

Evaluation of Multidetector Computed Tomography in Haematuria

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ABSTRACT

Aims and Objectives: (1) To study the role of multidetector computed tomography in patients with haematuria. (2) To correlate multidetector computed tomography findings with clinical outcome/laboratory findings/FNAC and/or operative findings (wherever performed).

Materials and Methods: The present study was carried out in the Department of Radiodiagnosis, M.M. Institute of Medical Sciences and Research, Mullana, Ambala, from April 2014 to 2016. Fifty patients with complaint of haematuria, referred from various wards and outpatient departments of this institution, were included. Multidetector computed tomography was performed in ultrasonography positive cases, in symptomatic patients with negative ultrasonography scans and in those with suboptimal ultrasonography scans. The equipment used in our study was a HD 11 XE (Philips medical systems) ultrasound unit with convex and linear probes and a 128 slice Multidetector CT (Philips Ingenuity).

Results: Maximum number of patients (30%) in the 51-60 years age group with a male preponderance. The prevalence of malignancy in patients with haematuria in this study was 28% which included bladder urothelial carcinoma (18%), renal cell carcinoma (6%), UTUC (4%), prostatic carcinoma (2%) and one case of TCC which turned out to be non-Hodgkin's lymphoma on histopathology. Calculi were more prevalent in the younger age group and overall constituted 20% of the causes of haematuria. Other causes of haematuria detected on multidetector computed tomography were pyelonephritis, renal trauma (grade V renal injury), bladder diverticulum, benign prostatic hyperplasia and cystitis.

Conclusion: Multidetector computed tomography by using its multiplanar and 3D capabilities is highly accurate and specific in detecting the causes of haematuria. It can demonstrate the exact site of involvement in very high percent of cases. In addition to haematuria, multidetector computed tomography can detect various associated and incidental findings which may not be suspected clinically.

Keywords: haematuria, tumours, ultrasonography, computed tomography.

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INTRODUCTION

Haematuria is one of the most common manifestations of urinary tract disease, its reported prevalence ranging from 0.2% to 21%. Multidetector computed tomography (MDCT) urography (MDCTU) has replaced excretory urography as the first imaging test in many institutions. It has the ability to acquire thinly collimated data sets which can be used to create excellent 3D quality images of the urinary tract (1). Given a prior low likelihood of cancer in haematuria, risk categories should be established and imaging algorithms should be tailored to populations at low-risk, medium-risk and high risk for developing urothelial cancer (2). Common extraurinary findings included diverticular disease (138, 17.7%), adrenal masses (85, 10.9%), lung abnormalities (67, 8.6%), and gall bladders containing calculi (44, 5.7%), adnexal cysts (7.7% of women) and aortic aneurysms (18, 2.3%).

Computed tomography (CT) urography (CTU) was associated with a high rate of unsuspected findings. There was an economic implication to performing CT scan in this setting in which unanticipated investigation and treatment cost was 60 pounds/patient (3). MDCT-VC combined with urine cytology is a good alternative to conventional cystoscopy for patients with painless gross haematuria. It should be used as a decision making aid to identify patients who will benefit from additional cystoscopic examination. Future developments should focus on visibility of sessile and carcinoma in situ lesions (4). A clinically significant source of haematuria was detected in 22.1% of CT urograms of young adults. However, an unenhanced CT alone may be sufficient in patients without additional predisposing medical conditions (5).

MATERIALS AND METHODS

The present study was carried out in the Department of Radiodiagnosis, M.M. Institute of Medical Sciences and Research, Mullana, Ambala, from April 2014 to 2016. Fifty patients with complaint of haematuria referred from various wards and outpatient departments of this institution were included in our study. Patients above 14 years of age presenting with haematuria were included in this study. Patients diagnosed during

pregnancy and lactation or with cardiac failure, severe renal failure, multiple myeloma and allergic to contrast medium were excluded from the study.

A complete patient history regarding the chief complaints was taken and a thorough clinical examination was carried out after taking a written informed consent. Relevant laboratory investigations were done. Patients with haematuria were evaluated by ultrasonography (US). Plain x-ray KUB was performed in 20 patients. Multidetector computed tomography was performed in US positive cases, in symptomatic patients with negative US scans and in those with suboptimal US scans.

