The Results of Curative Radiotherapy for Carcinoma of Uterine Cervix*

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This is a retrospective analysis of 135 patients with invasive carcinoma of the uterine cervix treated with curative radiotherapy from March 1983 through October 1989 at the Department of Therapeutic Radiology, Kang-Nam St. Mary's Hospital.

Among them, 78 patients received radiotherapy alone and 42 patients treated with neoadjuvant chemotherapy followed by radiotherapy and 15 patients were lost to follow up. All patients had follow up from 2 to 106 months (median; 62 months). Age of the patients ranged from 32 to 79 years at presentation (median; 59 years).

According to FIGO classification, there were 20 (16.7%) in stage IB, 19 (15.8%) in stage IIA, 49 (40.8%) in stage IIB, 5 (4.2%) in stage IIIA, 13 (10.8%) in stage IIIB, 14 (11.7%) in stage IVA. The pathological classification showed 96 (80.0%) squamous cell carcinomas, 5 (4.2%) adenocarcinomas and 19 (15.8%) proven by cytology. The overall 5-year survival rates was 50.8%, and the 5-year survival rates by stage IB, IIA, IIB, IIIA, IIIB, IVA was 47.7%, 70.2%, 64.1%, 40.0%, 23.1%, 14.3%, respectively. The 5-year survival rates was noted 51.2% of radiotherapy alone and 50.4% of neoadjuvant chemotherapy followed by radiotherapy. The overall failure rate was 18.3% (22/120) including 11.7% (14/120) locoregional failure, 5.8% (7/120) distant metastasis and 0.8% (1/120) locoregional failure with distant metastasis. Treatment failure rates by the stages were 15% (3/20) in stage IB, 10.5% (2/19) in stage IIA, 10.2% (5/49) in stage IIB, 20% (1/5) in stage IIIA, 61.5% (8/13) in stage IIB, and 28.6% (4/14) in stage IVA. The overall complication rate was 34.2% (41/120), including wet desquamation 7.5% (9/120), diarrhea 6.7% (8/120), radiation proctitis 5.8% (7/120) in decreasing order.

A multivariate analysis of factors influencing the survival showed patient age ($p<0.0291$), FIGO stage ($p<0.0001$), Karnofsky performance status ($p<0.0043$), initial hemoglobin level ($p<0.0001$), and intracavitary radiation ($p<0.0004$), but, no significancy in histology ($p<0.29$) and treatment method ($p<0.87$).

Key Words: Carcinoma of the uterine cervix, Curative radiotherapy, 5-year survival rate, Prognostic factors, Complications

INTRODUCTION

The curative treatment of carcinoma of the uterine cervix is accomplished with radiotherapy, surgery, and chemotherapy or a combination of these modalities[1,2]. In patients with stage I or IIA disease, comparative results can be achieved by either radiotherapy or surgery alone[3,4]. For the stage IIB and III disease, it is known that radiotherapy is the treatment of choice[5~11]. But for the stage IV disease, palliative radiotherapy, surgery and chemotherapy or combinantion of the modalities may also be needed. The use of chemotherapy with radiotherapy as a means of improving results[12~14] in advanced cervix cancer evolved as a result of disheartening results from studies following the virtually static survival rates in the last three decades despite the establishment of the megavoltage era in radiotherapy[15], encouraging results in certain epithelial malignancies treated with the empirical combination of some drugs with radiotherapy[16,17], and a growing awareness that metastatic extrapelvic failure was an important component of overall failure. Thus, this concurrent

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modality approach was directed toward improving local control as well as reducing distant metastases.

The present study was undertaken to analyze the survival, prognostic factors, patterns of failure, and complications following radiotherapy and/or chemotherapy for the invasive carcinoma of uterine cervix.

MATERIALS AND METHODS

A retrospective review was carried out of the records of 135 patients with carcinoma of the uterine cervix treated with radiotherapy alone or neoadjuvant chemotherapy followed by radiotherapy at the Department of Therapeutic Radiology of Kang-Nam St. Mary's Hospital from March 1983 to October 1989. Of the 135 patients, 78 patients received radiotherapy alone and 42 patients received combined neoadjuvant chemotherapy followed by radiotherapy and 15 patients were lost to follow up. The patients had followed up from 2 to 106 months (median; 62 months). Information was available for 89% of the patients from institutional records, or by letters or telephone contacts, and occasionally through direct communication with the patient or relatives. Patients lost to follow-up were withdrawn at that time from the risk groups for analysis.

