The Results and Prognostic Factors of Chemo-radiation Therapy in the Management of Small Cell Lung Cancer

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<u>Purpose</u>: Although small cell lung cancer (SCLC) has high response rate to chemotherapy and radiotherapy (RT), the prognosis is dismal. The authors evaluated survival and failure patterns according to the prognostic factors in SCLC patients who had thoracic radiation therapy with chemotherapy.

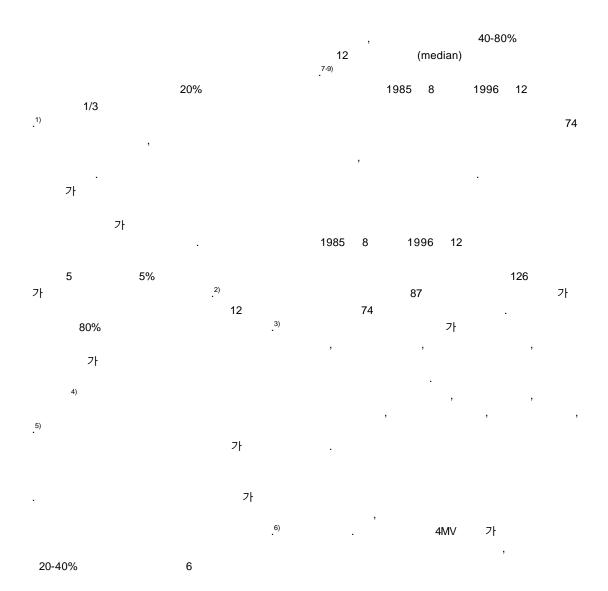
<u>Materials and Methods</u>: One hundred and twenty nine patients with SCLC had received thoracic radiation therapy from August 1985 to December 1996. Seventy-seven accessible patients were evaluated retrospectively among 87 patients who completed RT. Median follow-up period was 14 months (2-87months).

Results: The two years survival rate was 13% with a median survival time of 14 months. The two year survival rates of limited disease and extensive disease were 20% and 8%, respectively, with median survival time of 14 months and 9 months, respectively. Twenty two patients (88%) of limited disease showed complete response (CR) and 3 patients (12%) did partial response (PR). The two year survival rates on CR and PR groups were 24% and 0%, with median survival times of 14 months and 5 months, respectively (p= 0.005). No patients with serum sodium were lower than 135 mmol/L survived 2 years and their median survival time was 7 months (p=0.002). Patients whose alkaline phophatase lower than 130 IU/L showed 26% of 2 year survival rate and showed median survival time of 14 months and those with alkaline phosphatase higher than 130 IU/L showed no 2 year survival and median survival time of 5 the months, respectively p=0.019). No statistical differences were found according to the age, sex, ausnd performance stat. Among the

patients with extensive disease, two year survivals ac cording to the metastatic sites were 14%, 0%, and 7% in brain, liver, and other metastatic sites, respectively, with median survival time of 9 months, 9 months, and 8 months, respectively (p>0.05). Two year survivals on CR group and PR group were 15 % and 4%, respectively, with a median survival time of 11 months and 7 months, respectively (p=0.01).

<u>Conclusion</u>: For SCLC, complete response after chemoradiotherapy was the most significant prognostic factor. To achieve this goal, there should be further investigation about hyperfractionation, dose escalation, and compatible chemo-radiation schedule such as concurrent chemo-radiation and early radiation therapy with chemotherapy.

