

가

1984 1 2000 6

49 76 2 6 17

78 52 21 25 3

1997 T1 14 , T2 24 , T3 3 , T4 8 . N0 17 , N1 15 , N2 4 , N3 13

stage I,IIa, IIb, III,IVaIVb가 4 , 7 , 12 , 5 , 8 , 13

58 ~ 70 Gy

5 10 54.5% 47% 5 10 가 55.7%

45.3% 100%,IIa80%, IIb 59.5%,III40%, IV 42.2% 5 23

10 (20.4%) , 4 (8.2%) , 10 (20.4%) 가

T1 2 (4.3%), T2 3 (12.5%), T4 5 (62.6%) T 가 N2-3

(41.2%). 50%가 2 70% 2

T 가 T

가

T4 2 ~ 3

T4

Epstein-Barr

5 37 ~ 62%

40% 20% 30%

2 ~ 8)

가 9)

1)

가 49

2003 9 8 2003 11 26

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1984 1 2000 6
 가
 49
 2 6
 21 ~ 209
 가 30 가 19
 76
 17 78 48
 52 21
 가 25 가 3
 (Table 1). 1997 American Joint Com-
 mittee on Cancer(AJCC, 5th edition)
 stage I, IIa, IIb, III, IVa, IVb가 4 (8.2%), 7
 (14.3%), 12 (23.5%), 5 (10.2%), 8 (16.3%) 13 (26.54%)
 T1 14 (28.5%), T2 24 (49%), T3 3 (6.1%), T4 8
 (16.3%) . N0 17 (34.5%), N1 15 (30.6%), N2 4 (8.2%),
 N3 13 (26.5%) (Table 2).
 26 (53.1%), 20
 (40.8%), 14 (28.6%), 8 (16.3%)
 3 (6.1%) 1 (2%)
 가 6MV
 1.8 ~ 2 Gy 5
 58 Gy 70 Gy (

68.7 Gy 가
 60 ~ 70 Gy 가
 45 ~ 50 Gy 가
 가
 11
 5FU 1,000 mg/m² cisplatin 80 ~ 100 mg/
 m² VP-16 100 mg/m² cisplatin 80 ~ 100 mg/m²
 3 ~ 6 cycle
 Kaplan-Meier
 Log-rank test

1.
 84
 70 5 10
 54.5% 47%

Table 2. Stage Distribution by TNM System

	T1	T2	T3	T4	Total
N0	4	7	1	5	17
N1	3	9	1	2	15
N2	1	2	0	1	4
N3	6	6	1		13
Total	14	24	3	8	49

Table1. Patients Characteristics

Characteristics	Median (range)	76 (26 ~ 209)
Follow-up period (months)	Median	52
Age (years)	Range	17 ~ 78
Sex	Male	30
	Female	19
Stage	I	4
	IIa	7
	IIb	12
	III	5
	IVa	8
	IVb	13
Histology	Squamouscell	21
	Pooly differentiated	25
	Adenoid cystic	3

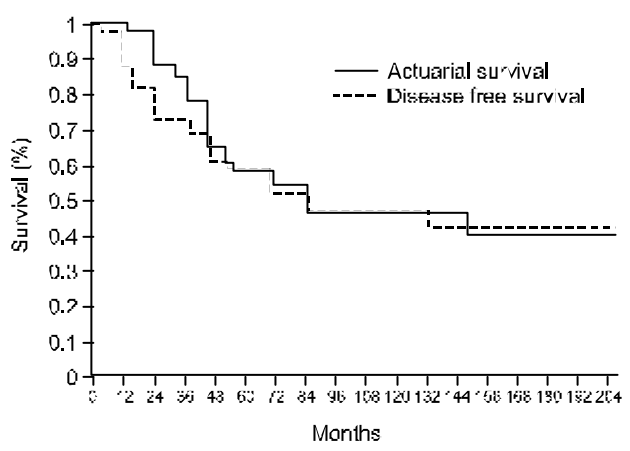


Fig. 1. Actuarial and disease free survival of nasopharyngeal cancer patients.