The characteristics of the patient population were outlined in Table 1. All patients had routine workups including CBC, LFT, urinalysis, electrolytes, chest X-ray, pelvic examination, pelvic CT or MRI scan and punch biopsy. In addition, intravenous pyelography, barium enema, cystoscopic examination, pelvic sonography, and radioisotope scanning including liver, kidney and bones were performed but not as routine procedures. According to FIGO classification illustrated: there were 20 (16.7%) in stage IB, 19 (15.8%) in stage IIA, 49 (40.8%) in stage IIB, 5 (4.2%) in stage IIIA, 13 (10.8%) in stage IIIB, and 14 (11.7%) in stage IVA. The pathological classification showed 96 (80.0%) squamous cell carcinomas, 5 (4.2%) adenocarcinomas, and 19 (15.8%) proven by pap smear. The median age of the patients was 59 years (range; 32 to 79 years) at presentation. 67.5% of patients was distributed between 50 and 69 years.

All patients were definitively treated with a 6 MV linear accelerator. The external pelvic irradiation was usually given with 4000-5040 cGy during the period of 5-6 weeks using 4 fields box or AP & PA parallel two opposing techniques, and 180-200 cGy daily fractionated dose, 5 times per week, followed by intracavitary radiation (ICR). ICR was performed in 70 patients using Fletcher-Suit applicator loading with 15, 10, 10 mg RaEq of Cs-137 sources in tandem and 20 mg RaEq of Cs-137 sources in each 2 colpostat in routine cases. A point dose was calculated to 1471-4597 cGy (mean: 2769 cGy) for 48-72 hours. In general, these techniques delivered total A point dose of 6500 to 9000 cGy. The field size of external pelvic irradiation was adjusted to encompass pelvic side bony walls bilaterally, common iliac nodes superiorly, upper 1/2 of vagina inferiorly

Table 1. Patient Characteristics

variables		No. of patients (%)
Number of patients irradiated		135
Excluded patients		15
Exaluated patients		120
Age	<50	24 (20.0)
	≥50	96 (80.0)
Histology		
	squamous cell car	96 (80.0)
	LC. K	10 (8.3)
	LC. NK	33 (27.5)
	small cell	1 (0.8)
	WD	6 (5.0)
	MD	16 (13.3)
	PD	13 (10.8)
	not classified	17 (14.2)
	Adenocarcinoma	5 (4.2)
	No information	19 (15.8)
FIGO Stage		
	IB	20 (16.7)
	IIA	19 (15.8)
	IIIB	49 (40.8)
	IIIA	5 (4.2)
	IIIB	13 (10.8)
	IVA	14 (11.7)
Tx method		
	RT alone	78 (65.0)
	RT+CHX	42 (35.0)
KPS	<80	29 (23.3)
	≥80	92 (76.7)
Initial Hb level		
	<12	61 (50.8)
	≥12	59 (49.2)
ERT+ICR		70 (41.7)
ERT alone		50 (58.3)

LC. K: Large cell keratinizing, LC. NK: Large cell nonkeratinizing, WD: Well differentiated, MD: Moderate differentiated, PD: Poorly differentiated, Tx: Treatment, KPS: Karnofsky performance status, Hb: Hemoglobin, RT: Radiotherapy, CHX: Chemotherapy, ERT: External radiotherapy, ICR: Intracavitary radiation

by lower border of obturator foramen, and also posterior 1/3 of bladder anteriorly and anterior half of rectum posteriorly. In the 42 patients treated with 2 to 3 courses of neoadjuvant chemotherapy, external pelvic irradiation was started on the 3rd week of the last day of neoadjuvant chemotherapy. The chemotherapy regimen consisted of VBP, MVP, cisplatin with 5-FU.

Locoreginal failure was determined by clinical and colposcopic examination including pap smear in every 4-6 months intervals. Treatment related complication was followed by symptom analysis and laboratory findings as well as by radiographic procedure including CT or MRI and occasionally confirmed by surgical procedure. Treatment failures were classified by either locoregional failure or distant metastasis. Locoregional control was measured from the initiation date of treatment to the first detection of locoregional failure or the last follow-up. Overall survival was measured also from the initiation of treatment to the date of cancer death. Intercurrent death was regarded as censoring at that time. Prognostic factors analyzed in view of the FIGO stage, patient age, Karnofsky performance status (KPS), initial hemoglobin (Hb) level, histology, intracavitary radiation (ICR), and treatment results in terms of overall survival.