Equipment

- Ultrasonography
 - HD 11 XE (Philips medical systems) ultrasound unit with convex and linear probes
- Multidetector Computed Tomography (MDCT)
 - 128 slice Multidetector CT (Philips Ingenuity)

PROCEDURES

Ultrasonography

Overnight fasting was preferred. The patient was made to lie down on the couch and proper exposure of part was ensured. A coupling agent was applied liberally to the patient's skin to act as acoustic window removing the air between transducer and patient's skin surface and thus allowing swift movement of the transducer. A general abdominal and pelvic survey by using a 3.5 MHz convex transducer was done. The pancreas was visualized by transverse scans in midline below the xiphoid process. The adrenal glands were assessed intercostally at the midaxillary line. The liver was assessed by starting with the left lobe along the midline, followed by the inferior lobe and intercostally in the end along the midaxillary line. Kidneys were assessed in transverse and coronal planes. Patients were examined in supine, oblique, lateral decubitus and prone (occasionally) positions. Subcostal and intercostal approaches were used wherever necessary to fully evaluate the kidneys particularly the upper pole of the left kidney. The images were acquired while patients held their breath in deep inspiration. Proximal ureters were visualised using coronal oblique views with kidneys as acoustic

windows. An attempt was made to follow the ureters to the bladder maintaining the same approach. The urinary bladder was best visualised in distended state and was followed by a post void scan for residual urine.

Multidetector Computed Tomography

Computed tomography scan was performed on a 128 multidetector CT scanner. Patients were placed in the supine position. Oral contrast was used depending upon clinical situation. CT scans were obtained from diaphragm to the pubic symphysis with a collimation of 64 x 0.625, pitch-1.016 and with 259 mAs. Images were reconstructed at a thickness of 0.625 mm. A 3 phase CT examination was performed after obtaining written consent. The first phase was the initial non-contrast phase. The second phase was the nephrographic/venous phase which was acquired following a delay of 90-100 seconds after administration of 120 mL of intravenous non-ionic iodinated contrast to evaluate the renal parenchyma. This was followed by a delayed phase (after 3-10 mins) from contrast administration to evaluate the excretory function of the kidneys and for the visualization of the ureters.

Findings were recorded as per Performa attached. Results of USG and MDCT were evaluated in each case and findings were correlated with clinical outcome/laboratory findings/FNAC and/or operative findings (wherever performed).

OBSERVATION AND ANALYSIS

A complete patient history was taken regarding the chief complaints and a thorough clinical examination was carried out after taking a written informed consent. Relevant laboratory investigations were done. Patients with haematuria were evaluated by ultrasonography. Plain X-ray KUB was performed in 20 patients. Multidetector computed tomography was performed in US positive cases, in symptomatic patients with negative US scans and in those with suboptimal US scans.

Maximum cases were seen in 51-60 years age group – 15 cases (30%) followed by 10 cases (20%) in the age group of 61-70 years. Seven cases (14%) were seen in the age group of 31-40 years and six cases (12%) in the age group of 41-50 years. The youngest patient was 19 years old and the eldest 74 years old. More than one of the associated symptoms was present in many

patients with haematuria. The most frequently encountered symptom was abdominal pain in 24 patients (48%). Anaemia was present in 30 patients (60%). Fever was also observed in 10 patients (20%). History of diabetes was present in five cases. Out of these five cases, two belonged to the inflammatory group. Loss of appetite was another important clinical feature in malignant cases (30%). One patient presented with history of road side accident with severe head and abdominal injuries (Figure 1). Out of the 30 patients in our study, 14 (28%) presented with haematuria associated with pain and 36 (72%) with painless haematuria (Figure 2).

