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SHORT - TIME EFFECTS OF BRONCHIAL ARTERY INFUSION WITH CHEMICAL DRUGS FOR LUNG CANCER

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Bronchial artery infusion (BAI) with chemical agents was performed in 41 patients with lung carcinoma up to 61 times, included 33 cases (51 times) primary lung carcinoma (PLC) and 8 cases (10 times) lung metastatic carcinoma (LMC). Short - time effects were valuable in 31 cases with PLC and 7 cases with LMC. Complete remission (CR) plus partial rimission (PR) ocurred in 14 cases (45.16%) among 31 patients with PLC and 1 case (14.28%) among 14 patients with LMC ($P < 0.01$). CR plus PR was 10 cases (52.63%) among 19 patients with central type cancer (CTC) and 4 cases (33.33%) among 12 patients with perprephal type cancer (PTC) of PLC ($P < 0.05$). CR plus PR in 15 squamous carcinomas (SC), 6 adenocarcinomas (AC) 2 small cell undifferentiated carcinomas (SCLC) and 8 histologically unclassfied carcinomas (HUC) were 8 (53.33%), 1 (50%), and 3 (37.5%), respectively. The rate of CR plus PR in squamous carcinoma was higher than that in adenocarcinoma and histologically unclassified carcinoma ($P < 0.05$). There was no remarkable difference in CR plus PR among stage Ⅱ—Ⅲ and Ⅳ patients with PLC, CAP and FMP protocol treatment. This study also investigated and analysed the side effects of 41 patients by BAI treatment.

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Key words: Lung carcinoma, Bronchial atery infusion, Short - time effect.

The treatment for lung cancer patients with bronchial artery infusion (BAI) has been widely performed in China.[1-8] It is well known that the short - time effect by this method is higher than using systemic venous infusion.[3,6] The main purpose of our study is to further investigate the short - time effects in using different chemical protocols for different pathological and clinical types of primary lung carcinoma (PLC) as well as lung metastatic carcinoma (LMC).

MATERIALS AND METHODS

Cases

The diagnosis of 41 cases with lung cancer had been confirmed by histo - pathological or cytological evidence in our hospital. All patients were treated by bronchial artery infusion up to 61 times. 33 cases of them are primary lung cancer (Table 1, male 31 cases, female 2 cases) and received BAI treatment up to 51 times. Average age of these patients is

61.4 years old (Max. 73, Min. 46). The times of BAI treatment were once for 22 cases, twice for 8 cases, three times for 2 cases and seven times for 1 case.

Table 1. Clinical characters of patients with primary lung cancer

Location			Stage			Pathology				Type	
Left	Right	Double	Ⅱ	Ⅲ	Ⅳ	SC	AC	SCLC	HUC	CTC	PTC
14	15	4	2	17	14	17	6	2	8	20	13

Note: SC: squamous carcinoma; AC: adenocarcinoma; SCLC: small cell undifferentiated carcinoma; HUC: histologically unclass fied carcinoma; CTC: central type cancer; PTC: perprephal type cancer

The 8 patients (male 6, female 2) with matastatic lung cancer treated by BAI up to 10 times (once for 6 cases, twice for 2 cases). Average age of LMC patients was 51.13 years old (Max. 58, Min. 43). Primary lesions originated from breast and nasopharynx were two cases each, and form larynx, esophagus liver and synovium one case each.

Methods

Bronchial arteriograms were made by a 6F tube through femoral artery with contrast medium and films taken continuously. We infused chemical drugs after observing tumors stained by meglu - camine diatrizoate. Each chemical protocol consisted of three drugs chosen from following five chemical agents: Cisplatinum 80—120 mg or Carboplatin (P) or 300—400 mg, Epi - rubicin (A) 40—60 mg, Mitomycin (M) 12—16 mg, Fluorouracil (F) 1000 mg, Nitrocaphane 60—100 mg or Cyclophosphamide (C) 600—1000 mg. The interval of BAI treatment was 4 weeks.

RESULTS

Short - time effects are evaluable in 31 cases with PLC and 7 with LMC (Table 2—7).