Survival and other time-to-event outcome estimates were used by the Kaplan-Meier method[18]. These curves were compared using the Mantel-Haenszel test[19] and, where approximate, the comparisons were stratified by survey or important factors. A Cox regression analysis[20] was used to determine statistically significant prognostic variables for prediction of survival. The survival was evaluated from the start of the treatment to June. 1, 1992 as end point of the statistical analysis.

RESULTS

Among 120 patients, the overall 5-year survival rates was 50.8% (Fig. 1). The mean survival was 56. 0 months and median survival was 62.0 months. The 5-year survival rates of stage IB, IIA, IIB, IIIA, IIIB, and IVA were 47.7%, 70.2%, 64.1%, 40.0%, 23.1%, and 14.3%, respectively (Fig. 2).

In multivariable analysis, the results of all pretreatment factors analyzed were summerized in Table 2. Patient age and FIGO stage, initial Hb level, KPS and ICR were prognostically significant variables.

1) Patient age: The 5-year survival rate for patents age of above 50 years and below were 53.7%,

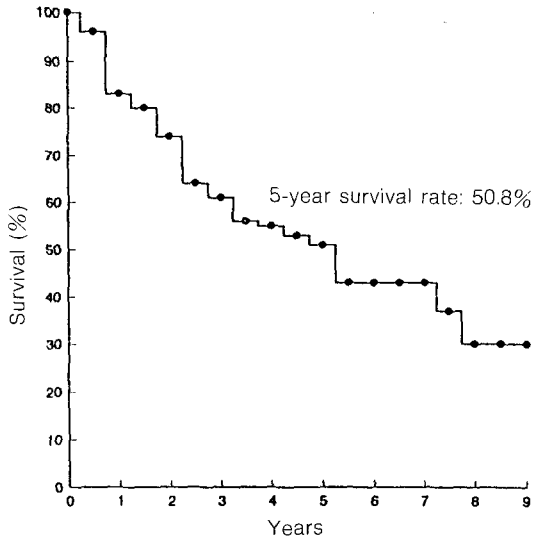

Fig. 1. Overall actuarial survival curve of 120 patients with uterine cervical cancers treated with curative intent.

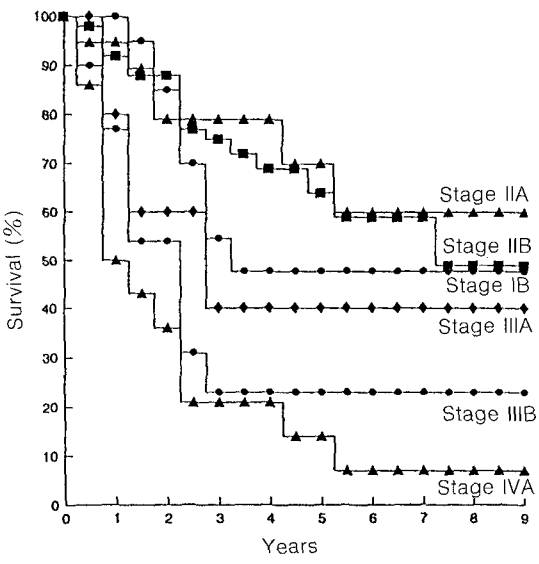

Fig. 2. Overall survival by FIGO Stage.

and 40.7% respectively ($p<0.0291$) (Fig. 3).

2) FIGO Stage: The 5-year survival rate for stage IIB and below, versus versus stage IIIA and above revealed 61.9% versus 20.8%, respectively ($p<0.0001$) (Fig. 4).

3) Initial hemoglobin (Hb) level: The 5-year survival rate was 70.9% for patients with Hb 12 g/dl and above, in contrast to 30.7% with Hb 12 g/dl and

Table 2. 5-Year Survival Rate according to Multivariate Analysis of Prognostic Factors in 120 Uterine cervix carinomas

		5-year SR	p-value
Age	<50	40.7	
	≥50	53.7	0.0291
FIGO Stage	≤IIB	61.9	
	≥IIIA	20.8	0.0001
Histology	Squamous cell carcinoma	53.9	
	Adenocarcinoma	40.0	0.2906
Tx method	RT alone	51.2	
	Combined RT+CTX	54.0	0.8778
KPS	<80	32.7	
	≥80	56.3	0.0043
Initial Hb level	<12	30.7	
	≥12	70.9	0.0001
ERT+ICR		64.6	
ERT alone		32.7	0.0004

SR: Survival Rate (%)

