

The Evaluation of Routine Pretreatment Investigation of Cervical Cancer Patients

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Abstract : A retrospective study of 524 cases of cervical cancer at Songklanagarind Hospital from February 1982 to December 1987 was done. The purpose of the study was to evaluate the usefulness of the routine pretreatment investigation and to find out whether it makes any difference in final stages from the initial clinical stages or not. In clinical stage I, pretreatment investigation made no difference to the final stage. In clinical stage II, only 1 among 136 patients (0.7%) showed ureteric obstruction from IVP which caused the final stage to be changed to stage IIIb. In clinical stage III, chest x-ray showed metastases in 6 among 212 patients (2.8%). IVP showed evidence of pelvic destruction in 2 among 211 patients (0.9%). Cystoscopy showed bladder invasion in 7 among 175 patients (4%) and sigmoidoscopy showed an area of suspected tumor invasion in 2 patients : 1 proved to be pathologically negative for malignancy, while the other was not biopsied.

From this study, we recommend only chest x-ray and IVP in all stages of cervical cancer patients while cystoscopy and sigmoidoscopy should be limited to patients at clinical stage III and IV or who have clinical indication. (Thai J Obstet Gynaecol 1989; 1: 101-7.)

Key words : evaluation, pretreatment investigation, cervical cancer

Accurate pretreatment evaluation and staging of patients with cervical cancer is important as a determining factor for proper treatment and as a means of comparing therapeutic results. Traditionally, routine investigation consists of chest x-ray, intravenous pyelography (IVP), cystoscopy, sigmoidoscopy,

complete blood count, renal and liver function tests and urine analysis⁽¹⁻³⁾. If we do all, these are expensive, time consuming and important factors that can cause many patients to refuse treatment especially in underdeveloped and developing countries. Several studies have recommended that patients in an

early stage of cervical carcinoma should be routinely investigated by a chest x-ray and IVP, while cystoscopy should be reserved for advanced stages and sigmoidoscopy if clinically indicated such as hematuria, bloody stool, etc.⁽⁴⁻⁹⁾. However, this is still debatable. With today's emphasis on cost-effectiveness, it is necessary to justify the tests we order and to discard those making little contribution to the patient's care. This is a report of a retrospective evaluation of the usefulness of routine investigations for staging cervical cancer patients over a period of 5 years.

Materials and Methods

A descriptive study with retrospective design was performed in patients with invasive carcinoma of the cervix. The records of 613 patients were retrieved. Seventy-seven were excluded because they refused both pretreatment evaluation and treatment. A further twelve were excluded because of unknown staging due to previous initial treatment elsewhere. Thus 524 were eligible for evaluation. Each patient was evaluated by gynaecologists in the Gynaecologic Oncology service between 1982 and 1987 to give an "initial stage" based solely upon physical examination and cervical biopsy. General anaesthesia was not used during the process of clinical staging. Most of the patients received routine pretreatment evaluation including chest x-ray, IVP, cystoscopy, sigmoidoscopy, complete blood count, renal function tests and urinalysis either at the referal hospitals or at Song-

klanagarind Hospital. Some patients received only some parts of pretreatment evaluations and then refused because of the long time waiting for the appointment for some of the investigations. Staging was done according to the International Federation of Gynecology and Obstetrics (FIGO) classification system.

Results

Pretreatment evaluations are shown in Table 1. The number of patients in each initial stage is shown in Table 2 and pathological descriptions of the invasive cervical cancer in 524 patients are shown in Table 3. Most of the patients had squamous cell carcinoma and adeno-carcinoma with an incidence of 82.5 and 13.1 per cent respectively.

Table 1 Pretreatment evaluation in 524 patients of cervical cancer

Investigations	Number of the patients investigated	Per cent
Chest x-ray	428	81.7
IVP	408	77.9
Cystoscopy	316	60.3
Sigmoidoscopy	335	63.9

Table 2 Initial clinical staging of 524 cervical cancer patients

Stage	Number of patients	Per cent
Ia	15	2.8
Ib	68	13.0
IIa	12	2.3
IIb	157	30.0
IIIa	0	0.00
IIIb	258	49.2
IV	14	2.7
Total	524	100.00

Table 3 Pathological descriptions of invasive cervical cancer

Histology	Number of cases	Per cent
Squamous cell carcinoma	444	84.7
Adenocarcinoma	70	13.4
Adenosquamous	8	1.5
Undifferentiated carcinoma	1	0.2
Verrucous carcinoma	1	0.2
Total	524	100.00