Table 2. Short - time effects of BAI treatment in PLC compared with LMC

Groups	No. of cases	CR	PR	S	P	CR + PR(%)	*P*
PLC	31	1	13	11	6	14(45.16)	
LMC	7	0	1	5	1	1(14.28)	<0.01

Table 3. Short - time effects of BAI treatment in central type compared with perprephal type cancer

Tyep	No. of cases	CR	PR	S	P	CR + PR(%)	*P*
CTC	19	1	9	6	3	10(52.63)	
PTC	12	0	4	5	3	4(33.33)	<0.05

Table 4. Comparison of short – time effects of BAI treatment in different stages of PLC

Stage	No. of cases	CR	PR	S	P	CR + PR(%)	*P*
Ⅱ + Ⅲ	17	1	7	7	2	8(47.6)	
Ⅳ	14	0	6	4	4	6(42.85)	>0.05

Table 5. Comparison of short – time effects of BAI treatment in different histological types of PLC

Tyep	No. of cases	CR	PR	S	P	CR + PR(%)	*P*
SC	15	1	7	4	3	8(53.33)	
AC	6	0	2	3	1	2(33.33)	<0.05
SCLC	2	0	1	1	0	1(50)	
HUC	8	0	3	3	2	3(37.5)	<0.05*

*SC compared with HUC

Table 6. Short – time effects of BAI treatment using CAP compared with FMP and other protocols

Protocals	No. of cases	CR	PR	S	P	CR + PR(%)	*P*
CAP	15	1	6	5	3	7(46.67)	
FMP	9	0	4	3	2	4(44.44)	>0.05
OTHERS	7	0	3	3	1	3(42.86)	>0.05

Table 7. Side – effects of BAI treatment in 41 patients

Side – effects	No. of cases	%
Alimentary tract	35	85.36
Fever	10	24.39
Thrombopenia	11	26.82
Leukopenia	12	29.27
Alopecia	21	51.21
Rising of ALT	6	14.63
Rising of BUN	4	9.75
Rising of Cr	2	4.87
Upper extremity pain	1	2.44
Ataxia	1	2.44

DISCUSSION

The difference between PLC and LMC in screen is that of the condition of tumor blood supply by our observation. PLC has a large nutrient artery origenated form bronchial artery and its many branches constituting a lot of complex blood vessel nets. LMC mainly originates from spreads through pulmonary artery and receives double blood supply from pulmonary and bronchial arteries[9]. Because the bronchial artery gives blood supply and many blood vessel nets, PLC can receive dose of chemical drugs greater than that in LMC, so that the rate of CR + PR in PLC is highter than that in LMC ($P < 0.01$)

According to observation from screen, we found that the central type cancer had mostly a larger nutrient vessel near the root of bronchial artery and more blood vessel nets than the

perprephal type cancer. We consider that the above is the main reason why the rate of CR + PR in former is higher than later. The reason for which the rate of CR + PR in SC is higher than that in AC ($P < 0.05$) is that most squamous cancer belongs to central type with rich blood supply and is more sensitive to chemical drugs than adenocarcinoma, which mainly belongs to perprephal type cancer with poor blood supply.[6,8,9] HUC is so poorly differentiated and with so little number of cells in sample aspirated from pleural and/or matastatic lymphnode, as a result, it is difficult to determine histological type. The patients with HUC who often have pleural and lymphnode matastatis belong to late cases. The rate of CR + PR in HUC is lower than that in SC ($P < 0.05$), because the chemical drugs can not enter chest cavity and matastatic lymphnode easily. It is possible that tumor volume is smaller in the patients with stage Ⅱ—Ⅲ, especially stage Ⅱ, relative blood supply is richer and drugs are easier to infiltrate into these tumors. Though the rate of CR + PR in state Ⅱ—Ⅲ of PLC is higher than that in stage Ⅳ, there is no remarkable difference in two groups. This result corresponds with reports of most researchers but is contrary to reports of few authors.[5] We consider that the constituent of tumor histological type in each stage of PLC and the different chemical protocols are two other important impact elements of short - time effects except for tumor blood supply. The relationship of different chemical protocols in BAL treatment with the sensitivity in different histological types of PLC is a valuable subject for our further study. Side - effects of alimentary tract, alopecia, leukopenia, throm - bopenia, elevation of ALT, BUN and Cr, upper extremity pain induced by chemical drugs are usually Ⅰ—Ⅱ grade (WHO, 1978) and reversible by time with no special treatment.[2,4,7] Side - effects of alimentary tract, leukopenia and thrombopnia are occasionally of Ⅲ grade in few patients, it is necessary to give symptomatic treatment for them. Fever is induced by chemical drugs, contrast medium and products of tumor necrosis.[9] Usually the temperature of patients is lower than 38.5℃ and returns to normal during a week. If the temperature is higher than 39.5℃ or 38.5℃ continuous out of one week, the doctor must pay attention to patients if he suffered from any infection of lungs.

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