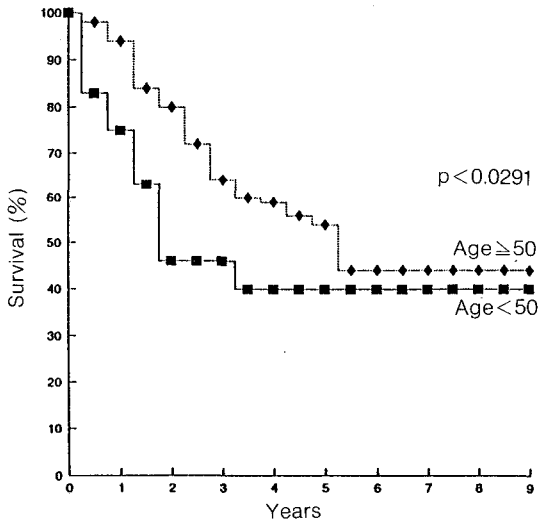

Fig. 3. Overall survival by age.

below (p<0.0001) (Fig. 5).

4) Karnofsky performance status (KPS): The 5-year survival rate was 56.3% for patients of KPS≥80, and 32.7% for those of KPS<80 (p<0.0041) (Fig. 6).

5) Intracavitary radiation (ICR): 70 (58.3%) out of 120 patients who received ICR showed better 5-year survival rate than those not treated with ICR (64.6% vs 32.7%, p<0.0004) (Fig. 7).

The survival rate was not influenced by treatment modality in terms of combination with/without

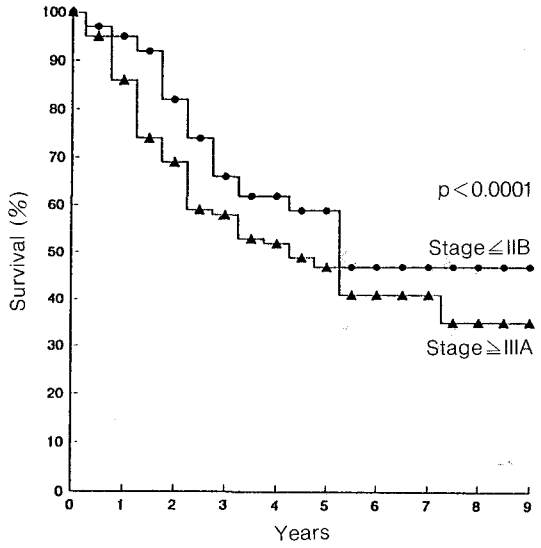

Fig. 4. Overall survival between stage≤IIB and stage ≥IIIA by FIGO stage.

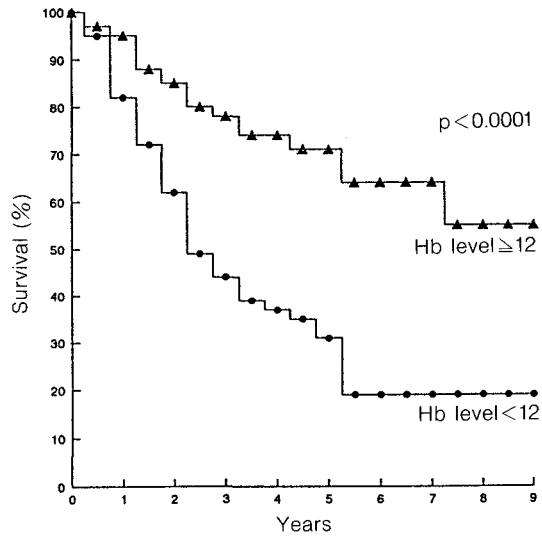

Fig. 5. Overall survival by initial Hb level. (Hb: Hemoglobin)

chemotherapy and histologic subtypes. The 5-year survival rates of radiotherapy alone group and neoadjuvant chemotherapy followed by radiotherapy revealed 51.2% and 50.4%, respectively (p<0.87) (Fig. 8).

