



**THE ULTRASOUND  
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## **EDITORIAL - I**

**I**n medicine, haematuria, is the presence of red blood cells (erythrocytes) in the urine. It may be macroscopic or microscopic. Microscopic hematuria (small amounts of blood, can be seen only on urinalysis or light microscopy). Macroscopic hematuria (or "frank" or "gross" hematuria) can be seen by naked eyes.

Common causes include UTI, bladder tumours, urinary tract stones, urethritis, benign prostatic hypertrophy and prostate cancer.

Infection : cystitis, tuberculosis, prostatitis, urethritis, schistosomiasis, infective endocarditis. Tumour : renal carcinoma, Wilms' tumour, carcinoma of the bladder, prostate cancer or urethral cancer. Trauma : renal tract trauma due to accidents, catheter or foreign body, prolonged severe exercise, rapid emptying of an overdistended bladder (eg after catheterisation for acute retention). Inflammation : glomerulonephritis, Henoch-Schönlein purpura, IgA nephropathy, Goodpasture's syndrome, polyarteritis, post-irradiation. Structural: calculi (renal, bladder, ureteric), simple cysts, polycystic renal disease, congenital vascular anomalies. Haematological : sickle cell disease, coagulation disorders, anti-coagulation therapy. Toxins : sulphonamides, cyclophosphamide, non-steroidal anti-inflammatory drugs.

All definite haematuria, whether macroscopic or microscopic, requires investigation to exclude serious underlying conditions, especially urinary tract neoplasm. Patients on anticoagulants should also be investigated. Anticoagulants are more likely to provoke, rather than be the cause of, haematuria. Initial investigations include: FBC (anaemia) and clotting screen, cytological examination of urine for any malignant cell, imaging i.e x-ray kub, ultrasonographic examination, and if indicated CT scan. Sometimes in inconclusive cases diagnostic Cystoscopy can also be done. Treatment modalities depend on the aetiology associated.

The National Institute for Health and Clinical Excellence (NICE) Cancer Referral Guidelines recommend urgent referral for : (1) Patients of any age with painless macroscopic haematuria. (2) Patients aged 40 years and older who present with recurrent or persistent UTI associated with haematuria. (3) Patients aged 50 years and older who are found to have unexplained microscopic haematuria. (4) Patients with an abdominal mass identified clinically or on imaging that is thought to arise from the urinary tract.

So in a nutshell, we conclude that haematuria (be it macroscopic or microscopic) should be dealt with great concern and should be investigated thoroughly.

**Dr. A. K. Roy**

## EDITORIAL-II

In recent decades there has been a steady increase in the incidence of urinary bladder cancer. It is the sixth most common cancer in the United States. The ways in which bladder cancers develop and progress are only partly understood. However, some identified carcinogens include tobacco smoking, exposure to industrial chemicals like paints and solvents, that contain benzidine, 2-naphthylamine like compounds. Transitional cell carcinoma is the commonest urothelial carcinoma. Apart from it, the other variants of urothelial carcinoma are carcinoma-in situ (CIS), papillary cancer and rarely squamous cell carcinoma and adenocarcinoma.

Commonest presenting symptom is painless macroscopic haematuria. It is more prevalent in the middle aged male population. Sometimes it may also present as microscopic haematuria. Dysuria may or may not be associated. Ultrasound plays a pivotal role in the primary imaging tool while investigating haematuria. SOL of urinary bladder detected in USG scan of KUB region along with urine for cytology positive for malignant cells almost always ascertain the diagnosis of urinary bladder cancer.

Transabdominal ultrasonography is a non-invasive tool with an acceptable accuracy in evaluation of the KUB anatomy. Since it is not dependent on contrast media excretion, ultrasound can be used regardless of the kidney function, unlike IVU and CECT examination.

Although transrectal and transabdominal ultrasound cannot be used in the staging of tumours and determining their invasion to the bladder wall, they are able to show mucosal lesions greater than 4mm to 5mm when the bladder is full. In comparison with IVU, ultrasound is more sensitive in investigating painless haematuria (sensitivity 85% versus 62.5%). A case control study was done in Italy to compare the results of USG in 516 patients with haematuria and with those in 1788 controls. They reported a sensitivity of 93% and a specificity of 100% for diagnosis of haematuria causes. The gold standard for diagnosing bladder cancer is biopsy obtained during cystoscopy. In most of the cases after the USG made diagnosis of bladder tumour, it is confirmed and the staging of the disease is done by cystoscopy and trans-urethral resection of bladder tumour (TURBT) and following histo-pathological examination.

Initial evaluation and staging are crucial for the management of bladder

cancer because the choice of curative surgical intervention or alternative therapeutic options depends on the extent of tumor invasion into the deeper layers of the bladder wall. Pathological staging of transurethral resection (TUR) is the gold standard for this purpose.

Cystoscopy remains the most widely used technique for the diagnosis of bladder cancer patients. On comparison with CT, TCUS (TRANS-CAVITARY USG) and cytology showed that CT and TCUS imaging were significantly beneficial, whereas cytology was not. The combined use of all three techniques resulted in a detection rate of 72% for cystoscopically proven tumors. Among the three techniques, TCUS exhibited the strongest correlation with cystoscopy. In the evaluation and staging of bladder cancers, both CT and TCUS results showed statistically significant correlations with pathological results; however, TCUS was clearly superior to CT.

At conclusion we can say that, Ultrasonography is operator dependent, compared to IVU and CT, MRI. However, many clinicians rely on the USG for the evaluation of patients with haematuria, especially when uremia, pregnancy, and other such conditions make IVU/CT contraindicated. In the presence of less-invasive techniques such as shock wave lithotripsy, transurethral resection, transurethral lithotripsy, ureteroscopy, and cystoscopy, USG findings may sometimes be difficult to take therapeutic decisions. However, we must decide to choose our diagnostic tool according to the patient's condition and the most suspected disorders causing hematuria.

**Dr. Saswati Das**