

The Results Observation on Adjuvant Chemotherapy with Microwave Hyperthermia and Stereotactic Radiotherapy in Retreated Elderly Patients with Advanced (III/IV Stage) Lung Cancer

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Abstract

Objective: To evaluate the significance of adjuvant chemotherapy and radiotherapy (Gamma-knife) in the elderly patients with retreated advanced lung cancer. **Methods** 83 patients (age 50 to 81 years) with retreating advanced (III/IV stage) lung cancer were divided into three groups according to patients received treating by different methods. The cases were treated by synchronous chemo-radiotherapy (A group), sequentially chemo-radiotherapy (B group) and continuous systematized chemotherapy alone (C group). The systemic 3-dimensional orientation apparatus was used in radiotherapy. The chemotherapy regimen in combined radiotherapy was given by common first line regimen on lung cancer. The regimen of chemotherapy combated with whole body hyperthermia by using micro-wave on abdomen about 2 or 3 line was used in C group only. **Results:** The overall responses rates (RR) of A, B and C groups were 17.1%, 11.5% and 31.8%, but it was non-significance difference ($P > 0.05$). Overall responses rates (RR) of III and IV stage groups were 18.2% and 20.0%. The average overall survival time (OS) and median survival time (MST) of the patients treated by chemotherapy (C group) were highest about 14.2 and 9.3 months (respectively at A group 6.7 and 6.0 months. $P < 0.01$), in which B group was longer than A group ($P < 0.05$), and 95.5% CI value was not overlap. The total survival time of postoperative patients was longer in the various groups by different treated than that in non-operations. **Conclusion:** The rates (RR) of III and IV stage groups were non-significance difference. The higher of ORR, OS and MST in a few patients of re-treated advanced lung cancer was presented in case with treated by continuous system chemotherapy. There were survival superiority in initial postoperative patients groups by different treated. It is a profitable and effect treatment that the pure reasonable systemic chemotherapy was used for elderly case with advanced retreated lung cancer.

Keywords

Elderly Patients, Chemotherapy, Combined Radiotherapy, Lung Cancer

1. Background

The retreating to elder patients with advanced lung cancer is a problems that often needs to be faced in clinical practice. A number of studies have shown that appropriately chemotherapy or radiotherapy is better than the best supportive care. Due to the special physiological function of old patients, it was considered that how to choose the best treatment for the patients. Especially for patients treated again, at present this kind of research is not much. It is object about the paper to investigate the effect and significance of adjuvant chemotherapy with hyperthermia and radiotherapy (Gamma-knife) in the treatment of elderly patients with retreated advance lung cancer.

2. Clinical Material and Methods

Eighty-three patients, median age 67.3 year (50 to 81 years), with retreating advanced (III/IV stage) lung cancer were divided into three groups according to patients received treating by different methods. 35 cases were treated by synchronous chemo-radiotherapy (group A). 26 cases were treated by sequentially chemo-radiotherapy (group B) and 22 cases were treated by continuous systematized chemotherapy alone (group C) (see **Table 1**). All patients were selected for inclusion in study after the initial treatment stoped 2 - 3 months. The systemic 3-dimensional orientation apparatus was used in radiotherapy. The total dose of 35-55GY was given in synchronous or sequential chemo-radiotherapy. The chemotherapy regimen in combined radiotherapy was given by common first line regimen on lung cancer. (NSCLC: NVB25 mg/m² d1, 8, GEM 0.8 - 1.0/m² d1, 8, DDP 40 mg d1-3 or DDP20 mg d1-5. SCLC: CBP AUC = 5, VP16 0.1/m². q21d). The part chemotherapy combated with whole body hyperthermia by using micro-wave on abodeman in temperature 40°C - 42°C for 1 - 2 hours. The regimen of chemotherapy about 2 or 3 line was used in C group only. Drugs was used at Taxol (Squibb US, Co) 175 mg/m² d1, or Docertacel (Aventis Pharma, SA, Co) 70 - 80 mg/m², d1; Pemetrexed (Lilly France SAS, Co) 500 mg/m², d1.). The response rate was statistically based on RECIST (WHO) method.

Statistical analysis The categorical variables percent date were compared between the two groups by using the independent X² test. Continuous data were compared between two groups by using independent *t* test. A two-tailed *P* value of < 0.05 was considered statistically significant. Survival was calculated by using the Kaplan-Meier method and compared by using the log-rank test. The *Kaplan-meier* curve was used to exhibit survival time.

3. Results

1) The overall responses rates (RR) of A, B and C groups were 17.1%, 11.5% and 31.8%, but it was non-significance difference respectively at three group (*P* > 0.05). The higher effective rate was presented in stage III case with synchronous chemo-radiotherapy (23.1%), and in stage IV with continuous systematized chemotherapy alone (38.5%), but overall responses rates (RR) of III/IV stage groups was non-significance difference (18.2% and 20.0%) (see **Table 2**).

Table 1. The general state of the patients with cancer on different treating groups.