Over 90% of the tumors were squamous cell carcinomas, and less than 5% were other histologies. Squamous cell carcinomas showed

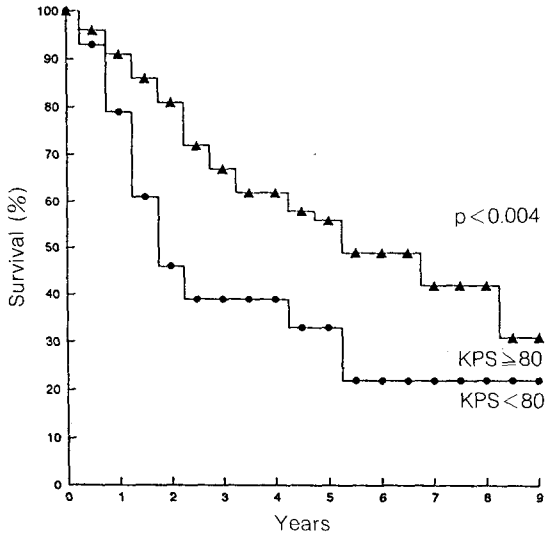

Fig. 6. Overall survival by KPS.
(KPS: Karnofsky performance status)

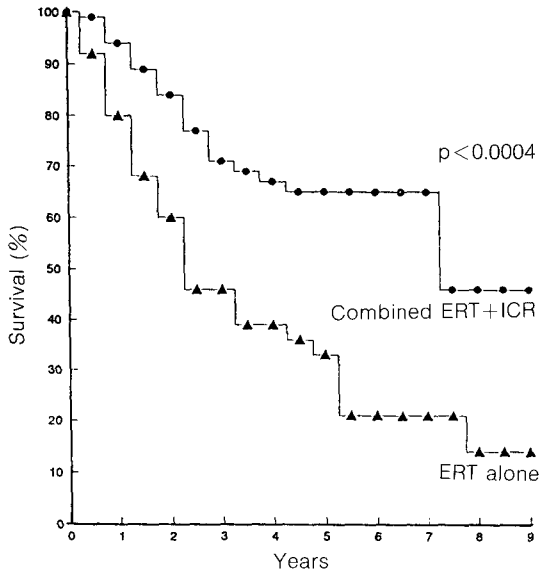

Fig. 7. Overall survival of patients treated with ERT alone and Combined ERT+ICR.
(ERT: External radiotherapy, ICR: Intracavitary radiation)

slightly better survival than those of adenocarcinomas (53.9% vs 40.0%), without statistical significance ($p<0.98$).

As shown on Table 3, treatment failure was noted in 18.3% (22/120): locoregional failure 11.7% (14/120), and distant metastases 5.8% (7/120), and combined locoregional failure along with distant metastasis 0.8% (1/120). Of 120 patients, 10 (10.8%) patients developed remote metastases, in terms of supraclavicular lmyph node 4 (3.7%), lung 3 (2.5%), and paraaortic node 3 (2.5%) (Table 4). Failure rates of each stages were 15% (3/20) in stage IB, 10.5% (2/19) in stage IIA, 10.2% (5/49) in stage IIB, 20% (1/5) in stage IIIA, 61.5% (8/13) in

Table 3. Pattern of Treatment Failure

Failure site	No. of patients (%)
Locoregional Failure (LF)	14 (11.7)
Distant Metastasis (DM)	7 (5.8)
LF+DM	1 (0.8)
Total	22 (18.3)

(%)=No. of patients/Total (n=120)

Table 4. Sites of Distant Metastases

Site	No. of patients (%)
SCL	4 (3.7)
lung	3 (2.5)
PAN	3 (2.5)
Total	10 (8.7)

SCL: supraclavicular lymph node
PAN: para-aortic lympn node
(%): No. of patients/Total (n=120)

Table 5. Pattern of Treatment Failure by Stages

FIGO stage	No. of patients (%)
Stage IB	3/20 (15.0)
Stage IIA	2/19 (10.5)
Stage IIB	5/49 (10.2)
Stage IIIA	1/ 5 (20.2)
Stage IIIB	8/13 (61.5)
Stage IVA	4/14 (28.6)
Total	22/120 (18.3)

Table 6. Underlying Disease

Disease	No. of patients (%)
Hypertension	16 (13.3)
Diabetes mellitus	5 (4.1)
Cardiac disease	4 (3.3)
Breast cancer	1 (0.8)
Bladder cancer	1 (0.8)
Endometrial cancer	1 (0.8)
Total	28 (21.7)

(%)=No. of patients/Total (n=120)

Table 7. Complications

Complications	No. of patients (%)
Wet desquamation	9 (7.5)
Diarrhea	8 (6.7)
Radiation proctitis	7 (5.8)
Radiation fibrosis	5 (4.2)
Rectal bleeding	3 (2.5)
Radiation cystitis	3 (2.5)
Leg edema	3 (2.5)
Aggressive urinary symptom	2 (1.7)
Radiation colitis	1 (0.8)
Total	41 (34.2)

(%)=No. of patients/Total (n=120)

stage IIIB, and 28.6% (4/14) in stage IVA (Table 5).

