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UROLOGICAL MALIGNANCY DIAGNOSIS BY USING STANDARD PROTOCOL OF INVESTIGATION FOR HAEMATURIA

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ABSTRACT

OBJECTIVE: To diagnose the urological malignancy by using standard protocol of investigation for Haematuria.

Materials and Methods: This prospective study was conducted in the Department of surgery Saidu Teaching Hospital Swat from Jan 2005 to Dec 2008. The Standard protocol of investigating haematuria included flexible cyctoscopy, urine cytology and culture, upper renal tract imaging, consisting of renal tract ultrasound scan, radiograph of Kidney, Ureter , Bladder (KUB) and intravenous urogram (IVU) in patients where needed.

RESULTS: total of 455 patients were included in this study; 330 (72.52%) were males and 125 (27.47%) were females. Frank Haematuria was reported by 155 (34%) patients.(110 males and 45 females). Patients presenting with microscopic haematuria formed 65.93% (n=300) of the total (220 males and 80 females). Median age was 55 years (20- 90). Malignancy was found in 12.52 % (n=57) of all patients 10.76% (n=49) with frank haematuria and 1.75 % (n=8) of patients with microscopic haematuria.
No malignancy was detected under the age of 50 years with microscopic haematuria. Where 2.58% (n=4) under 50 years with frank haematuria were diagnosed to have malignancy.

CONCLUSIONS: All patients with frank haematuria and those with microscopic haematuria above 50 years of age should be fully investigated to rule out urological malignancy. Patients under 50 years of age with microscopic haematuria have a lower priority for investigation.
Keywords; haematuria, malignancy. intravenous urogram (IVU)

INTRODUCTION

Haematuria is the presence of red blood cells in the urine. All patients with single episode of haemauria need investigation because it is often associated with malignancy.

Dipstick Haematuria is the detection of haemoglobin with in the red blood cells using reagent strips in macroscopically normal urine. Dipstick test has 86% sensitivity and 85% specificity[1]. Microscopic Haematuria is macroscopically normal urine that has red blood cells visible on microscopy; 2-5 red blood cells per high power field is considered abnormal. Urine microscopy is easy to perform and given the possibility of false results with dipstick testing, all positive dipstick test should be confirmed with microscopy.

Macroscopic Haematuria is also known as frank or gross haemituria and is the most common presentation of transitional cell carcinoma of the urothelium. It is much more likely to be associated with a serious underlying cause than haematuria of a lesser degree. It is sometime misdiagnosed if other agents. (e.g. beetroot, rifiampicin, phenothiazine) turn the urine red.

We focused on this issue by prospectively assessing the outcome of standard protocol of investigation of haemituria.

MATERIALS AND PATENTS

This prospective study was conducted in

Department of surgery Saidu Teaching Hospital Swat from January 2005 to December 2008. All consecutive patients presenting with gross or microscopic Haematuria, age 20-90 years were included in the study. Patients below 20 years and above 90 years of age were excluded from the study. A standard investigation protocol was applied to all patients. (Figure1). Patients were diagnosed on the basis of history, clinical examination, urine analysis, urine culture and cytology. All patients included in the study had Flexible cystoscopy done on their first visit. Urgent Intravenous urogran (IVU) was performed in those patient having urinary bladder tumour on cystoscopic examination to look for any upper renal tract transitional cell carcinoma (TCC). Upper renal tract IVU comprised a radiograph of kidney, Ureter, Bladder (KUB) and renal ultrasound scan. Patients below the age 50 years with microscopic haemituria, who had negative investigation at this stage were discharged. Unless a renal ultrasound scan showed a parenchymal lesion, patients over 50 years with microscopic haemituria had an IVU. Patients below the age of 50 years with abnormal urine cytology also had an IVU.

Ultrasonography was performed with patient in supine position followed by imaging the kidney in semi decubitus position. An IVU was obtained by taking a KUB radiograph followed by an intra-venous injection of 100ml of non-ionic water based contrast medium. Standard radiographs were taken at 5 and 10 minutes following administration of contrast media. Subsequent time interval between raidiographs depended on the type of pathology and presence of any obstruction. A post micturation film was also obtained.

RESULTS

Total of 455 patients were included in this study; 72% (n = 330) were males and 27.47% (n = 125) were females. Frank Haematuria was reported by 155 (34%) patients.(110 males and 45 females). 65.93% (n= 300) of the total Patients presented with microscopic haematuria. (220 males and 80 females) Median age 56 years (20 90 years)
Malignancy was found in 12.52% (n = 57) of all patients; 10.76% (n = 49) with frank haemituria and 1.75% (n = 8) of patients with microscopic haemituria.
No malignancy was detected in patients under the age of 50 years with microscopic haemituria, where 2.58% (n = 4) under 50 years with frank haemituria were diagnosed to have malignancy.
The age distribution and frequency of malignancy found in patients presenting with frank haemituria and microscopic haemituria are shown in table 1, 2 and 3 respectively.

TABLE 1. Comparison of frank and microscopic Haematuria between male and female patients.

Types of presentation	Total no of patients 455			
Frank Haematuria	Males	Females	Total	percentage
	110	45	155	34%
Microscopic Haematuria	220	80	300	67%
Total: 330	125		155	

TABLE 2: Distribution and frequency of malignancy on the basis of age limits of the patients with frank Haematuria

Age	Total number of patients	Malignancy
Under 20 years	3	0
20 – 29	5	1
30 – 39	9	2
40 – 49	18	4*
50 – 59	33	6**
60 – 69	42	18**
70 – 79	36	15**
80 - 89	9	3*

TABLE 3: Distribution and frequency of malignancy on the basis of age limit of the patient with microscopic Haematuria

Age	Total number of patients	Malignancy
Under 20 years	7	0
20 – 29	22	0
30 – 39	35	0
40 – 49	49	0
50 – 59	77	1
60 – 69	65	3*
70 – 79	38	3*
80 - 89	11	1

In patients below 70 years of age with frank haemituria, males were more likely to be found having malignancy than females. This higher risk was not observed in males over 70 years with frank haemituria.

