

# URINARY TRACT CHANGES IN CARCINOMA OF CERVIX WITH SPECIAL REFERENCE TO URINARY INFECTION

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Carcinoma cervix is the commonest malignancy in females next to breast carcinoma. The close proximity of urinary tract precludes its involvement as the cervical malignancy progresses. Such an involvement has been demonstrated by various workers using different techniques. Pomeroy (1939) reported deformed bladder wall in 17.2% cases on cystoscopic examination. Dearing (1953) and Balkrishnan (1960) found changes in urinary tract after intravenous pyelography.

The urological study in cases of carcinoma cervix prior to any treatment is essential to know the anatomical condition and functional efficacy of urinary tract. Involvement of urinary tract apart from affecting the treatment also reflects the future prognosis. Everette *et al* (1949) and Dearing (1953) have stated that changes in urinary tract are of grave prognostic significance even when found in early cases. With these views in mind, urological study was undertaken in 60

cases of carcinoma cervix of different stages.

## Material and Methods

Sixty cases of carcinoma cervix were selected for the study from the out patient department and indoors of Obstetric & Gynaecological department of S.N. Medical College, Agra and L.L.R.M. Medical College, Meerut. The Clinical symptoms of these cases were noted with special stress on urinary symptoms. Clinical staging of the disease was done by careful speculum, vaginal and rectal examinations. Diagnosis was confirmed in all cases by cervical biopsy.

All the cases submitted to a routine urine examination, culture and sensitivity of urine and blood urea examination. Intravenous pyelography was done and state of calyces, renal pelvis, ureters and bladder was noted.

## Observations

1. *Age and Parity*: Age of the patients ranged from 38-68 years. All the cases were multiparous. Average number of deliveries were 6.0 in those who had urinary tract changes and 5.72 in those who did not have any changes in urinary tract.

2. *Urinary Complaints*: History suggestive of urinary tract infection was present in 35 cases. Table I shows the

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Accepted for publication on 25-6-1977.

TABLE I  
Symptoms

Sl. No.	Symptoms	No. of Cases	Percentage
1.	Dysurea	30	85.7
2.	Increased frequency of micturation	25	71.4
3.	Haematuria	2	5.7
4.	Nocturia	2	5.7

urinary symptomatology in different cases.

Depending upon the severity of urinary complaints, cases were divided in the following 3 groups:

1. Severe—Having 3 or more urinary symptoms.
2. Moderate—Having 2 or more urinary symptoms.
3. Mild—Having only 1 symptom.

Out of 35 cases having urinary complaints, 20% belonged to severe group, 42.8% to moderate group and 37.2% to mild group.

3. *Clinical Staging of Disease:* In the present series 14 cases (23.3%) were of stage I, 18 (30%) of stage II, 25 (50%) of stage III and 3 (5%) of stage IV. Parametrial infiltration was present in 42 cases. It was unilateral in 17 cases and bilateral in 29 cases. Incidence of urinary tract changes was 48.7% in cases of bilateral parametrial infiltration and 20% in cases with unilateral parametrial involvement.

#### Investigations

(a) *Urine Pus Cell Count:* Pyouria was present in 18 (30%) out of 60 cases. Pus cell count was between 5-10 in 4 cases, between 11-20 in 8 and above 20/HPF in 6 cases.

(b) *Urinary Pathogens:* Positive

urine culture was present in 19 (31.6%) cases. Klebscilla was grown in 7 cases, E. coli in 6 cases, proteus in 1 case and mixed growth was present in 5 cases.

(c) *Blood Urea:* Blood urea was between 20-40 mg% in 51 cases, while 9 cases had raised blood urea. Among those 9 cases 2 were of stage II, 4 of stage III and 3 of stage IV carcinoma.

(d) *Radiological Findings:* Evidence of urinary tract changes was present in 21 (35%) cases while the remaining 39 cases (65%) had normal pyelogram. No case of stage I revealed any changes on intravenous pyelography. Urinary tract changes were present in 6 cases (33.33%) of stage II, 12 (48%) of stage III and all the 3 cases of stage IV. Tables II, III and IV depict the various changes in urinary tract in cases of different stages. Hydronephrosis and hydroureter were the commonest changes observed. Photograph 1 shows unilateral hydronephrosis with other sided nonfunctioning kidney, photograph 2 shows bilateral hydronephrosis, photograph 3 shows bladder filling defect on right side with normally functioning kidneys.