The observed complications were shown in Table 6. Nine (7.5%) patients developed wet desquamation, transient diarrhea in 8 (6.7%), radiation proctitis in 7 (5.8%) in decreasing order. Table 7 listed underlying diseases, in terms of hypertension 16 (13.3%), diabetes mellitus 5 (4.1%), cardiac disease 4 (3.3%), and other malignancies such as breast cancer and bladder cancer and endometrial cancer 1 (0.8%), respectively.

DISCUSSION

Over the past 40 years, refinement in the management of carcinoma of the cervix has resulted in better pelvic control and longer patient survival. Radiotherapy is the treatment of choice for patients with stage IIB and III carcinoma of the uterine cervix. It is also effective alternative to surgery in stage I, IIA and comparable survival and tumor control with each modality have been reported. Radiotherapy has been used for many years as primary treatment in patients with advanced cervix cancer. Recently, reports using combined modality with radiotherapy and chemotherapy and/or surgery showed improvements in survival over radiotherapy alone[16,21,22].

A prospective clinical trial conducted by Gillian and co-Workers[21] showed that patients treated by radiotherapy concurrent with 5-FU and mitomycin C had better median survival than patients treated by radiotherapy alone. Pinto et al[23] gave one course of vincristine, bleomycin, and mitomycin prior to radiotherapy in 58 patients. Almost 50% of patients showed a 'good' response and a 'few' had practically no evidence of tumor following chemotherapy in this preliminary report. Blake and coworkers[24] treated 10 patients with advanced cervical cancer with either cisplatin, cyclophosphamide, or methotrexate for one or two courses prior to irradiation, followed by single-agent treatment. Six of 10 patients had no histologic evidence of disease at the time of surgery, and 8 of 10 were free of disease for 21 to 40 months following surgery with one recurrence. In our study, differences between the radiotherapy alone and neoadjuvant chemotherapy followed by radiotherapy group were not significant. Treatment method was not affecting the survival because of the latter consist of older and more advanced stage than of the former. Thus early detection, development of effective drugs and sequence of combinations are essential for improving long term survival and local control. We found that induction chemotherapy provides good palliation in patients with advanced diseases, which is comparable to the results reported by Hyman B and associates[13]. In a report of combined radiotherapy and chemotherapy[16], morbidities were in excess of those obtained with radiotherapy alone because of hematologic and other chemotherapeutic complications, but complication rate was less than all surgical series. In our study, the morbidity of the combined treatment regimen was not differ significantly from that of radiotherapy alone except acute effects of chemotherapy such as anorexia, nausea, vomiting and mild hematologic toxicities. We cold not derive any conclusion except poor results of cervix cancer treated by radiotherapy or combined radiotherapy and chemotherapy.

In review of reported series[13,16,21,22], the chombination chemotherapy was an effective and relatively well tolerable treatment of advanced cervix cancer and was preferred alternative to surgery or radiotherapy alone. The results of our data indicative that multi-agent therapy with cisplatin prior to definitive radiotherapy in advanced carcinomas of the cervix was unlikely to be very beneficial. Other data, although early, utilizing combination chemotherapy concurrently with radiotherapy was more encouraging. In results, different treatment methods did not affect the survival because neoadjuvant chemotherapy followed by radiotherapy group were consisted of older age patients and more advanced disease at presentation. Further randomized trials are needed, to define the role of induction chemotherapy or combined modality therapy in the treatment of locally advanced disease.

Survival rate was decreased with advanced clinical stage in younger age group. There have

been few reports of a more favorable prognosis for older age group[25]. Our results revealed that the mean age of patients was increased with advanced stage. In agreement with other data[26] as expected, older patients had lower survival rates because of death of the other causes than cancer of the cervix. In our study, 96 patients who were 50 years and above had better survival than 50 years old and less, indicating that radiotherapy could be more successful in the older patients. The effect of treatment parameters on survival rates in younger patients was currently being evaluated in an attempt to explain this finding in an assumption that the younger the age, the more aggressive disease.

KPS has been regarded as a strong predictor of outcome in various cancer sites, namely head and neck, prostate, lung, brain, as well cervical cancer, as previously reported[10,27]. Our study also confirmed KPS as a significant prognostic factor with respect to survival in multivariate analysis and should be used for stratification prior to randomization in cervical cancer trials.