55.7% 45.3% (Fig. 1). 5 I 100%,
 IIa 80%, IIb 59.5%, III 40%, IV 42.2% 5
 10 I 100%, IIa 80%, IIb 47.6%, III 10
 IV 28.1% (Fig. 2).

35 T
 NO , 가
 T
 (Table 3).
 I IIa
 가

(Table 4).
 2.
 23 (46.9%) 10
 (20.4%), 4 (8.2%) 10 (20.4%)
 1 .
 2 T1 2
 (4.3%), T2 3 (12.5%), T3 0 (0%), T4 5 (62.5%) . NO 1
 (6.2%), N1 1 (6.2%), N2 0 (0%), N3 2 (15.3%) . N2-3
 41.2% 가 .
 , 가 3 , 가 2 ,
 가 1 . 50% 2 80%
 5 7 1 11 1 .
 70% 2 .

3.

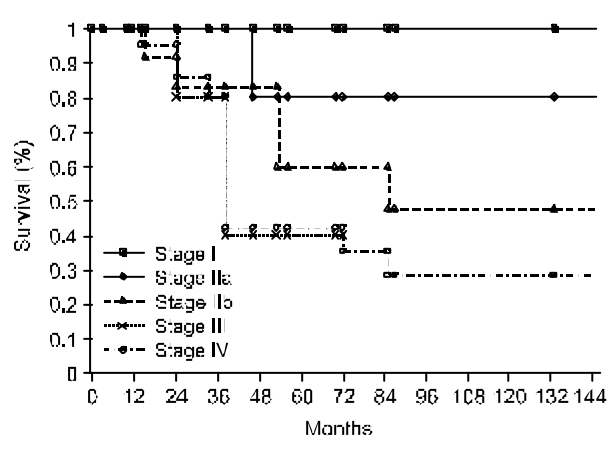


Fig. 2. Actuarial survival according to stage in nasopharyngeal cancer patients.

grade 2 37 (95%),
 trismus 2 , Lhemitte's sign 4 , 2 , 1
 , blindness가 1 .

Table 3. Overall Survival According to Prognostic Factors

Factors	Groups	No	5 yr* (%)	10 yr (%)	p-value
Age	≤ 35	11	77.9	58.4	0.1
	> 35	38	52.9	38.8	
Sex	M	30	46.6	31.0	0.07
	F	19	75.7	67.3	
Stage	T1	14	68	58.3	0.14
	T2	24	52.5	52.5	
	T3	3	33.3	33.3	
	T4	8	44.4	29.6	
	(T1-2)	38	74.1	65.9	
	(T3-4)	11	41.2	28.3	
Lymph node	N0	17	67.5	57.1	0.38
	N1	15	50.8	40.6	
	N2	4	75.0	75.0	
	N3	13	44.5	29.7	
Stage	I	4	100	100	0.02
	IIa	7	80	80	
	IIb	12	59.5	47.6	
	III	4	40	-	
	IV	21	42.2	28.1	
Histology	Squamous cell	21	45.2	37.7	0.67
	Pooly differnetiated cell	25	67.5	52.1	
	Adenoid cystic	3	66.7	66.7	

Table 4. Overall Survival According to Treatment

	No	5 yr* (%)	10 yr (%)	p-value
All group				
Chemotherapy+RT	11	27.2	13.6	.03
RT alone	38	64.6	54.7	
For stage IIb				
Chemotherapy+RT	10	32.1	0	.29
RT alone	28	57.5	40.6	