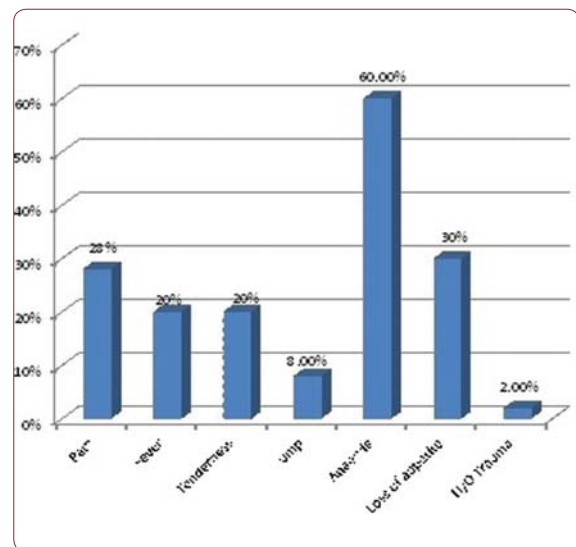


FIGURE 1. Distribution of associated clinical features in patients with haematuria

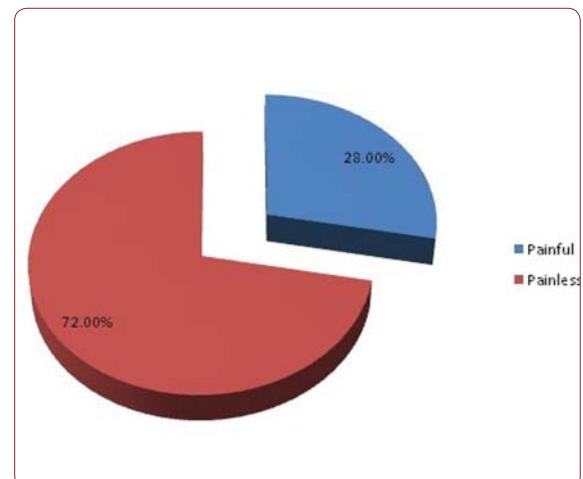


FIGURE 2. Distribution of patients according to type of haematuria

Painless haematuria was common in malignant cases and in patients in whom MDCT was normal, whereas those with calculi presented with painful haematuria. In 27 (54%) out of the 50 patients, the duration of presenting symptoms was less than one month. Seventeen patients (34%) complained of one or more symptoms existing from one to three months prior to presentation. The duration of symptoms was more than three months in six patients (12%).

Haemoglobin levels were the most affected in patients with haematuria. Thirty patients (60%) were anaemic. Blood urea and creatinine levels were affected in five (10%) and three (6%) cases, respectively. One patient with prostatic carcinoma had elevated PSA levels. On plain X-ray KUB, positive findings were seen in eight (16%) patients, whereas 12 (24%) had a normal plain abdominal radiograph. X-ray KUB was not done in 30 patients (60%). There were abnormal radiopacities present in eight patients on plain X-Ray KUB in KUB area out of which seven patients had calculi and in one patient tumour calcification was confirmed on MDCT.

Ultrasound was performed in all 50 patients presenting with haematuria. Provisional diagnosis could be made in 31 subjects on the basis of ultrasound findings, while in 19 patients ultrasound was normal. The ultrasound diagnosis of patients with haematuria is summarized in Table 1.

Bladder carcinoma constituted for 9 (18%) of the patients with haematuria evaluated with ultrasonography. Urinary calculi were detected in 10 patients (20%) as the primary cause of haematuria. Most of the patients with calculi belonged to the younger age group (<40 years).

The other causes of haematuria detected on ultrasound were renal cancer (6%), prostatic carcinoma (2%) BPH (4%), cystitis (2%) bladder diverticulum (2%), renal trauma (2%), chronic pyelonephritis (2%), and acute pyelonephritis (4%).

Bladder carcinoma (18%) and calculi (20%) were the most common causes of haematuria on MDCT. Two cases of ureteral carcinoma which were missed on US were diagnosed on MDCT. Seventeen patients had normal MDCT scans (Figure 3).

