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Pretreatment urographic evaluation in invasive carcinoma of the cervix uteri

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Summary

The urographic findings in 52 patients with histologically proven carcinoma of the cervix were studied. Obstructive changes observed were classified according to the severity of calyceal distension and related to the clinical staging of the disease. Obstructive urographic changes were present in 46% of cases, which is three times as high as reported in Caucasian populations, and the severity correlated significantly with the stage of disease. Urography is advocated as a useful pre and post-treatment index of the progress of cervical carcinoma.

Résumé

On a étudié les résultats de l'urographie chez cinquante-deux (52) malades qui souffraient d'un cancer du col de l'utérus prouvé histologiquement. Les changements obstructifs observés ont été classés selon la sévérité de la distension du col et on a fait le rapprochement avec le stade clinique de la maladie. Des changements obstructifs de nature urographique ont été rapportés dans 46% des cas, ce qui est trois fois plus que ceux qui on trouve chez les populations du Caucase et la gravité est en rapport étroit avec la maladie. On recommande l'urographie comme indice utile de la progression du cancer du col de l'utérus avant et après traitement.

Introduction

Carcinoma of the cervix is a very common malignancy in Ibadan. Indeed it is by far the

most common female malignancy, excluding the lymphoreticular tumours [1]. Intracavitary irradiation is the only method of treatment at present.

Pretreatment intravenous urography (IVU) is a part of the standard investigations performed for invasive carcinoma of the cervix, and has been found to be one of the best diagnostic indices in the management of this condition [2,3].

In the following report, the findings at IVU were studied among patients with carcinoma of the cervix seen during a 3-year period at the University College Hospital (UCH), Ibadan. The aim of the study was to assess the value of this investigation and correlate the radiological findings and grading to findings during examination under anaesthesia (EUA).

Subjects and methods

Fifty-two patients with histological diagnosis of carcinoma of the cervix seen during the 3-year period January 1978-December 1980, formed the subject of this study. Their radiographs, clinical records, findings at EUA, histological and other laboratory findings were collated and evaluated.

The technique of urography consisted of bowel preparation with 10 mg bisacodyl (Dulcolax) tablets administered orally the night before the examination, with no food or fluid intake until after completion of the study the following morning. A baseline abdominal X-ray was taken, after which 50-60 ml of urografin 60% (52.1% meglumine diatrizoate, 7.9% sodium diatrizoate) was injected into an ante-cubital vein and serial abdominal X-rays obtained, usually immediately post-injection, at 5, 15 and 30 min. In the presence of unilateral

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or bilateral non-function X-rays up to 24 h later were obtained. No abdominal compression was applied.

The preliminary and contrast films were studied and any abnormality of the urinary tract was recorded. As a measure of back-pressure effect on the calyces, the severity of calyceal distension was graded in conformity with the system suggested by Lagundoye *et al.* [4]. The gradings were:

- Grade 0 = no abnormality;
- Grade 1 = minimal blunting;
- Grade 2 = early clubbing;
- Grade 3 = moderate clubbing;
- Grade 4 = gross clubbing; and
- Grade 5 = non-function.

Fifty-two patients had radiographs and adequate records to merit inclusion in the study. Several patients were excluded because of lack of histological confirmation of carcinoma of the cervix, and a few because their radiographs were not available for assessment.

Results

The ages of the patients ranged from 21 to about 70 years, although some patients' ages were not stated. The highest rate of carcinoma of the cervix occurred in the 4th and 5th decades, which constituted about 55.7% of the patients (Table 1).

In general, the severity of urinary tract obstruction correlated well with the staging of carcinoma of the cervix at EUA (Table 2). While 11 out of 12 patients with Stage I and 30 out of 44 patients with Stage II carcinoma of the cervix had normal urographic findings, only

four out of 14 patients with Stage IV carcinoma of the cervix had normal urographic findings while the majority had moderate clubbing to non-function of the kidneys in Stage IV. This was statistically significant ($P < 0.005$).

In several cases, ureteric obstruction with non-function (Grade 5) occurred in cases staged as IIA, whereas a normal urinary tract was noted in some cases considered at EUA to be Stage IV carcinoma. In all, 46.1% of patients showed evidence of ureteric obstruction (Table 2).

When each kidney was analysed separately, non-function occurred twice as commonly on the left as on the right (Table 3 and Fig. 1). The level of obstruction was always within the bony pelvis at the bladder trigone (Figs 1 & 2). In contrast, fundal uterine masses tended to produce ureteric obstruction at the pelvic brim. (Fig. 3). Obstruction at the pelvic brim can also occur with a pregnant uterus, ovarian masses and other abdomino-pelvic masses, but in carcinoma of the cervix the obstruction involves the terminal ureter below the pelvic brim and in the trigonal and juxta-trigonal area.

