

*, †
* . * . †

_____ :

_____ : 1989 4 1997 12

154

FIGO Ib 12 , IIa 24 , IIb 98 , IIIa 1 , IIIb 17 , IVa 2 . Kaplan-Meier
Log-rank test , Cox proportional hazard model
logistic regression model .

가 RTOG/EORTC SOMA scale .

_____ : 154 가 130 84.4% 가 6
, 25 , 10 가 31.5%가 가 6
가 25 , 가 25 , 가 15
42.1% (65/154) , (,) ()
, 25.9% (40/154), 25.9% (40/154) .
가 , 가
.5 FIGO Ib 74%, IIa 67%, IIb 63%, IIIb 45% .
: 가 4 cm 가 가 가 4 cm
가 4 cm 가 가 가 4 cm

: , ,

²⁾ 3

5

가

1999 2 cisplatin

³⁾ 7)

"Clinical Announcement" ¹⁾ Clini-
cal Announcement 5 , , ,

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vical cancer consensus conference .

가

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1989 4 1997 12
 84 57 . FIGO
 IB 12 , IIA 24 , IIB 98 , IIIA 1 , IIIB 17 , IVA 2
 IIB가 64%
 143 93% 8 , 3
 가 4 cm 가 107 4 cm
 47 60 , 50
 , 38 , 가 6
 가
 28 77 12 mg%

2 :
 , 77 12 mg% (Table 1).
 6 MV 가 4,500
 cGy 5,000 cGy 500
 1,000 cGy 가 .
 가 28
 126
 Point A
 7,500 8,500 cGy
 7,000 7,500 cGy . 3
 가
 logistic regression model
 Kaplan-Meier
 Log-rank test , Cox propor-
 tional hazard model
 가 RTOG/EORTC SOMA
 scale grade 1 , grade 2
 가 , grade 3

Table 1. Patient Characteristics

Characteristics	Number (%)
Age	
20-29	1 (0.7)
30-39	11 (7.1)
40-49	27 (17.5)
50-59	48 (31.2)
60-69	50 (32.5)
70	17 (11.0)
Histology	
squamous	143 (92.9)
LCNK*	78 (50.7)
LCK†	33 (21.4)
not specified	32 (20.8)
adenosquamous	3 (1.9)
adenocarcinoma	8 (5.2)
Stage	
Ib	12 (7.8)
IIa	24 (15.6)
IIb	98 (63.6)
IIIa	1 (0.7)
IIIb	17 (11.0)
IVa	2 (1.3)
Type of ICR	
low dose rate	26 (16.9)
high dose rate	128 (83.1)

*Large cell non-keratinizing, †Large cell keratinizing

Table 2. Failure Pattern

	LRF [*] (%)	DF [†] (%)	LRF + DF (%)	Total (%)
Overall (n=154)	25 (16.2)	25 (16.2)	15 (9.7)	65 (42.1)
Tumor response				
complete responder (n=130)	6 (4.6)	25 (19.2)	10 (7.7)	41 (31.5)
partial/ nonresponder (n=24)	19 (79.2)	0 (0.0)	5 (20.8)	24 (100)
Histology				
squamous (n=143)	23 (16.1)	20 (14.0)	14 (9.8)	57 (39.9)
nonsquamous (n=11)	2 (18.2)	5 (45.5)	1 (9.1)	8 (72.8)
Tumor size				
tumor < 4 cm (n=107)	15 (14.2)	15 (14.2)	6 (5.6)	36 (34.0)
tumor ≥ 4 cm (n=47)	10 (21.3)	10 (21.3)	9 (19.2)	29 (61.8)
Pelvic L/ N in involvement				
no (n=126)	20 (15.9)	18 (14.3)	10 (7.9)	48 (38.1)
yes (n=28)	5 (17.9)	7 (25.0)	5 (17.9)	17 (60.8)