In order to have more accurate and comparative analysis and better understanding of the correlation between the clinical, radiological, operative and histopathological findings, the causes of haematuria were grouped into four groups:

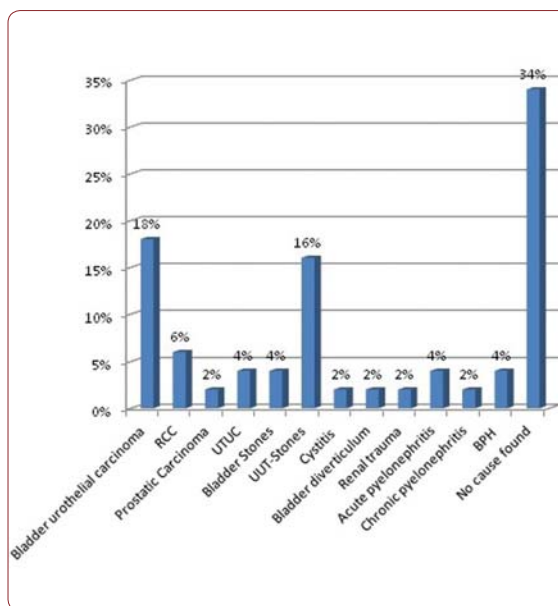


FIGURE 3. Disease prevalence in patients with haematuria evaluated with MDCT

(a) neoplastic; (b) inflammatory; (c) calculus disease, and (d) others.

The neoplastic group included both benign and malignant neoplasms, i.e. TCC, RCC, adenocarcinoma prostate and BPH. Inflammatory conditions included acute and chronic pyelonephritis. In others, patients with renal injury, bladder diverticulae and cystitis were included (Figure 4). Calculi were detected in 10 out the 50 patients included in our study with no other cause of haematuria detected in these cases on MDCT. These included six cases of renal, two cases of ureteric and two cases of vesical calculi.

Urolithiasis was the most common cause of haematuria in age group <40 years. The other causes in this age group included a case of trau-

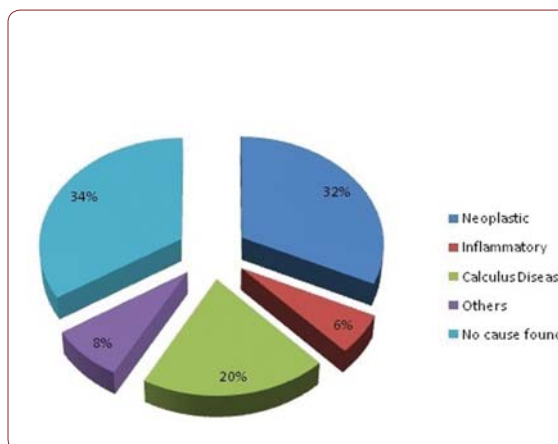


FIGURE 4. Classification of causes of haematuria on MDCT

ma and cystitis each. In this study, urinary bladder was the most commonly involved of all the organs in 13 patients (26%) followed by kidneys – 10 (20%). Ureters and prostate were involved in 14% and 6% cases, respectively.

Out of the 50 patients in our study, 14 were identified to have malignant cause for haematuria on MDCT. These included bladder carcinoma, renal cell carcinoma, ureteral mass, adrenal mass and prostatic carcinoma. The prevalence of malignancy in patients with haematuria in this study was 28%. In seven out of 50 patients, eight clinically significant findings were present on MDCT performed for haematuria. Follow up evaluation was available for two out of these seven patients by histology and clinical information. One of the patients with pulmonary nodules was proven bronchogenic carcinoma on histopathology. The incidence of highly significant findings at MDCT urography performed for haematuria was 14% in our study. Two cases of ureteral carcinoma which were missed on ultrasound were diagnosed on MDCT.

Out of the 50 patients in our study, ultrasound and MDCT could make a provisional diagnosis in 31 and 33 cases, respectively. Seventeen patients with haematuria were labelled as normal on MDCT, as compared to 19 normal ultrasound scans. Two cases of ureteral TCC which were missed on ultrasound were diagnosed on MDCT (Table 1). Out of the 50 patients

