

ISOTOPE NEPHROGRAPHY IN CARCINOMA OF THE UTERINE CERVIX STAGE I B

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In a previous report on cervical carcinoma treated with irradiation only, a significantly poorer prognosis was found in patients with ureteric involvement demonstrated by isotope nephrography (KJÖRSTAD et coll. 1973). This was considered to be due to cancerous involvement of the parametrial tissues and the pelvic lymph nodes. The validity of this statement was investigated, in a series of stage I cases, in which the extent of the cancerous lesion was clearly defined at surgery and the result is now reported.

Material

Isotope nephrography was performed before operation (radical hysterectomy with pelvic lymph node dissection) in 90 cases of stage I B cervical carcinoma treated at this hospital in 1970. Nearly all patients had two radium insertions after the Paris method approximately 6 weeks before the operation. The nephrography was performed after the radium treatment was finished, by injection of 50 μCi ^{131}I -Hippuran after adequate hydration and with the patient supine.

The ratio between the maximum activity and the activity measured 10 min after the maximum, the excretion index (AURELL 1971), was calculated. Approximately at the same time as the nephrography urography was performed in all patients.

Results

The 90 patients had a crude five-year survival of 78 per cent. Eighteen patients had metastases to the pelvic lymph nodes (20%). The frequency and site of metas-

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Table 1

The frequency and site of involvement for 18 patients with pelvic lymph node metastases

	Right	Left	Total
External iliac group	4	7	11
Obturator group	8	8	16
Common iliac group	3	5	8
Total	15	20	35

tases is given in Table 1. No metastases were found in the paracervical glands, but serial sections of the parametrial tissue was not performed routinely. AURELL defined the excretion index as normal if it exceeds 1.8. Using this criterion a high frequency of pathologic values (30 %) was found.

The excretion index in the 72 patients without metastases, was on the right side 2.2 ± 0.5 SD and on the left 2.5 ± 0.6 SD. Only one of these patients without metastases had an excretion index less than 1.6, and this patient had a left-sided hydro-nephrosis at urography.

Introducing an arbitrary borderline value for the excretion index of 1.6 instead of 1.8, 15 cases of the total material (17 %) had pathologic nephrograms, 10 on the right side. Of the 15 cases 6 died within the first 5 years after treatment (40 %); the mortality was 19 per cent in the group of 75 patients with normal values. An excretion index less than 1.6 was found in 10 of 18 patients with metastases, which means a detection rate of 55 per cent. The pathologic values always corresponded to the side of metastases but the detection rate was much lower on the left side than on the right. The obturator lymph nodes were the most common site for metastases. Seven of 8 patients with metastases to these nodes on the right side had pathologic values. On the left side, the lymph nodes must obviously be more extensively involved before the ureteric function is impaired giving pathologic values. Single metastases on this side were not detectable (Table 2).

Ten of 15 patients with pathologic excretion index had lymph node metastases, in all 10 the urography was without abnormality. Thus, 5 patients had 'false positive' nephrograms. Two patients had pathologic values bilaterally with prolonged excretion phase, but normal first and second phases; no abnormality was found at urography. The possibility of technical error or inadequate hydration must be considered in these cases. Two patients had unilateral delayed excretion and urography showed that one had a congenital malformation of the renal pelvis, the other had a benign cystic tumor of the kidney. These 4 patients are living and well with no evidence of disease. The fifth patient died of pelvic recurrence 3 months after surgery; the urography was normal at the time of presentation.