Key Words: Small cell lung cancer, Prognostic factor, Radiation therapy



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p=0.032).
                                                                             31
               3600cGy
                                               2
                                      3
                                                                  26
                                                                                  22
                             3800-5580cGy(
                                                                                                        2
5040cGy)
                                                        85%
                                                                                                        0%
                                                                            sex, and performance status.
       3000cGy
                            200cGy
                                       15
                                                        Among patients of extensive disease, two years
                                                              14
                                                                                              가
                                                                                                        (p=
                                                        0.005, Fig. 3).
                                                                                         가 135mmol/L
                                                                  2
                                                                                17%
CAV-EP
                                                                                                         14
           6
            가
                                                                                      가 135mmol/L
                                                             3
                                                                                    (p=0.002).
                                                                                                   Alkaline
          1-3
                                                        phosphate(ALP)
                                                                               가 130IU/L
가
                                                                    2
                                                                                       26%
                                                                                              0%
                         , 50%
                    , 50%
                                                                                                 가
                                                                        14
                                                                                   5
                                                        (p=0.019).
                                                                                               50
         가
                   20%
                                     가
                                                                                20%
                                                               17
                                                                         12
                                                                                       가
                                                                                                  2
                                                             20%
                                                                                                       12
                                                                                 15
                           4-87
                                                                                  2
                         8
                                                                         0-2
                                                        3-4
                                                                       23%
                                                                               25%
                              27
                                       78 (
                                                             14
                                                                       12
                                                                                                         가
                       74
59 )
          50
                               61
                                   (82\%)
50
                 가
                                                  5
   1
           가
                                                              1.0
         30 pack/year
                              77%
               135mmol/L
                                     가 9

    Survival Function

                                                              8,
                                   가 31 (42%)

    Censored

                       가 43 (58%)
                                                           Survival Ratio
                                                              .6
     Kaplan-Meier
                                                              .4
       2
                          Log-rank test
                                                              .2
                                                             0.0
                                                                                  12
                                                                                 Months
               2
                             13%
       10
                   (Fig. 1).
                                                         Fig. 1. Actuarial survival rate of chemoradiation therapy
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14

(Fig. 2,

가

2

8%

9

20%

in the management of small cell lung cancer.

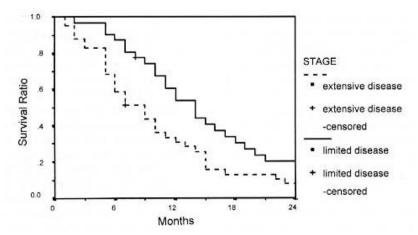
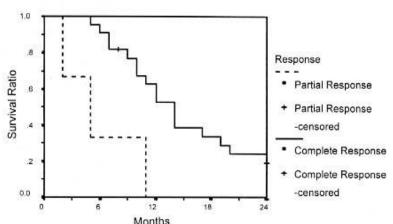


Fig. 2. Survival rate by stage for patients with small cell lung cancer.



Months

Fig. 3. Survival rate by treatment response in limited disease for patients with small cell lung cancer.

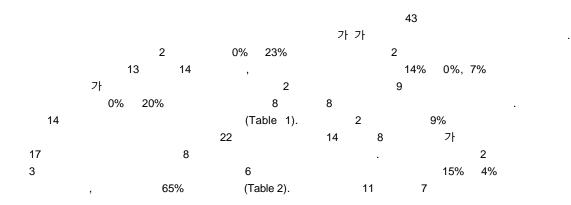


Table 1. Actuarial Survival by Initial Parameter in Limited Disease

Factors	No. of Patients	2 YSR <sup>§</sup> (%)	Median Survivals	<i>p</i> -value
	-	200	47	
Age(Years)	5 26	20 20	17 12	NS <sup>¶</sup>
50				
> 50 Sex	25	20 20	12	
Male	6	20	15	NS
Female	22	24	14	
Treatment response	22 3	0	5	0.005
CR* · PR†				0.005
ALP <sup>‡</sup>	24 3	26	14	
130IU/L	3	0	5	0.019
> 130IU/L	3	0	7	
Serum sodium	3 18	17	14	
135mmol/L				0.002
> 135mmol/L Performance(ECOG)	23 4	23 25	14	
0-2	4	25	12	NS
3-4	4	0	13	140
Pleural effusion	27	23	14	
Yes No				NS
Lymph node	26 5	20	14	
N0-2	5	0	8	NO
N3	15	22	16	NS
Weight loss 10%/6Mo	15 7	22 14	10	
> 10%/6Mo				NS
> 10/0/0HIO				

Table 2. Patterns of Recurrence in Complete Response Patients of Limited Disease

Recur site	Number of patients(%)
Local Recurrence(LR) LR with DM Distant Metastasis(DM)	8( 47) 3( 18) 6( 35)
Total	17(100)

(p=0.01).

