
Assessment of Abdominal Ultra Sonography (U/S) with Urine Cytology in the Follow up of Bladder Tumor Patients

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Background: Cancer of bladder is a common disease characterized by its high recurrence and progression.

Objective: To measure the sensitivity of transabdominal U/S in conjunction with urine cytology in follow up of patients with carcinoma of the bladder.

Patients and Methods: The study was carried out for total number of 21 patients the age of those patients ranged from 40-77 years with mean age of 60 years. All those patients have already been diagnosed as bladder carcinoma through previous cystourethroscope and histopathological results and followed up by transabdominal U/S and urine cytology and then all were examined by cystoscopy. The value of diagnostic test lies in its ability to detect patient with disease (its sensitivity).

Result: Twenty (21) patients were examined ultrasonically with urine cytology for 2 times. The following in each patient cystoscopic examination detected that all patients had recurrent tumors, (100% Out of 21) the 42 transabdominal ultrasonic examination, 29 revealed positive results. The sensitivity is 69%. On urine cytology examinations 21 examinations were positive. The (sensitivity is 50%). The combination of transabdominal U/S with urine cytology examination increases the (sensitivity up to 78.5%.

Conclusion: The combination of transabdominal U/S with urine cytology in diagnosis of recurrent bladder cancer are non-invasive investigations which can be repeated as much as required and used to dictate the need for cystoscopic examination and considered as convenient mode in the follow up patients. In addition, it's easy to perform, cheap and not troublesome to the patients. Because of high sensitivity rate we believe that the combination of transabdominal U/S with urine cytology should be the first choice examinations for selected patients who are suspected of having recurrent bladder cancer.

Key Words: Trans Abdominal Ultra Sonography, Urine Cytology, Cysto Urethroscopy.

Introduction:

Carcinoma of the bladder constitute 3% of malignant tumors in the world and is the second most common cancer of genitourinary tract^[1]. In Iraq it is the third common cancer after breast and lung and constitutes 9.2% of total body cancer^[2].

Types of bladder cancer are:

Transitional cell carcinoma (also called *urothelial carcinoma*), squamous cells carcinoma, Adenocarcinoma, and Small cell carcinoma.

The tumor may also grow in other places in the urinary tract, such as the lining of the kidney (called the *renal pelvis*), the ureters, and the urethra. In fact, patients with bladder cancer sometimes have a similar tumor in the lining of the kidneys, ureters, or urethra, therefore, when someone is found to have a cancer in one part of their urinary system, the entire urinary tract needs to be checked for tumors^[2,3].

Diagnosis is commonly performed by ultra sonography intravenous urogram (I.V.P), computed tomography and cystoscopy^[3]. Majority of bladder tumors are exophytic and papillary and may be visualized by trans-rectal scanning^[4].

The accuracy of diagnosis by trans-abdominal U/S reach 91% with deeply invasive tumors^[5].

Combination of transabdominal U/S with urine cytology increases the diagnostic sensitivity.^[7]

In order to reduce costs and patients inconvenience in the follow up bladder tumor

patients; abdominal U/S and urine cytology are advocated as an alternative to cystoscopy.

Patients & Methods:

Prospective study was carried out on a total number of 21 patients the age of those patients ranged from 40-77 years with mean age 60 years.

All those patients have already been diagnosed as bladder carcinoma through previous cystourethroscopy and histopathological results.

All were followed up by transabdominal U/S and voiding urine cytology then cystourethroscopy was carried out in all of them (in order to measure the sensitivity). Each patient underwent 2 sets of checking (U/S, cytology cystoscopy) with 3 months apart. So, a total of 42 cystourethroscopies were carried out for the period from October 2008 to October 2009. Sensitivity (measures the fraction of patients with disease that will be detected by the diagnostic test) was calculated by:

Sensitivity % = $\frac{\text{No. of +ve cases}}{\text{Total No. of Lesions}} \times 100$
(True+ve + False+ve / False – ve + true –ve) x100

Results:

Twenty (21) patients were examined by U/S with urine cytology for 2 times, 3 months apart for each of them. The following cystoscopic examinations detected that all patients had recurrent tumors, 100%.

Out of the 42 transabdominal ultrasonic examinations, 29 revealed positive results. The sensitivity is 69% (**Table 1**). Urine cytology

examinations 21 were positive. The sensitivity is 50% (table 2).

The combinations of transabdominal U/S with urine cytology examination increase the sensitivity up to 78.5% (Table 3).