Table 4 Results of chest x-ray in 428 cervical cancer patients

Clinical staging	Number of cases	Normal chest x-ray	Pulmonary metastases	Non-tumor abnormalities
Ia	8	8	-	-
Ib	52	50	-	2
IIa	10	5	-	5
IIb	133	115	-	18
IIIb	212	169	6 (2.8%)	37
IV	13	8	2 (15.3%)	3
Total	428	355	8	65
Per cent	100	82.9	1.9	15.2

Chest x-ray was performed in 428 patients studied. The results are summarized in Table 4. Pulmonary metastases were found in 8 patients, all in advanced stages, 6 among the 212 were at

the initial stage IIIb and 2 among the 13 were at the initial stage IV. Hence, the x-ray appearance altered the staging from IIIb to IV in 6/212 (2.8 per cent) patients, or to put it another way, we had to do a chest x-ray in 212 patients in an initial stage IIIb in order to alter 2.8 per cent of this staging. The character of pulmonary metastases includes infiltration, one or more nodules in the lung fields and pleural effusion. Non-tumor abnormalities were found in 65 patients (15.2 per cent). Cardiovascular abnormalities such as cardiomegaly and calcified tortuous aorta occurred in 36 patients, while respiratory abnormalities such as tuberculosis, pulmonary infiltration, and atelectasis occurred in 20 patients. Active tuberculosis was found in 7 patients (1.6 per cent). The rest of the abnormalities were scoliosis, old healed fractured rib and fractured clavicle.

Intravenous pyelography was performed in 408 patients studied. The results are summarized in Table 5. Unilateral ureteric obstruction was seen in 10.3 per cent and bilateral in 7.1 per

Table 5 The results of IVP in 408 cervical cancer patients

Stage	No.	Normal IVP	Ureteric obstruction Unilat.	Bilat.	Total obstruction (by cancer)	Suspected bladder involved	Pelvic bone destruction
Ia	2	2	-	-	-	-	-
Ib	49	45	1*	-	-	-	-
IIa	10	8	-	-	-	-	-
IIb	126	107	3**	-	1(0.7)	1*	-
IIIb	211	122	37	23	60	6	2(0.9%)
IV	10	2	1	6	7	2	-
Total	408	241	42	29	68	9	2
Per cent	100	59.1	10.3	7.1	16.7	2.	0.5

* previous urologic surgery

** 2 cases of ureteric obstruction caused by ureteric calculi

cystoscopy showed no evidence of tumor invaded bladder mucosa

cent. One patient in stage Ib had unilateral ureteric obstruction which was thought to be due to previous urologic surgery. Three patients in stage IIb had unilateral ureteric obstruction but two of them proved to be due to ureteric calculi. Thus, only one unilateral ureteric obstruction in initial stage IIb patient was thought to be due to cervical cancer. Hence, the results of the IVP altered the staging from II to IIIb in 1/136 patients (0.7 per cent), 2 among 211 patients at the initial stage IIIb were shown to have bony pelvic destruction by the scout film of IVP. Hence, the IVP (scout film) altered the staging from IIIb to IV in 2/211 patients (0.9 per cent).

Cystoscopy was performed in 316 patients studied. The results are summa-

rized in Table 6. No patients in stage I and II were shown to have suspected tumor invasion or even bullous edema while there was grossly suspected tumor invasion in stages IIIb and IV with an incidence of 7.4 and 14.3 per cent respectively. Nine among 13 patients who had grossly suspected tumor invasion in initial stage IIIb received cystoscopic biopsy and revealed pathologic tumor invasion in 7 patients. Hence, the cystoscopy altered the staging from IIIb to IVa in 7/175 patients (4 per cent).

Sigmoidoscopy was performed in 335 patients studied. The results are summarized in Table 7. There were 5 patients who had been suspected of tumor invasion, one patient was at the initial stage IIb but sigmoidoscopic bi-

Table 6 Results of cystoscopy in 316 cervical cancer patients

Stage	Normal/Exam	V-V* fist	Bullous edema	Suspected tumor involvement	Cystoscopic +ve	Biopsy -ve	Not biopsy
Ia	1/1	-	-	-	-	-	-
Ib	29/29	-	-	-	-	-	-
IIa	4/4	-	-	-	-	-	-
IIb	97/100	-	-	-	-	-	-
IIIb	141/175	-	14	13 (7.4%)	7 (4%)	2	-
IV	1/7	2	2	1 (14.3%)	1	-	-
Total	273/316	12	16	14	8	2	4
Per cent	86.4	0.6	5.1	4.4	2.5		