*locoregional failure, †distant failure

154 가 130
 84.4% .
 가 25 , 가 25 , 가 15
 42.1% (65/154) ,
 (,)
 (,)
 25.9% (40/154), 25.9% (40/154) .
 23.8%
 54.6% (Table 2).
 가 , ,
 (Table 3).
 130 가 6 , 25
 , 10
 31.5% .
 3 108 13
 73% (30/41)가 24
 , 88% (36/41)가 36 60
 가 1 .
 16 10 (62.5%) 가 ,
 24 5 (20.8%)
 가 . 35 가
 16 (45.7%) 가
 25 10 (40%),
 가 10 6 (60%)
 가 .
 10 7 가
 6 가 .
 가 , , ,
 가 (Table 4). 가 가
 가 4 cm ,
 가
 47 10 (21.3%) ,
 28 7 (25%) , 가 4 cm
 가 12 4 (33.3%) 가 (8 30%) 10% (8 11%) .<sup>14 20) Perez
 (20%)</sup>

Table 3. Sites of Dstart Failures

Site	number (%)
Para-aortic nodes	21 (52.5)
lung	13 (32.5)
bone	10 (25.0)
liver	4 (10.0)
neck nodes	5 (12.5)
brain	1 (2.5)
others	7 (17.5)
Total	40

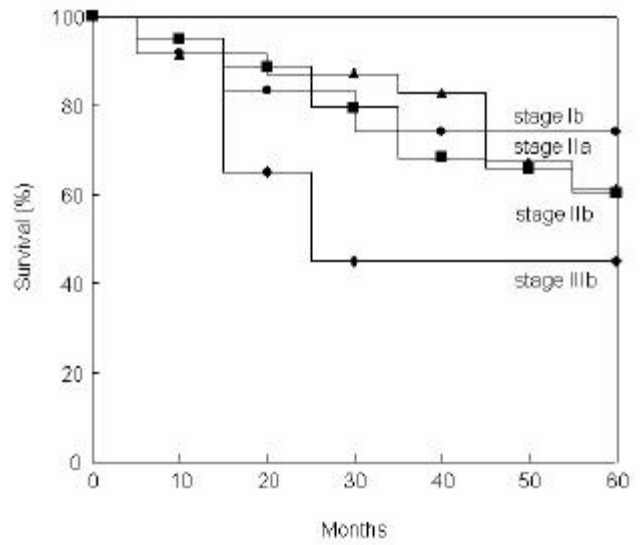


Fig. 1. Five year survival according to FIGO stage.

5 FIGO IB 74%, IIA 67%, IIB 63%, IIIB 45%
 (Fig. 1).

(Table 5). SOMA grade 1 2 4.5%

(7/154), 9.7% (15/154) .
 15 80 32
 10 28 18

Table 4. Risk Factors for Locoregional or Distant Failure

Factor	Locoregional failure			Distant failure		
	failure rate (%)	univariate (p-value)	multivariate (p-value)	failure rate (%)	univariate (p-value)	multivariate (p-value)
Stage						
Ib	25.0			8.3		
IIa	20.8			25.0		
IIb	23.5			26.5		
IIIb	41.2	0.12	ns*	35.3	0.6	ns
Histology						
squamous	25.9			23.8		
nonsquamous	27.3	0.92	ns	54.5	0.03	ns
Tumor size						
<4 cm	19.6			19.6		
≥4 cm	40.4	0.007	0.009	40.4	0.007	0.04
Tumor type						
exophytic	18.3			30.0		
endophytic	36.0			24.0		
infiltrative	26.3			26.3		
superficial	16.7	0.19	ns		0.44	ns
Pelvic L/N in CT						
(-)	23.8			22.2		
(+)	35.7	0.19	ns	42.9	0.02	0.02
preRT Hb						
<12	24.7			33.8		
≥12	27.3	0.71	ns	18.2	0.03	0.07

*not significant (p>0.05)

Table 5. Univariate and Multivariate Analysis of Prognostic Factors

Factor	(n)	5 YSR (%)	Univariate (p-value)	Multivariate (p-value)
Stage				
Ib	(12)	74		
IIa	(24)	67		
IIb	(98)	63		
IIIb	(17)	45	0.17	ns*
Histology				
squamous	(143)	64		
nonsquamous	(11)	36	0.102	ns
Tumor size				
<4 cm	(107)	69		
≥4 cm	(47)	47	0.008	0.02
Tumor type				
exophytic	(60)	63		
endophytic	(50)	62		
infiltrative	(38)	59		
superficial	(6)	83	0.65	ns
Pelvic L/N in CT				
(-)	(126)	64		
(+)	(28)	54	0.25	ns
preRT Hb				
≥12	(77)	55		
<12	(77)	69	0.16	ns

*not significant (p>0.05)