In patients with microscopic haemituria 52.33% (n = 300) were asymptomatic and 47.66% had symptoms.
4 patients (2.54%) with asymptomatic microscopic haemituria had a malignancy where as 6 (2%) patients with symptomatic microscopic haemituria were found to have malignancy. The

Haemituria were found to have malignancy. The presence or absence of associated symptoms was not predictive of finding a malignancy. 38.33% (n = 115 out of 300) of patients were diagnosed to have urinary calculi.

Five types of malignancy were observed. Transitional cell carcinoma (TCC) of the bladder was the commonest type of malignancy affecting 9.23% (n=) of all patients of bladder carcinoma (TCC). 80% presented with frank haematuria, occurred in males over the age of 50 years.

In patients with frank haematuria the prevalence of bladder cell carcinoma (TCC) increased steadily with age.

In this study urine cytology had a low sensitivity of 25% but its specificity was high at 91%. The sensitivity of urine cytology was higher with less differentiated bladder tumors.

we found in our study that IVU was sensitive than an ultrasound scan in detecting upper tract calculus and upper tract TCC where as ultrasound scan was more sensitive than IVU in detecting renal parenchymal lesion.

DISCUSSION

As frank Haematuria is visible to patients, they are likely to seek early medical assistance. However investigation of the much commoner microscopic haemituria warrants skilled examination. This is due to the presumed improved prognosis with earlier treatment of bladder TCC that may present with microscopic haematuria.

The prevalence of microscopic haematuria reported is between 0.8 % and 22 % in population screened by urine reagent stick test.[2,3,4] The investigation of individual who have a positive test for blood with a urine reagent stick test is controversial because of urine chemical reagent strip (Dipstick) has a sensitivity of 86 % and specificity of 85% [1]. It may detect myoglobin and free haemoglobin as well as red blood cells.

It has been calculated that a target of 60% reduction in mortality from bladder cancer in USA would require 60 million tests a year, generating 60,000 false positive test[5]. Earlier diagnosis and prompt treatment of urological malignancies found in patients presenting with microscopic haematuria may lead to improvement in prognosis [6,7].

For instance, Wallace and Haris (1965) reported a reduction of over 50 % in a three year survival rate of bladder carcinoma if treatment was delayed from one month to six months following presentation[8]. In our study the finding of a malignancy with microscopic haematuria in patients over the age of 50 years was 3.27 %.

Britton et al (1992) reported a bladder cancer incident of 5.3% of 319 males over 60 years of age[9].

A wide range of urological malignancies have been reported by other authors, varying between 2 - 11 % of patients presenting with microscopic haemituria.[10-12] Patients with haematuria who are at a high risk of having malignancy should be given priority for investigation. In this study only patient presented with frank haemituria and increasing age were to be independent predictor of malignancy. In contrast, paul et al (1993) found tumor in patients with frank haemituria (15%) compared with patients presenting with microscopic haemituria (6%) [13].
This finding may be due to the small number in their study population (n = 321) Other authors have used age as a factor in planning investigation of haematuria [4, 12,14] Gender, presence of symptom and duration of symptom were not found to be independent predictors of malignancy in this study.

Therefore, patients over the age of 50 years with frank haemituria should be given priority for investigation. In this study we found that patients below the age of 50 years with microscopic haemituria have no malignancy at the time of study. Although there have been reports of malignancy in patients with microscopic haemituria below the age of 40 years, they are extremely rare even on long follow up [2,15].

Perhaps patients under the age of 50 years with microscopic haemituria should be given lower

Perhaps patients under the age of 50 years with microscopic haemituria should be given lower priority for urological investigation. In our study all renal cysts and hypernephromas diagnosed were detected by ultrasound scanning. All upper tract TCCs, and calculi diagnosed were detected by IVU. These finding support the opinion that ultrasound is better than IVU in detecting renal parenchymal lesions which constitute 80 - 90 % of urinary tract tumors.

Ultrasound differentiates accurately between a cyst and a solid lesion. It has been suggested that ultrasound is as sensitive as IVU and yet more cost effective for imaging of patients presenting with microscopic haemituria.

However ultrasound scanning report is very much dependent upon operator [14]. Although there is a 0.03 % risk of anaphylactic shock with the use of contrast medium and a considerable radiation exposure, IVU is still regarded by most urologist as the gold standard test for upper renal tract investigation. Measures should be taken to avoid known risk associated with IVU in patients with asthma, diabetes or mild renal impairment. There are commonly additional symptoms (e.g loin pain) exhibited by patients with upper tract calculi that require investigation with IVV on their own merit and upper tract TCCs are exceedingly rare in young patients [15]. Ultrasound and KUB as primary imaging modalities in asymptomatic patients should diagnose most of the serious pathologies in the upper tract.

On the other hand, glomerular disease is being increasingly diagnosed on renal biopsies in relatively young patients presenting with microscopic haemituria [17, 18]. Therefore it may be warranted to first refer patients with microscopic haemituria and under the age of 50 years to nephrologists.

CONCLUSION

Detailed investigation of all patients with frank or microscopic haemituria above 50 year of age, are well justified. Patients under 50 years with microscopic haemituria should have a lower priority for investigation.

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