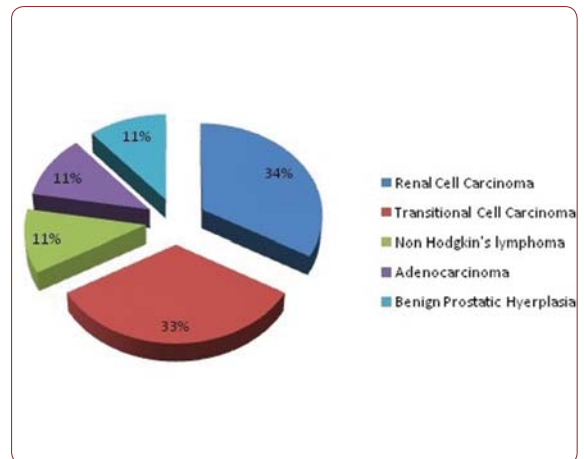


FIGURE 5. Histopathological diagnosis in patients with haematuria

in our study, 14 (28%) were diagnosed malignant on CT and two with BPH were reported. Out of these, nine cases were operated and specimens were sent for histopathological examination.

Histopathological examination revealed three cases of TCC, three cases of RCC and one case of prostatic adenocarcinoma. One case of benign prostatic hyperplasia was reported. One case of bladder growth with abdominal lymphadenopathy which was diagnosed TCC on MDCT turned out to be lymphoma on histopathology (Figure 5).

Final diagnosis in our study in patients with haematuria was made by correlating MDCT findings with the clinical outcome/laboratory findings/FNAC and/or operative findings (wherever performed). On the basis of our final diagnosis in 50 patients with haematuria, MDCT diagnosis matched the final diagnosis in 49 out of the 50 patients, whereas US diagnosis matched the final diagnosis in 30 patients. No cause on MDCT or US could be made in 17 patients. Two cases of uretral TCC were missed on ultrasound where as one case of bladder lymphoma with abdominal lymphadenopathy was wrongly diagnosed as TCC bladder on MDCT. One case which was diagnosed TCC urinary bladder on MDCT was diagnosed as lymphoma on histopathology.

Out of the 50 patients, provisional diagnosis was made on ultrasound in 31 (62%) cases. Two patients with ureteral mass were missed on ultrasound which were diagnosed on MDCT. One case of TCC turned out to be non-Hodgkin's lymphoma of urinary bladder on histopathology.

Therefore, MDCT made a correct diagnosis in 49 out of 50 cases of haematuria. In one case in

	No. of patients with ultrasound diagnosis	No. of patients with MDCT diagnosis
Bladder carcinoma	9	9
UTUC	-	2
RCC	3	3
Prostatic carcinoma	1	1
UUT-stones	8	8
Bladder stones	2	2
BPH	2	2
Cystitis	1	1
Renal injury	1	1
Urinary bladder diverticulum	1	1
Chronic pyelonephritis	1	1
Acute pyelonephritis	2	2
Normal	19	17

TABLE 1. Comparison of US diagnosis with MDCT diagnosis

which the diagnosis of TCC of urinary bladder was made turned out to be non-Hodgkin's lymphoma on the basis of histopathological findings. Thus, MDCT provided 98% accuracy in 50 cases of haematuria (Table 2).

DISCUSSION

Multidetector Computed Tomography (MDCT) was performed in US positive cases, in symptomatic patients with negative US scans and in those with suboptimal US scans. Age distribution in our series ranged from 19 to 74 years. Maximum numbers of patients were in the age group of 51-60 years (30%). The youngest patient was 19 years old and the oldest 74. The mean age of subjects with haematuria in our study was 51. The results of the present study were comparable to those of the study conducted by Song *et al.* (1). On analyzing the gender distribution of patients presenting with haematuria in our study, it was found that there were more males (60%) than females (40%), with a ratio of 3:2 or 1.5:1. Hence, the present study is in accordance with the studies conducted by Song JH *et al* (1), and Maheshwari E (6) *et al*, where male:female ratios were 1.17:1 and 1.47:1, respectively.

In the study conducted by Cowan NC *et al* (7), bladder urothelial carcinoma was the most common cause of haematuria detected on MDCT (18.6%), followed by calculi (16.3%).

