: 2189-2192

6 Djavan B et al. Safety and morbidity of first and repeat transrectal ultrasound guided prostate needle biopsies: results of a prospective European prostate cancer detection study. J Urol 2001, 166: 856-860

7 Rodriguez LV, Terris MK. Risks and complications of transrectal ultrasound guided prostate needle biopsy: a prospective study and review of the literature. J Urol 1988, 160: 2115-2120

8 Thompson I et al. For the AUA Prostate Clinical Guideline Update Panel (2007). Guidelines for the management of clinically localized prostate cancer: 2007 update. J Urol 2007, 177: 2106-2131

9 Ostroff EB, Chenault OW Jnr. Alum irrigation for the control of massive bladder haemorrhage. J Urol 1982, 128: 929-930

10 Perazella M, Brown E. Acute aluminum toxicity and alum bladder irrigation in patients with renal failure. Am J Kidney Dis 1993, 21: 44-46

11 Kanwar VS et al. Aluminum toxicity following intravesical alum irrigation for haemorrhagic cystitis. Med Paediatr Oncol 1996, 27: 64-67

12 Ragavaiah NV, Soloway MS. Anuria following silver nitrate irrigations for intractable bladder haemorrhage. J Urol 1977, 118: 681-682

13 Singh I, Laungani GB. Intravesical epsilon aminocaproic acid in the management intractable bladder haemorrhage. Urology 1992, 40: 227-229

14 Kearney MC et al. Clinical predictors in the use of finasteride for control of gross haematuria due to benign prostatic hyperplasia. J Urol 2002, 167: 2489-2491

15 Donohue JF et al. Randomized placebo controlled trial showing that finasteride reduces prostatic vascularity rapidly within 2 weeks. BJU Int 2005, 96: 1319-1322

16 Rastinehad AR et al. Selective arterial prostatic embolization (SAPE) for refractory haematuria of prostatic origin. Urology, in press

17 Hald T, Mygind T. Control of life-threatening vesical haemorrhage by unilateral hypogastric artery muscle embolization.

Correspondence to Dr I C Anochie E mail-anochieify@hotmail.com