Table No. (1) Results of urine cytology as compared as cystoscopy.

No. of patients	Urine Cytology				Cystoscopy
	True-ve	True+ve	False+ve	False-ve	Total
21	0	21	0	21	42

Sensitivity of urine cytology= No True +ve *100/ Total [True- ve +True +ve+ False +ve+ False-ve]= 21/42*100=50%

Table No. (2) Results of transabdominal U/S as compared to cystoscopy.

No. of patients	transabdominal U/S				Cystoscopy
	True-ve	True+ve	False +ve	False -ve	Total
21	0	29	0	13	42

Sensitivity %= No. of +ve cases / Total No. lesions [True- ve +True +ve+ False +ve+ False-ve]* 100%=29/42*100=69%.

Table No. (3) Results of combination of transabdominal U/S with urine cytology as compared to cytology.

combination of transabdominal U/S with urine cytology				Cystoscopy
True-ve	True+ve	False +ve	False -ve	Total
0	33	0	9	42

Sensitivity rate of combined methods-No. of True+ve/Total No.* 100= 33/42*100=78%

Discussion:

Reliability of urine cytology depends on both extent diathesis and degree of cellular anaplasia.

Low grade tumors are often found to have negative urine cytology because of tendency toward a normal cellular appearance and lower cellular shedding.

As in any cytological study, the detection rates are better for lesion of higher grade [12].

Papillomas are detected in only 50% of patients. Ta, T1s and invasive lesion are detected in approximately 82%, 89% and 90% of patients. More over the distinction between low grade tumors and traumatic and inflammatory conditions may lead to false +ve reading. The yield of positive cytologic specimen is enhanced when bladders washing rather than voided specimens are obtained [22].

Cystourethroscopy and urine cytology remain the gold standard combination for follow up of patients with bladder cancer but because of invasive nature of cystourethroscopy and its expense, so the search for other methods have been justified. [11].

Transabdominal ultrasonograph has been evaluated by several authors who have confirmed its potential in the surveillance of bladder tumor. This procedure is generally performed when patient's bladder is full. The full bladder is an echo free structure with a regular wall. [9].

Tumors are demonstrated as protrusions into the lumen of the bladder, the base tumor is easy to visualize, and incomplete bladder filling can lead to false positive results because of mucosal folds, clots

and enlarged prostatic middle lobe, severe trabeculation, cystitis cystic. Sometimes Sonography could not differentiate flatmors from oedema [18].

The diagnostic accuracy of U/S was proportionally related to tumor size.

This modality seems safe in patients with low-risk bladder tumor disease [6].

In the management of bladder tumor. It has well known advantages of being:

- 1-Simple
- 2- Quick
- 3- Harmless
- 4- Easy repeatable

From all these suggested possibility of using transabdominal U/S in conjunction with urine cytology for follows up of bladder cancer patients.

From our results statistical analysis shows urine cytological diagnosis sensitivity 50% in diagnosis of recurrent bladder cancer.

Statistical analysis shows transabdominal U/S diagnosis sensitivity is 69% for our study in diagnosis of recurrent bladder cancer (Table 2).

Combination of both methods raises our diagnostic sensitivity rate to 78%. Yamashita-T; Okada-N; Ogawa-A; from Matshiro General Hospital, Nagano Japan on 1993 they evaluated the presence or absence of recurrent bladder cancer by combination of transabdominal U/S and urine cytology for 23 patients.

All patients were diagnosed as bladder cancer by cystourethroscopy and biopsy. By this sensitivity rate was 96%. [19].

From this study we have found that the sensitivity rate for the detection of tumor recurrence in the bladder is raised when both methods are combined together and consider them as complementary to each other. Accordingly we found that our sensitivity rate was inferior to Japanese study sensitivity rate possibly because of the technique of both cytological and ultrasonic studies is more accurate in Japan.

Conclusion:

- 1-The combination of transabdominal U/S with urine cytology in diagnosis of recurrent bladder cancer are non-invasive investigations that could be used to dictate the need for cystoscopy examinations and considered as convenient mode in the follow up of patients.
- 2- It's easy to perform, cheap and not troublesome to the patients. It alters the management of those patients and may help in earlier diagnosis of recurrence.
- 3-We believe that the combination of transabdominal ultrasonography and urine cytology should be the first choice examination for patients who are suspected of having recurrent bladder cancer.

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