TABLE II  
Urinary Tract Changes in Stage II

Sl. No.	Type of change	No. of Cases	Percentage
1.	Bilateral hydronephrosis and hydroureter	1	5.55
2.	Unilateral hydronephrosis and hydroureter with other sided normal kidney	3	16.65
3.	Unilateral hydronephrosis with other sided nonfunctioning kidney	1	5.55
4.	Bilateral poor excretion of dye	1	5.55
	Total cases having urinary tract changes	6	33.33

TABLE III  
Urinary Tract Changes in Stage III

Sl. No.	Type of Change	No. of Cases	Percentage
1.	Unilateral Hydro-nephrosis with other sided non-functioning kidney	4	16
2.	Unilateral hydro-nephrosis with other sided normal kidney	3	12
3.	Bilateral hydronephrosis and hydroureter	2	8
4.	Bilateral poor excretion of dye	3	12
	Total cases with urinary tract changes	12	48

TABLE IV  
Urinary Tract Changes in Stage IV

Sl. No.	Type of change	No. of Cases	Percentage
1.	Bilateral hydronephrosis and hydroureter	1	33.33
2.	Unilateral hydro-nephrosis and hydro-ureter with other sided non-functioning kidney	2	66.66
	Total cases with urinary tract changes	3	100

#### Discussion

Anatomically and embryologically the genital and urinary tracts are so closely associated that one may frequently be affected by pathology of the other. The urological study in cases of carcinoma cervix is of prime importance in deciding the response to treatment and future prognosis.

In the present study changes in pyelogram were more frequent (46.3%) in women in sixth and seventh decades than in women in fourth and fifth decades (25%). Henriksen (1949) has also reported that elderly women with carcinoma

cervix are more prone to die with ureteric obstruction than younger ones. The average number of pregnancies was 5.21 in those who had no change and 6.0 in those who had changes in urinary tract. This indicates that pregnancies cannot be blamed to be responsible for changes in urinary tract. Similar has been the opinion of Pomeroy (1947) and Aldridge and Mason (1950).

Urinary complaints were present in 58.3% cases. Dysuria and increased frequency of micturation were the commonest symptoms. Dean (1933) reported urinary symptoms in 80% cases and Diehl and Hundley (1948) in 49.5% cases of cancer of cervix. Significant pyouria was present in 30% cases. Positive urine culture was obtained in 31.6% cases. Incidence of positive culture was 22.2% in stage I and II and 42.8% in stage III and IV. Klebscilla was the commonest organism grown. This may be due to the fact that presence of necrotic tissue in vagina favoured growth of these organism. Upadhya and Verma (1969) have reported urinary tract infection in 40.8% cases of stage I and II carcinoma of cervix and 8.3% of these had associated changes in urinary tract.

Different types of changes were present in 35% cases on intravenous pyelography. Aldridge and Mason (1950) reported urinary tract changes in 34% cases, Balkrishnan (1960) in 46% cases and Dearing (1953) in 29.4% cases after intravenous pyelography. Photograph (4) shows the comparative incidence of various urinary tract changes in different stages of carcinoma of cervix. None of the cases of stage I revealed any abnormality in pyelograms while changes were present in 33.3% cases of stage II, in 48% cases of stage III and in all the 3 cases (100%) of stage IV. Hence it can

be concluded that the incidence of involvement of urinary tract increases with advancement of the disease. Table V shows the comparative incidence of involvement of urinary tract in different stages of cancer cervix as has been reported by different authors.

have been the observations of DeAlvarez (1947) and Aldridge and Mason (1950).

#### Summary and Conclusions

1. Urinary complaints were present in 35 out of 60 cases. Positive urine culture was obtained in 31.6% cases.

TABLE V  
Incidence of Urinary Tract Changes Reported by Different Authors

Sl. No.	Name of Author	Year	Stage I	Stage II	Stage III	Stage IV	Total
1.	Aldridge & Mason	1950	14.5%	22.0%		59.0%	34.0%
2.	Ruth Dearing	1953	11.2%	24.5%	51.2%	66.6%	29.4%
3.	Balkrishan	1960	0.0 %	27.0%	49.0%	79.0%	46.0%
4.	Present series		0.0 %	33.3%	48.0%	100.0%	35.0%

Comparative incidence of urinary tract changes in different stages of carcinoma of cervix.

Postoperative complications can be reduced and prognosis can be judged prior to the treatment by assessing the kidney function and results are definitely better if the disease is diagnosed and treated in early stage before it affects the urinary tract. Rosh *et al* (1952) are of the opinion that cases of stage I and II carcinoma cervix with evident urinary tract changes should be transferred to stage IV from the point of view of prognosis. Dearing (1953) stated that changes in urinary tract are of grave prognostic significance even when found in early stages.

Involvement of urinary tract depends on the extent of parametrial infiltration or infiltration of urinary bladder wall in the region of interstitial portion of ureters. In the present study no urinary tract changes were observed in cases who had no parametrial infiltration while the incidence of involvement was 20% in cases with unilateral parametrial infiltration and 48.7% in cases with bilateral parametrial involvement. Similar

2. Urinary tract changes were present in 68.4% cases showing positive urine culture. This shows that urinary stasis secondary to hydroureter and hydronephrosis is a potent cause of urine infection.

3. Urinary tract changes were present in 35% cases. Hydronephrosis and hydroureter were the commonest changes. The incidence of involvement of urinary tract increases with advancement of the disease.

4. The present study has proved that urinary tract is frequently involved in cases of cancer cervix. Sometimes this involvement may not be evident during the early stages of the disease. Hence a careful urine examination, urine culture and intravenous pyelography must be done in every case before submitting the case to surgery or radiological treatment. Such study apart from being essential in planning the treatment, is useful in evaluating the correct prognosis.

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See Figs. on Art Paper I