Groups	Cases	SEX		Mid-age	Stage (%)		PS (%)	
		M	F		III	IV	≤2	≥3
group A	35	23	12	54.6	13 (37.1)	22 (62.8)*	25 (71.4)	10 (28.6*)
group B	26	20	6	51.2	11 (42.3)	15 (57.7)	16 (61.5)	10 (38.5)
group C	22	13	9	56.5	9 (40.9)	14 (63.7)*	14 (63.7)	8 (36.3)

**P* > 0.05.

2) The average overall survival time (OS) and median survival time (MST) of the patients treated by chemotherapy (C group) were highest about 14.2 and 9.3 months (respectively at A group 6.7 and 6.0 months. $P < 0.01$), in which B group was longer than A group ($P < 0.05$), and 95.5% CI value was not overlap. The *Kaplan-meier* curve for survival time was showed (shown in **Figure 1**).

3) The total survival time of initial postoperative patients were longer in the various groups by different treated than that in non-operations (see **Table 3**).

Table 2. The contrast about respond rate (RR) in different treating groups.

Group	Stage III		Stage IV		RR (%)	
	N	RR (%)	N	RR (%)		
Syn.che-rad (A)	13	3 (23.1)	22	3 (13.6) [#]	6/35	(17.1)
Seq.che-rad (B)	11	1 (9.1)	15	2 (13.3)	3/26	(11.5)
Chem.onl (C)	9	2 (22.2)	13	5 (38.5) ⁺	7/22	(31.8) [*]
	33	6 (18.2)	50	10 (20.0)	16/83	(19.3)

^{*} $\chi^2 = 1.87$. $P > 0.05$ (contrast between C and B); ⁺ $\chi^2 = 2.86$. $P > 0.05$ (contrast between C and A); [#] $\chi^2 = 0.51$ $P > 0.05$ (contrast between stage IV and III in A group).

Table 3. Survival time (months) on different treating groups with post-operation.

Content	No operation			Post-operation		
	n	\bar{X}	MST	n	\bar{X}	MST
Syn.che-rad (A)	30	6.5	5.0	5	19.2	13.4
Seq.che-rad (B)	20	9.9	7.0	6	17.0	15.0
Chem.onl (C)	17	10.9	9.0	5	25.2	15.0
	65	9.1	7.0	16	20.5	14.5 [*]

^{*} $t = 2.79$. $P < 0.01$ (post-ope.cont no ope. about MST).

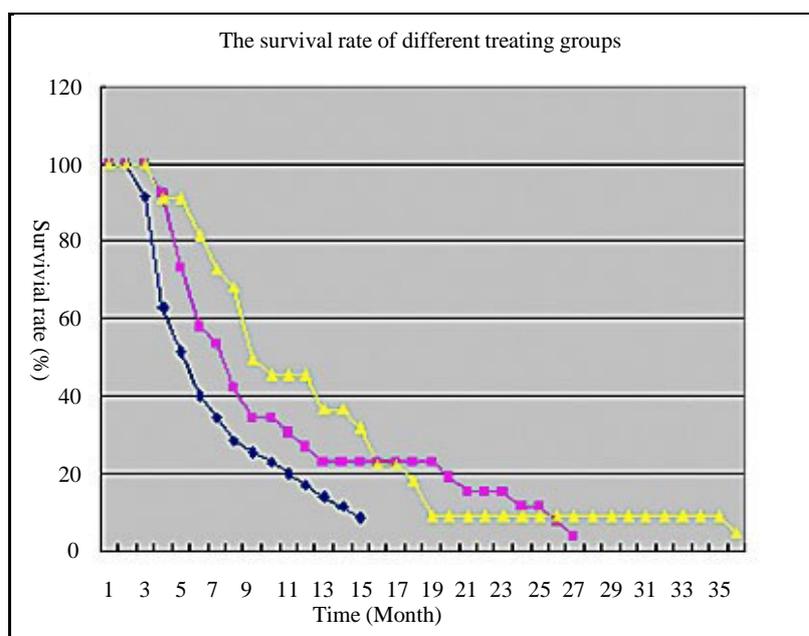


Figure 1. The *Kaplan-meier* survival rate of different treating groups. —●—: group A, —■—: group B, —▲—: group C.

4. Discussion

Stereotactic gamma knife radiotherapy for intracranial tumor and somatic localized tumors can make small part of radical effect to the operation as a knife. However, chemotherapy is often needed for patient with recurrence and metastasis [1]. However studies have indicated that, after radiotherapy or early chemotherapy, the residual tumorcells can accelerate the proliferation, which make the tumor more difficult to control [2]. So it is very important to follow up the system chemotherapy or consolidation chemotherapy. Hyperthermia can increase the efficacy of chemotherapy and reduce side effect, in which it can appropriately reduce the dose of chemotherapy drug and more suitable for the elderly. Although surgical treatment of lung cancer, especially in the initial treatment still occupies an important position [3], our research also shows that there were survival superiority in initial postoperative patients groups by subsequent different treated. But it is not possible for the elderly tumor patients to choose again. This clinical observation study of this paper suggested that the synchronous chemoradiotherapy can partly increased about RR of the patients with stage III case, and higher effective rate was presented in stage IV with continuous systematized chemotherapy, but the rates (RR) of III and IV stage groups were non-significance difference. The higher of ORR, OS and MST in a few patients of re-treated advanced lung cancer was presented in case with treated by continuous system chemotherapy. Conclusion: It is a profitable and effect treatment that the pure reasonable systemic chemotherapy was used for elderly case with advanced retreated lung cancer.

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