Table 3. Actuarial Survival by Initial Parameter in Extensive Disease

Factors	No. of patients	2YSR(%)	Median survival	<i>p</i> -value
Metastatic sites Brain Liver Others Performance	14 7 20	14 0 7	9 9 8	NS
(ECOG) 0-2 3-4 Response	27 11	9 9	10 6	NS
CR PR	12 23	15 4	11 7	0.01
,1)	1/3			가
가				1960
cyclophosphamic 가	ae	paclitaxel		
docetaxel		가	. 11)	
	12	.3)	, '	80%
		가 가		
가 Warde	가 , e <sup>12)</sup>		가 11	
			가	2
5.4% Pignon <sup>5)</sup> 16 5.4%	6	가 가 가	'ŀ	3
43%	,		50%	72% 기 -
30 15-20% <sub>15)</sub>	)-80% 가	.13, 14)	2	가 Osterlind
	2	•	20%	

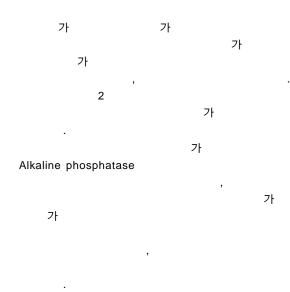
85%

14

가 .10)

 $<sup>^{\</sup>dagger}\text{CR}$  : complete response  $^{\dagger}\text{PR}$  : partial response  $^{\ddagger}\text{YSR}$  : year survival rate  $^{\S}\text{ALP}$ : Alkaline phosphatase  $^{\$}\text{NS}$ : no significant

```
Alkaline
                                                                             가
phospataes(ALP)
                                      ,16)
                 가
                              가
                                                                                          가
                                                               , Coy
                                          가
                          가
                                                         가
        가
                     .17, 18)
                                        2
                                                   21.2
                                                                                             16.0
                                                                   가
                         가
                                                                                                2
가
                                                       3 , 4
                                                                                      40%
                                                                                            32%,
                                                   25%,
                                                                       33%
                                                                              22%, 15%
                                                                            18%
Gronowitz 19)
                     Alkaline phosphatase(ALP)
                                                      28%
                                                                     (<0.05)
    가
가 135 mmol/L
                                  가 1
                                                                                  가
                                                                                 10%
                                                                                               가
    (p=0.002), ALP가 130IU/L
                                           2
                                    (p=0.019).
                                                                     가
                                                                                             25)
                                                      20-25%
                                                                                . Pederson
                 가 가
                                            가
                                                   6%
                                                        22%
                                                                                         2
                                            가
                                                   80%
                                                                    가
  2
                                          가
                                                                     가
                              2
가
                                                                                        가
                                    2
   20%
                                           2
                                                                                          가
        0%
  가
              가
                  . Lebeau
                                                                               가
                                                                             (3-4Gy)
                                                                                        가
                                     . Komaki
                                                   가
  21)
                                 (interdigitating
                                                              2Gy
chemotherapy and radiotherapy)
                                                   30-36Gy
                                                     26, 27)
             22)
Tummarello
                                                                                   2
                                  (maintenance
                                                                  가
alternating chemotherapy)
                                            23)
                                 . Mornex
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20-25% 가 : 1985 8 1996 90 12 가 74 4-87 14 ), 8 27 78 59 2 13% 10 2 14 9 20% 8% 가 (p=0.032). 34 26 22 (88%) 3 (12%) 2 24% 0% 14 (p=0.005).135mmol/L 1 2 17% 7 14 (p=0.002). Alkaline phosphatase(ALP)가 130IU/L 2 0% 14 5 (0.019). 43 26% 14% 0% 2 7% 8 , 7 2 15% 4% 7 가 (p=0.01).11 가 가

Alkaline phosphatase