- 1998;30:762-771
12. Suh HS, Kang SH, Kim JR, Lee ES, Kim YB, Park SK. Concurrent weekly cisplatin and radiation therapy for high risk group of uterine cervical cancer. J Korean Soc Ther Radiol 1992;10:213-217
 13. Ma SY, Cho HL, Sohn SC. Survival and complication rate of radiation therapy in stage I and II carcinoma of uterine cervix. J Korean Soc Ther Radiol 1995;13:349-357
 14. Kim OB, Choi TJ, Kim JH, et al. Carcinoma of uterine cervix treated with high dose rate intracavitary irradiation: I. Patterns of failure. J Korean Soc Ther Radiol 1993;11:369-376
 15. Shin KH, Ha SW, Yoo KY. Analysis of pretreatment prognostic factors in stage IIB carcinoma of the uterine cervix. J Korean Soc Ther Radiol 1992;10:227-235
 16. Kim ES, Choi DH, Huh SJ. Radiotherapy results of uterine cervix cancer stage IIB: overall survival, prognostic factors, patterns of failure and late complications. J Korean Soc Ther Radiol 1998;16:51-60
 17. Lee KJ. Results of radiation therapy for carcinoma of the uterine cervix. J Korean Soc Ther Radiol 1995;13:359-367
 18. Kim GE, Suh CO, Lee DH, Park CY. The treatment of uterine cervical cancer using high dose rate Co-60 sources. J Korean Soc Ther Radiol 1983;19:5-102
 19. Kim HJ, Kim JS, Kwon HC, Kim JK, Oh BC. The results of curative radiotherapy for the uterine cervical cancer. J Korean Soc Ther Radiol 1996;14:191-199
 20. Ahn SJ, Chung WK, Nah BS, Nam TK, Choi HS, Byun JS. Irradiation alone in stage IB, IIA, IIB cervical cancer: I analysis of survival and failure patterns. J Korean Soc Ther Radiol 1997;15:129-136
 21. Perez CA, Breaux S, Madoc-Jones H, et al. Radiation therapy alone in the treatment of carcinoma of uterine cervix. Cancer 1983;51:1393-1402
 22. Eifel PJ, Morris M, Oswald MJ, Wharton JT, DeKobs L. Adenocarcinoma of the uterine cervix. Cancer 1990;65:2507-2514
 23. Drescher CW, Hopkins MP, Roberts JA. Comparison of the pattern of metastatic spread of squamous cell cancer and adenocarcinoma of the uterine cervix. Gynecol Oncol 1989;33:340-343
 24. Ha SW, Oh DH, Kim MS, et al. Pretreatment prognostic factors in carcinoma of uterine cervix. J Korean Soc Ther Radiol 1993;11:387-396
 25. Stohmann FB, Bundy BN, D'Saia PJ, Keys HM, Larson JE, Fowler WC. Carcinoma of the cervix treated with radiation therapy I. A multivariate analysis of prognostic variables in the Gynecologic Oncology Group. Cancer 1991;2776-2785

Abstract

Analysis of Treatment Failure after Curative Radiotherapy in
Uterine Cervical Carcinoma

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Purpose: The aim of this study is to analyze the treatment failure patterns and the risk factors for locoregional or distant failure of uterine cervical carcinoma treated with radiation therapy.

Materials and methods: A retrospective analysis was undertaken of 154 patients treated with curative radiation therapy in Gyeongsang National University Hospital from April 1989 through December 1997. According to FIGO classification, 12 patients were stage IB, 24 were IIA, 98 were IIB, 1 were IIIA, 17 were IIIB, 2 were IVA.

Results: Overall treatment failure rate was 42.1% (65/154), and that of complete responder was 31.5% (41/130). Among 65 failures, 25 failed locoregionally, another 25 failed distantly, and 15 failed both locoregionally and distantly. Multivariate analysis confirmed tumor size (>4 cm) as risk factor for locoregional failure, and tumor size (>4 cm), pelvic lymph node involvement as risk factors for distant failure.

Conclusion: On the basis of results of our study and recent published data of prospective randomized study for locally advanced uterine cervical carcinoma, we concluded that uterine cervical carcinoma with size more than 4 cm or pelvic lymph node involvement should be treated with concurrent chemoradiation.

Key Words: Cervix cancer, Radiotherapy, Failure pattern