It was generally felt stage for stage, adenocarcinoma of the cervix respond equally well to radiation as those with squamous cell carcinomas[28]. Pejovie et al[29], in a series of a total of 1863 patients with carcinoma of the cervix of whom 7% had adenocarcinoma, reported decreased survival rates in patients with the adenocarcinomas as compared to squamous cell carcinomas. Although the number of patients with adenocarcinoma for each disease stage was small, our results did not show a statistically significant adverse prognostic effect for adenocarcinoma on overall survival.

The deleterious effect of anemia on crude survival in cancer of the cervix had been reported by several investigators[3,30~32]. It has been our policy in recent years, to transfuse anemic patients so that their Hb are greater than or equal to 12 g/dl prior to the radiotherapy. Nonetheless, our results clearly demonstrated a significant effect of anemia on survival in agreement with other investigators who had not controlled for other pertinent factors[3,30,31]. Our results indicating improved survival in patients with Hb greater than 12 g/dl, when compared with those less than 12 g/dl, would be suggested a benefit from maintaining patient's Hb at values greater than 12 g/dl when medically permissable.

Use of ICR is the most important treatment factor with respect to survival and in-field pelvic control for stage I, II and III cervical cancer. The importance of ICR was first demonstrated in multivariate analysis by Hanks et al[10] from the 1973 PCS study reported in 1983. When ICR was used in stage III disease, a 24% decrease in recurrence was seen at 4 years in the 1973 national average. Perez et al[8] also confirmed improved pelvic control following ICR, although the majority of these patients (97%) received ICR as a component of the treatment. They also found an increase in pelvic control if the placement of ICR was adequate, further supporting the importance of adequate (point A) doses in the control of the cervix cancer. In our study certainly showed that patients treated with external radiotherapy and ICR using standard Fletcher-Suit applicators had a low complication rate and an acceptable local control that was consistent with published results[29]. Ryu MS et al[33] found no evidence of improved survival for the use of ICR from a retrospective review. In their study, overall survival at 5 years for 49 patients was 49%. Total pelvis was irradiated routinely with 4000 cGy in conventionally fractionated doses, but for exophytic tumor mass or barrel shaped uterine cervix, total pelvis was irradiated with slightly higher dose, 5000-5040 cGy with 180-200 cGy daily fractionated dose. Radiation dose to point A above 8500 cGy and upto 9000 cGy, however could be attempted to achieve the control of pelvic cancer for specific state of disease: barrel shaped uterine cervix, a bulky exophytic mass or poor response to 4000 cGy with total pelvic irradiation. However cautious dosimetry of small bowel, rectum and urinary bladder should be performed. The improved 5-year survival rate, 64.6%, for the patients treated by ICR was found to be because ICR was usually performed on the patients who had more than 80% regression of tumor after external radiotherapy. The patients who were unable to receive ICR was treated by external radiotherapy alone with shrinking field technique.

We had good results on analysis of 120 patients treated by higher pelvic radiation dose. Treatment failure rate was 18.3%; local failure 11.7% and distant metastasis. In our study, the rates of locoregional failure and distant metastasis for each stages were 15% (3/20) in stage IB, 10.5% (2/19) in stage IIA, 10.2% (5/49) in stage IIB, 20% (1/5) in stage IIIA, 61.5% (8/13) in stage IIIB, 28.6% (4/14) in stage IVA. Perez and associated[6] reported the rate of locoregional failure and distant metastasis for each stages; 14.2% in stage IB, 28.4% in stage IIA and 32.5% in stage IIB, and these results were similar to those of ours. Five-year actuarial survival rate in our study was 50.8% and it was hard to compare directly with the results of other studies in

which 5-year survival rate was variable.

The presence of underlying disease adversely affected overall survival, but had no influence in our series. This would imply no direct effect of underlying disease on the response to the treatment of cervix cancer. A more detailed analysis of the effect of uterine position on the intensity of the radiotherapy delivered will be undertaken in an attempt to further elucidate this finding.

Dose fractionation has been also an important factor that correlates with incidence and severity of sequelae[35]. Several authors, including Flwler[36] and Withers[37] had shown in experimental data the substantial impact of higher dose per fraction on late effects of irradiation in normal tissues. It was well known that irradiation injury of normal tissues depend on the organ under consideration, the dose of irradiation, fractionation, and the volume treated. In assessing the effectiveness of a particular therapeutic modality, it was important to determine not only the probability of tumor control but also the modality of the therapy. For many years a great deal of effort has been applied to determine the doses to the bladder and rectum in an effort to decrease the incidence of complications. In our study, the complication rate was 34.2%. It was difficult to compare complication rates with the different report and between different therapeutic modalities.