In their study, Maheshwari E *et al* (6) reported bladder carcinoma (9%) and calculi as the leading causes of haematuria on MDCT. In the present study, bladder carcinoma (18%) and calculi (20%) were the most common detected causes of haematuria on MDCT (18%). The findings of our study are comparable to those provided by the study conducted by Cowan NC *et al* (7), where bladder carcinoma was the leading cause of haematuria detected on ultrasound with no cause detected in 62.35% of the cases. In all these studies, calculi were the leading cause of haematuria in the younger age group (<40 years). Whereas in the older age group (>40 years), malignant diseases such as bladder TCC, RCC, UUT-UC and prostate related causes were more prevalent. No diagnosis could be made in 17 patients (34%) (Table 3).

In the studies conducted by Cowan NC *et al* (7), neoplastic causes of haematuria on MDCT

	Final diagnosis	No. of patients with MDCT diagnosis
TCC	10	11
RCC	3	3
Prostatic adenocarcinoma	1	1
NHL bladder with pelvic LAP	1	-
UUT-stones	8	8
Bladder stones	2	2
BPH	2	2
Cystitis	1	1
Renal injury	1	1
Bladder diverticulum	1	1
Chronic pyelonephritis	1	1
Acute pyelonephritis	2	2
Normal	17	17

TABLE 2. Comparison of MDCT diagnosis with the final diagnosis (n=50)

MDCT diagnosis	Cowan NC <i>et al</i> ⁷ (n=1001)	Maheshwari E <i>et al</i> ⁶ (n=200)	Present study (n=50)
Bladder urothelial carcinoma	18.6 %	9 %	18 %
Renal cell carcinoma	2.4 %	-	6%
UTUC	2.2 %	4.5 %	4 %
Prostatic carcinoma	3.5 %	-	2 %
Calculus disease	16.3 %	7.5 %	20 %
BPH	-	5 %	4%
Cystitis	-	2 %	2 %
Renal injury	-	-	2 %
Bladder diverticulum	-	-	2 %
Acute pyelonephritis	-	-	4 %
Chronic pyelonephritis	0.2 %	-	2 %
Others	0.5 %	8.5%	-
No cause found	56.5 %	61.5 %	34 %

TABLE 3. Comparison of disease prevalence in patients with haematuria evaluated by MDCT in different studies

were observed in 26.7% and 13.5% patients, respectively. Calculus disease formed the second most common cause. In the present study, neoplastic causes were observed in 32% cases. Calculi were the second most common cause on MDCT in patients with haematuria (20%) (Table 4). In the present study, urinary bladder was the most commonly involved organ in 26%

cases, followed by kidney (24%) and ureters (14%). Prostate was involved in 6% of the cases presenting with haematuria. In our study, no organ involvement was seen in 34% cases. The findings of the present study are comparable to those obtained by Cowan NC *et al* (7) and Maheshwari E *et al* (6), where urinary bladder was the most commonly involved primary organ with 19.8% and 11%, respectively (Table 5).

In the studies by Song JH *et al* (1), the prevalence of malignant disease on MDCT in patients with haematuria was 18.4%. Maheshwari E *et al* (6) and Cowan NC *et al* (7) reported 13.5% and 26.7% of malignant cases, respectively. In the present study, the prevalence of malignant disease was 28%, with bladder urothelial carcinoma being the most common malignancy (nine patients).

In the present study, the incidence of highly clinically significant extraurinary findings at MDCT urography performed for haematuria was 14%. In another study, conducted by Song JH *et al* (1), the prevalence of highly significant extraurinary findings was 6.8%.

Computed tomography can help detect active hemorrhage and urine leakage and is the most accurate screening test for high grade injuries and is of great help in guiding Trans catheter embolization and delineating pre-existing disease entities. They concluded that multiphasic CT well demonstrated various traumatic renal lesions with proper diagnosis and staging of renal trauma and guiding management. Kim JY *et al* (8) conducted a study to prospectively compare nephrographic phase MDCT urography performed with oral hydration and a diuretic with standard pyelographic phase MDCT in the detection of recurrence after transurethral resection. For recurrence detection in the bladder, overall accuracy was significantly higher for the nephrographic phase than the pyelographic phase [91.7% (354/386) vs 83.2% (321/386), $p = 0.038$]. For recurrence detection in the upper tract, overall accuracy was significantly higher in the nephrographic phase than in the pyelographic phase [86.7% (260/300) vs 80% (240/300), $p = 0.028$] (9).