Table 2
The findings in 18 patients with lymph node metastases

Excretion index		Metastases		Survival
Right	Left	Right	Left	
1.4	2.5	Single	None	> 5 years
2.2	1.3	None	Multiple	> 5 years
1.3	2.9	Single	None	> 5 years
2.0	1.6	Single	Multiple	17 months
1.5	2.7	Single	Multiple	22 months
1.3	3.3	Single	Single	7 months
1.6	2.6	Single	None	40 months
1.5	3.2	Single	Single	> 5 years
1.6	2.6	Single	Single	> 5 years
1.6	4.0	Multiple	Multiple	3 months
1.8	1.8	Single	Multiple	> 5 years
1.7	2.0	Single	Multiple	> 5 years
1.9	2.3	None	Single	> 5 years
2.7	3.2	Single	None	20 months
2.0	2.9	None	Single	16 months
4.6	2.3	Single	Multiple	> 5 years
2.3	2.8	Single	None	> 5 years
2.7	3.0	None	Single	> 5 years

In the 8 patients with pelvic lymph node metastases, but with normal isotope nephrography, the urography was also normal. Three of these patients had multiple metastases on both sides.

Discussion

Isotope nephrography gives excellent information concerning the function of the renal pelvis and the ureters (RODDICK et coll. 1964, MOGENSEN et coll. 1973).

This method is more sensitive than urography (KJÖRSTAD et coll. 1973). It is reasonable to assume that even early tumor involvement of the parametrial tissues and the lymph nodes in the pelvis will influence the ureteric function. It has been stated that the right ureter is more often implicated than the left (PATRICIO & BAPTISTA 1968, VAN VAERENBERG & WINTER 1971). However, this could not be confirmed in patients with cervical carcinoma of all stages (KJÖRSTAD et coll.), but in the present material, which consisted of cases in stage I B, the right side was affected twice as often as the left. This may be explained by the topography of the ureters, the right one having a more intimate relation to the iliac vessels than the left (SOBOTTA & BECHER 1958). The lymph nodes are located along these vessels and it is possible that the anatomic differences on the two sides account for the difference in the detection rate of metastases that is found between the right and left side.

The introduction of a new borderline figure for the excretion index may be discussed, but in this series it proved practical as it reduced the 'false positive' values to an acceptable level. The majority of the patients had radium insertions before the nephrography. The radium will definitely have some effect on the paracervical tissues surrounding the ureter, and this may account for the many pathologic values found when the definition of AURELL (excretion index of at least 1.8) was used. No effect of the radium is to be anticipated on the cancerous pelvic lymph nodes (SCHUMAN & FRISCHBIER 1972). Impaired nephrography may improve or become normal during external radiation therapy. This could indicate successful treatment of lymph node metastases.

Conclusion. The isotope nephrography alone gives limited information in cases of carcinoma of the cervix. It is obviously a reliable indicator of cancerous involvement of some lymph nodes, but the overall metastases detection rate is only about 50 per cent. It must be combined with other methods such as urography, lymphangiography (KOLBENSTVEDT 1975), maybe also biochemical tests. However, a pathologic nephrography is suggestive of metastatic disease.

SUMMARY

Isotope nephrography was performed in 90 cases of carcinoma of the uterine cervix stage I B before radical hysterectomy with pelvic lymph node dissection. Ureteric involvement was indicated in 15 patients, 10 of these had metastases to the pelvic lymph nodes. The overall metastases detection rate was 55 per cent.

ZUSAMMENFASSUNG

Bei 90 Fällen mit Karzinom der Cervix uteri im Stadium I B wurde vor der radikalen Hysterektomie mit Dissektion der Beckenlymphknoten eine Isotopen-Nephrographie durchgeführt. Eine Beteiligung der Ureteren wurde bei 15 Patienten gefunden; 10 von diesen hatten Metastasen in den Beckenlymphknoten. Die gesamte festgestellte Metastasenfrequenz betrug 55 Prozent.

RÉSUMÉ

Les auteurs ont fait une néphrographie isotopique dans 90 cas de cancer du col de l'utérus au stade I B avant hystérectomie radicale avec dissection des ganglions lymphatiques pelviens. Il y avait une atteinte des uretères chez 15 malades dont 10 avaient des métastases ganglionnaires pelviennes. Le taux global de détection des métastases a été de 55 pour-cent.

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