Lee and coworkers[38] and Kagan at al[39] have correlated high-dose areas in the rectum, bladder, or vagina with the development of clinically significant injuries in these organs. They suggested that these complications can be prevented by modifying the loading of the applicators with the radioactive sources and by changing the time of the intracavitary applications. Further, patients who live longer might have a greater probability of developing complications. This observation refutes the concept that major sequelae of therapy will result in decreased overall survival. The good prognosis of the patients developing complications underscored the need for rapid and definitive treatment of these unfortunate sequelae, particulary if a surgical procedure was indicated.

CONCLUSION

A retrospective analysis of 120 patients with previously untreated invasive carcinoma of the uterine cervix seen at Department of Therapeutic Radiology of Kang-Nam St. Mary's Hospital between March 1983 and October 1989, was undertaken in an attempt to elucidate pretreatment factors that were of prognostic significance in terms of patient survival. A stepwise Cox regression analysis was used to help identify those factors that had possible effects on survival. As expected, stage of disease greatly influenced prognosis and within each stage, patient age, initial Hb level and KPS at diagnosis, ICR were of significant prognostic importance. These factors should be taken into account when comparing groups of patients with different treatments.

Further more imperative optimization of treatment schedules is sine quanon for individualizing patient by proper examination at the end of pelvic external radiation. Further increment of pelvic control and survival rate of the cancer of uterine cervix is expected to be achieved by dose schedule and combined chemotherapy or surgery for the uterine cervical cancers. Knowledge of patients with poor risk factors should aid in selecting patients for combined or more aggressive treatment protocols.

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= 국문초록 =

자궁 경부암의 근치적 방사선 치료 및 유도 화학요법과의 병행 치료성적

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강기문 · 유미령 · 장지영 · 서태석 · 윤세철
박용휘 · 신경섭 · 남궁성은** · 김승조**

가톨릭의과대학 강남성모병원 치료방사선과에서 1983년 3월부터 1989년 10월까지 79개월 동안에 자궁경부암으로 근치적 방사선치료를 받았던 135명의 환자들 중에서 추적이 가능하였던 120명의 환자들을 대상으로 치료결과및 예후에 영향을 미치는 인자에 대하여 후향적 분석을 하였다. 방사선 단독으로 치료한 환자는 78명이었고 유도 화학요법을 방사선 치료전에 시행한 환자는 42명이었다.

대상 환자들의 추적 조사기간은 2개월에서 106개월이었고 중간 추적조사 기간은 62개월이었다. 환자들의 나이는 32세부터 79세까지의 분포를 보였다(중앙값, 59세).

FIGO 병기별 분류에 의하면, IB 기가 20명(16.7%), IIA 기가 19명(15.8%), IIB 기가 49명(40.8%), IIIA 기가 5명(4.2%), IIIB 기가 13명 (10.8%), IVA 기가 14명 (11.7%)이었다.

전체환자의 5년 생존율은 50.8%였다. 병기별 5년 생존율은 IB 기가 47.7% IIA 기가 70.2%, IIB 기가 64.1%, IIIA 기가 40.0%, IIIB 기가 23.1%, IVA 기가 14.3%였다.

치료방법에 따른 5년 생존율은 방사선 단독으로 치료한 환자가 51.2%였고, 유도화학요법을 방사선 치료전에 시행한 환자는 54.0%였다.

치료후 재발은 22명(18.3%)에서 관찰되었고, 이중 14명(11.7%)에서 국소재발이, 7명(5.8%)에서 원격전이가, 1명(0.8%)에서 국소재발과 원격전이가 함께 발생하였다. 그리고, 치료에 의한 합병증은 41명(34.2%)에서 관찰되었으며 9명(7.5%)에서 습낙설, 8명(7.5%)에서 설사, 7명(5.8%)에서 방사선 직장염의 순으로 발생하였다.

예후와 관련된 생존율에 영향을 주었던 인자로는 나이($p<0.0291$), 병기($p<0.0001$), 전신상태($p<0.0041$), 초기 혈색소 수치($p<0.0001$), 강내 조사($p<0.0004$)였고, 조직학적 소견($p<0.29$), 유도 화학요법과의 병행치료($p<0.87$)는 통계학적으로 유의하지 않았다.