Cha KH *et al* conducted a study to develop a computerized system for bladder segmentation in CT urography as a critical component for computer aided detection of bladder cancer. A deep learning convolutional neural network (DL-CNN) was trained to distinguish between the inside

Type	Cowan NC <i>et al</i> ⁷	Maheshwari E <i>et al</i> ⁶	Present study
Neoplastic	26.7%	13.5 %	32 %
Inflammatory	0.2%	3%	6 %
Calculus disease	16.3%	7.5%	20 %
Others	0.5%	8%	8 %
No cause found (Normal)	56.5%	61.5%	34 %
Indeterminate	2%	-	-

TABLE 4. Comparative classification of haematuria causes on MDCT (n=50)

Organ	Cowan NC <i>et al</i> ⁷	Maheshwari E <i>et al</i> ⁶	Present study
Kidneys	18 %	7.2 %	20 %
Ureters	2.2 %	6 %	14 %
Urinary bladder	19.8 %	11 %	26 %
Prostate	3.5 %	5 %	6 %

TABLE 5. Comparison of organ involvement in patients with haematuria on MDCT

and the outside of bladder using 160000 regions of interest from CTU images. With DL-CNN based likelihood map and level sets, the average volume intersection ratio, average volume percent error, average absolute volume error, average minimum distance and the Jaccard index for the test set were 81.9%, 12.1%, 10.2%, 14%, 3.6% and 76.2%, respectively. The authors demonstrated that DLL-CNN can overcome the strong boundary between two regions that have large difference in grey levels and provides a seamless mask to guide level set augmentation which has been a problem for many gradient based segmentation methods (10).

Multidetector computed tomography is the new imaging technique employed in blunt trauma patients of abdomen and pelvis. It easily detects the solid organ injuries with associated bowel or mesenteric injuries and decreases the morbidity and mortality. But challenges still continue in abdominal and pelvic CT images of trauma cases. Moreover, with the help of advanced technology such as MDCT, new CT features of bowel or mesenteric injuries have been identified (11).

CONCLUSIONS

Multidetector computed tomography by using its multiplanar and 3D capabilities is highly accurate and specific in detecting the

causes of haematuria. It can demonstrate the exact site of involvement in a very high percent of cases. It is highly sensitive and specific in diagnosing cause of haematuria. In addition to haematuria, MDCT can detect various associated

and incidental findings which may not be suspected clinically. $\square$

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REFERENCES

1. Song JH, et al. Haematuria evaluation with MDCT urography. *AJR* 2011;197:W84-W89.
2. Molen AJ, Hovius MC. Haematuria: A problem based imaging algorithm illustrating the recent Dutch guidelines on haematuria. *AJR* 2012;198:1256-1265.
3. Bromage SJ et al. The economic implications of unsuspected findings from CT urography performed for haematuria. *Br J Radiol* 2012;85:1303-1306.
4. Kuehass FE et al. Multidetector computed tomography virtual cystoscopy: an effective diagnostic tool in patients with haematuria. *J Urol* 2012;79:270-276.
5. Lokken RP, Sadow CA, Silverman SG. Diagnostic yield of CT urography in the evaluation of young adults with haematuria. *Am J Roentgenol* 2012;198:609-615.
6. Maheshwari E et al. Split bolus MDCT urography: upper tract opacification and performance for upper tract in patients with haematuria. *AJR* 2010;194:453-458.
7. Cowan NC. CT urography for haematuria. *Nat Rev Urol* 2012;13:9:218-226.
8. Shaaban MS et al. Multidetector CT assessment of traumatic lesions. *Alex J Med* 2016;52:173-184.
9. Kim JY et al. MDCT urography for detecting recurrence after transurethral resection of bladder cancer: comparison of nephrographic phase with pyelographic phase. *AJR Am J Roentgenol* 2014;203:1021-1027.
10. Cha KH. Urinary bladder segmentation in CT urography using deep learning convolutional neural network and level sets. *Med Phys* 2016;43:1882.
11. Singal R et al. Delayed presentation of the traumatic abdominal wall hernia; dilemma in the management – review of literature. *Indian J Surg* 2012;74:149-156.

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