* V-V fist = Vesico-vaginal fistula

Table 7 Results of sigmoidoscopy in cervical cancer patients

Stage	Exam	Normal	Suspected tumor involvement	Sigmoidoscopic +ve	Biopsy -ve	Not biopsy
Ia	1	1	-	-	-	-
Ib	32	32	-	-	-	-
IIa	5	5	-	-	-	-
IIb	104	101	1	-	1	-
IIIb	185	175	2	-	1	1
IV	8	5	2	2(25%)	-	-
Total	335	319	5	2	2	1
Per cent	100	95.2	1.5	0.6	0.6	0.3

opsy showed negative for malignancy in this case. Two patients were at the initial stage IIIb. Unfortunately, only one of these patients received biopsy and was shown to be negative for malignancy. The fourth and fifth patients were at stage IV due to rectovaginal fistula and were positive for malignancy from biopsy. Thus, the sigmoidoscopy in this study does not alter the staging.

Discussion

Most of the Thai patients who had carcinoma of the uterine cervix were in advanced stages. This was probably due to inadequate service of the government health care, the great number of uneducated patients especially in the old age group, the stigma placed on pelvic examination and because the symptoms in early stage cervical cancer were not severe enough to encourage appropriate attention on the part of the patients. Even in the advanced stages, up to 12.8 per cent of the patients refused to have pretreatment evaluation following a treatment programme. This was probably due to the time and money spent on complete evaluation, and the fact that patients usually come from provinces far away from a gynaecological center. They have to spend many days in or near the hospital before the evaluation is completed. Furthermore, they have most likely heard about the unsatisfactory results of treatment provided at the advanced stage. Thus, only 48.9 per cent (300/613) of the patients received complete pretreatment evaluation in this study. However, 524 patients (85.5 per cent) received treatment. Some of them

received only some parts of the pretreatment evaluation. So, the purpose of this study is to evaluate the usefulness of the routine pretreatment evaluation in order to identify which tests may be omitted without compromising the patient's care.

The study of 428 chest films found that pulmonary metastases occurred only in initial stage III and IV patients. However, we still recommend performing chest x-ray in all cases because pulmonary metastases can occur in early stages due to the high density of lymphatic and blood vessels in the parametrium. Other studies showed that pulmonary metastases occurred at stage II in about 0-1.9 per cent^(4, 6, 8, 9). The findings on pulmonary metastases influence the appropriate management, which usually requires systemic chemotherapy plus radiation. The result of treatment is much improved due to the advance in chemotherapeutic agents when compared to radiation alone⁽¹⁰⁾. Furthermore, chest x-ray can be performed easily, has no adverse effect, is not expensive, and is valuable for check up in Thai people because of the high incidence of asymptomatic pulmonary diseases such as tuberculosis in 1.6 per cent and pulmonary infiltration in 2.1 per cent in this study. These cause the chest film to be suitably performed in all cases of cervical cancer. The incidence of pulmonary metastases in this study is 1.9 per cent while from the other studies it ranged from 0.3-2.2 per cent^(4, 6, 8, 9). The character of radiographic abnormalities include infiltration, one or more nodules in the lung fields and pleural effusion. Sometimes the radiographic abnormalities

from pretreatment evaluation may be misread. Parker et al⁽¹¹⁾ showed that the follow-up chest films may eventually reveal tumor related abnormalities in approximately 6 per cent of patients with cervical cancer.

The study of IVP showed that the incidence of ureteric obstruction was related to the extent of the tumor detected by pelvic examination. Almost all of the patients who had ureteric obstruction were in clinically advanced stages except 1 among 126 patients (0.8 per cent) in the initial stage IIb. While the findings of ureteric obstruction from IVP does not influence accurate staging in patients who had initial stage IIIb, the scout film does, because it may show evidence of pelvic bone destruction which can alter stage IIIb to IV as shown in this study, i.e. 2 among 211 stage IIIb patients which represents 0.9 per cent. Thus, if we consider only accurate staging the IVP has probably little value other than the scout film in test. However, other studies have found that the incidence of ureteric obstruction in the initial stage IIb patients was approximately 0-7.5 per cent^(4-6, 8, 9). This may reflect the difficulty in the assessment of the parametrial extension by tumor from pelvic examination without anaesthesia especially in an obese patient and may be the reason why the incidence of ureteric obstruction in the initial stage IIb differs in this study from other study⁽¹²⁾. The knowledge of ureteric obstruction may require pretreatment urinary drainage such as percutaneous nephrostomy before radiotherapy. Also Photopoulos et al⁽¹³⁾ showed that

routine posttreatment IVP is useful in early detection of recurrences of cervical cancer. Therefore, a baseline IVP should be performed because of the usefulness in the treatment plan and in the follow-up period.