The preliminary film was found to be of little value as far as assessment of pelvic mass was concerned. In only four cases, all in Stages III and above, was a soft-tissue mass radiologically evident. Osteitis pubis, calcification in an associated fibroid and pedicular destruction, was present in one patient each. In two patients double ureters were noted on the right side as incidental findings, they were of normal calibre and united just prior to entry into the bladder.

Discussion

The close anatomical relationship of the distal ureters to the cervix makes them prone to obstruction in carcinoma of the cervix. This results from invasion or encasement of the ureters by tumour masses. Indeed, uraemia from obstructive uropathy is the leading cause of death in patients with carcinoma of the cervix. Ureteric strictures may also develop as a post-surgical or post-irradiation complication [5]. Excretory urography (IVU) is therefore of immense benefit in the assessment of carcinoma of the cervix. It has been found to be of greater diagnostic value when compared with a barium enema, cystoscopy, proctoscopy or a radio-isotope bone scan [2,3].

Table 1. Age distribution in carcinoma of the cervix

Age (years)	Number of patients (%)
Under 20	—
21-30	7 (13.5)
31-40	14 (26.9)
41-50	15 (28.8)
51-60	7 (13.5)
61-70	6 (11.5)
Not stated	3 (5.8)
Total	52

Table 2. The severity of urinary tract obstruction and staging of carcinoma of the cervix

Stage of carcinoma of the cervix	Grade of calyceal changes					Total	Percentage with ureteric obstruction
	0	1&2	3&4	5			
I	11	1	—	—	12	8.3	
II	30	5	4	5	44	31.8	
III	11	8	5	10	34	76.6	
IV	4	2	5	3	14	71.4	
Total	56	16	14	18	104		

Overall rate of ureteric obstruction = 46.1%.

Table 3. Calyceal changes in cervical carcinoma analysed by severity and side of involvement

Calyceal grading	Right kidney	Left kidney
0 (normal)	30	26
1&2	8	7
3&4	6	8
5	7	12
Number with obstructive changes	21	27



Fig. 1. Excretory urogram in a 35-year-old woman with Stage IV cervical carcinoma. There is grade 3 calyceal clubbing on the right with hydroureter extending into the bony pelvis. Only a nephrogram is observed on the left (▲).



Fig. 2. Bladder view taken during excretory urography in a 40-year-old woman with Stage III carcinoma of the cervix. Note dilatation of right ureter down to the trigone. There is non-function from the left kidney.

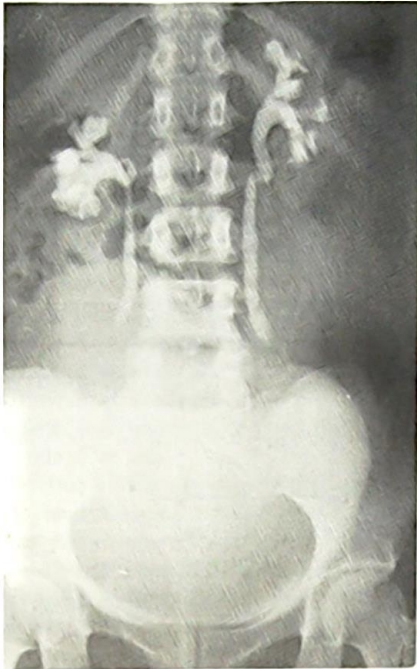


Fig. 3. Excretory urogram in a 38-year-old woman with uterine fibroid. There is a soft tissue mass arising from the pelvis and producing bilateral hydrocalyces and hydronephrosis. Note that ureteric dilatation only extends down to the pelvic inlet, unlike in carcinoma of the cervix when dilatation extends to the terminal ureter.

The results shown in this study (Table 2) indicate a significant correlation ($P < 0.005$) between severity of ureteric obstruction and the clinical stage of carcinoma of the cervix. This trend was also reported by Shingleton *et al.* [6]. However, other authors have not found urography to be a reliable staging procedure. This may be due to the fact that by definition, as long as cervical carcinoma is at clinical stage IIB and above, there is parametrium involvement and ureteric obstruction can therefore occur in all such cases [7]. However, the study remains a useful prognostic indicator, and can form a baseline investigation for future comparison to assess patients' progress.

Our present series show that severe ureteric obstruction resulting in a unilateral nonfunc-

tioning kidney was twice as frequent on the left as the right (Table 3). The probable reason for this observation may be that most uteri are dextrorotated, which has the effect of bringing the cervix into closer apposition with the left ureter than with the right. Hence the left ureter is more prone to direct invasion from carcinoma of the cervix than the right ureter.

In this study, 46% of our patients showed evidence of ureteric obstruction. This high positive yield is in contrast to values of about 7–14% recorded elsewhere [6,7]. This difference is probably accounted for by the fact that most of our patients present late in hospital, as recourse is still often made first to traditional healers before any thought is given to hospital care.

In conclusion, intravenous urography has been found to be a most valuable examination in the pre-operative assessment of patients with carcinoma of the cervix and should prove a useful baseline study in subsequent post-operative assessment.

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