*year survival rate

가
35
Tang¹⁴⁾ Perez¹⁵⁾
2% 가
1% 50% 2
, Epstein-Bar 가 80% 5 7 11
, 1) 2,5,8,16) 2 ~ 3
가 가 65 ~ 85% 가
4,12) 가
67% 가
70 Gy 가 Valentini¹⁷⁾
T3 T4 T1 T2
T2 T3 T4 Yan¹⁸⁾ T1
가 가
T1-T3 가
Wang¹⁹⁾ 가 Teo²⁰⁾ T1-T3
20%, 가 30%, 5 37 ~ 62% T1-2, 59 ~
2~8) 5 2,3,6,13) T1 T2
70%, T3 35 ~ 55% T4 0 ~ 40% 3 66 Gy
T1, T2 T1 68% 5 66 Gy
T3 T2 52.5%
T4 T1-3 66 ~ 70 Gy
T3 T4 33.4 T4 44.4% T4 37.5%
가
T 5 가
N0-N1 56 ~ 80% N2-3 40 ~ 59% 2,3,6,13)
N0 67.5% N1 50.8%, N2 75%, N3
44.5% 가
6 cm 가 Wang²¹⁾ 1 1.6 Gy
(accelerated fractionation) T3
T4 5 34% 71% 가 N2
N3 46% 71% 가 Lee²²⁾
T3 100% T4 37.5% T1 85.7%, T2 87.5% T1-2 69 ~
89%, T3 50 ~ 73%, T4 12 ~ 46% Teo²³⁾ 1 1.6 Gy
T3 T4 가 2,4,5) 가
81.6% 82 ~ 97% 1.2Gy
13 ~ 15) T1-3 가
가 T4 가
5 가 2 ~ 3

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Radiotherapy for Nasopharyngeal Carcinoma

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Purpose: To evaluate the results of radiation management on recurrence, survival and prognostic factors of patients with nasopharyngeal cancer.

Materials and Methods: Forty-nine patients, treated for nasopharyngeal cancer by radiotherapy between January 1984 and June 2000, were retrospectively studied. All patients were followed up for at least 2.5 years. Their median age was 52 years (range 17~78). The histological types were 21 squamous cell carcinoma, 25 undifferentiated carcinoma, and 3 adenoid cystic carcinoma. The tumor stages were as follows: T1 in 14 patients, T2 in 24, T3 in 3, and T4 in 8, and N0 in 17 patients, N1 in 15, N2 in 4 and N3 in 13. Stages I, IIa, IIb, III, IV and IVb were 4, 7, 12, 5, 8, and 13 patients respectively. Radiation doses of 58~70 Gy (median 68.7 Gy) were given to the nasopharyngeal and involved lymphatic areas and of 46~50 Gy to the uninvolved neck areas.

Results: The overall 5 and 10-year actuarial and disease free survival rates were 54.53% and 47%, and 55.7% and 45.3%, respectively. The overall five-year survival rates were 100% in stage I, 80% in stage IIa, 59.5% in stage IIb, 40% in stage III, and 42.2% in stage IV tumors. Twenty-three patients failed either loco-regionally or distantly. Incidences of local failure, regional failure and distant metastasis for the first failure were 20.4%, 8.2% and 20.4%, respectively. Local recurrences were 4.3% in T1, 12.5% in T2, 0% in T3, and 62.5% in T4 lesions. Distant metastasis was seen in 41.2% of N2-3 lesions. Fifty percent of local recurrence appeared within 2 years of treatment at the primary lesion, whereas 70% of distant metastasis appeared within 2 years following treatment. Young age, female, early T stage, N0 stage, and poorly differentiated carcinoma were all related with good survival. However only stage showed statistically significance.

Conclusion: Based on the results of this study, radiation therapy to nasopharyngeal cancer showed high local recurrence in T4 and increased metastasis in N2-3 lesions. To improve local failure, further radiation doses, such as stereotactic radiation or IMRT radiation, are necessary especially in T4 lesions. The high incidence of distant metastasis in positive lymph node patients, indicates that combined radiation and effective chemotherapeutic agents with appropriated schedule are necessary.

Key Words: Nasopharyngeal cancer, Radiation