From our study in cystoscopy no patients in stage I and II showed suspectd tumor invasion or even bullous edema. This confirmed the studies from other series which found tumor invaded bladder only in stage III and IV^(4, 5, 7-9). The incidence of tumor invading the bladder in initial stage IIIb and IV ranged from 0-21.6 per cent and 0-90 per cent respectively. These incidences depend upon the number of patients in each stage and series. From our study, the incidence of gross tumor invading the bladder in stage IIIb and IV was 7.4 per cent and 14.3 per cent respectively. This means that about 7.4 per cent were upstaged by cystoscopy. However, this incidence was not exactly correct because there was pathologic confirmation of stage IIIb patients in about 70 per cent (7/13) of cases. If we rely only on the cases that are confirmed by pathology, the patients of the initial stage IIIb will be upstaged in only 7 among 175 patients (4 per cent). The study of Romero et al⁽⁷⁾ showed that the incidence of tumor invading the bladder was reliable on when there was pathologic confirmation, because only 12 per cent and 24 per cent of the patients in stage IIIb and IV who had grossly suspected tumor invasion proved to be positive for malignancy by cystoscopic biopsy. In cases of frankly invasive cancer which were negative for malignancy from pathology,

the cystoscopic biopsy should be repeated but this will cause higher cost, morbidity and delay in treatment.

Based on our findings and from other reports^(4, 5, 7-9), patients with clinical stage I and II of carcinoma of the cervix are lucky to have no significant bladder findings. Thus, we do not recommend the routine use of cystoscopy for staging of cases with stage I or II cervical cancer.

The incidence of abnormalities detected by sigmoidoscopy in patients with invasive carcinoma of the cervix is directly related to the extent of the tumor detected in the physical examination. This is the same as the results in the cystoscopy. Very few tumor related abnormalities were demonstrated by the sigmoidoscopy in this study. There were only two patients who had pathological confirmation of tumor invading the rectal mucosa and all of them were already in stage IV by initial staging. So, the final stage was not different from the initial stage after the sigmoidoscopy was performed. Other studies also showed that mucosal invasion is found only rarely in the advanced stage^(4, 8, 9). Thus, we no longer recommend it as part of our routine pretreatment but, instead, reserve it for those patients with specific indications such as chronic diarrhea, ulcerative colitis, etc..

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References

1. Disasia PJ, Creasman WT. Clinical Gynecologic Oncology. 2nd ed. St. Louis: CV Mosby, 1984 : 61-121.
2. Mattingly RF, Thompson JD. Te Linde's Operative Gynecology. 10th ed. Philadelphia : JB Lippincott, 1985 : 781-844.
3. Jones HW Jr, Jones GS. Novak's Textbook of Gynecology. 10th ed. Baltimore: Williams & Wilkins, 1981 : 296-350.
4. Shingleton HM, Fowler WC, Koch GG. Pretreatment evaluation in cervical cancer. *Am J Obstet Gynecol* 1971 ; 110 : 385-9.
5. van Nagell JR Jr, Sprague AD, Roddick JW. The effect of intravenous pyelography and cystoscopy on the staging of cervical cancer. *Gynecol Oncol* 1975 ; 3 : 87-91.
6. Griffin TW, Parker RG, Taylor WJ. An evaluation of procedures used in staging carcinoma of the cervix. *Am J Roentgenol* 1976 ; 127 : 825-7.
7. Romero RE, Hicks TH, Galindo GH, Drach GW. Evaluation of importance of cystoscopy in staging gynecologic carcinomas. *J Urol* 1979 ; 121 : 64-5.
8. Abyomi O, Dritschilo A, Emami B, et al. The value of "Routine tests" in the staging evaluation of gynecologic malignancies : A cost effectiveness analysis. *Radiation Oncol Biol Phys* 1982 ; 8 : 241-4.
9. Lindell LK, Anderson B. Routine pretreatment evaluation of patients with gynecologic cancer. *Obstet Gynecol* 1987 ; 69 : 242-6.
10. Gulthrie D. Chemotherapy of cervical cancer. *Clin Obstet Gynecol* 1985 ; 12 : 229-46.
11. Parker RG, Friedman RF. A critical evaluation of the roentgenologic examination of patients with carcinoma of the cervix. *Am J Roentgenol* 1966 ; 97 : 100-7.
12. van Nagell JR Jr, Harralson JD, Roddick JW Jr. The effect of examination under anesthesia on staging accuracy in cervical cancer. *Am J Obstet Gynecol* 1972 ; 117 : 938-9.
13. Photopoulos GJ, Shirley RE, Ansbacher R. Evaluation of conventional diagnostic tests for detection of recurrent carcinoma of the cervix. *Am J Obstet Gynecol* 1977; 129 : 533-5.