Original Article

Concomitant chemoradiotherapy with docetaxel and cisplatin followed by consolidation chemotherapy in locally advanced unresectable non-small cell lung cancer

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Abstract:

OBJECTIVES: To evaluate treatment results and toxicities in patients who received concomitant chemoradiotherapy (CRT) followed by consolidation with docetaxel and cisplatin in locally advanced unresectable non-small cell lung cancer (NSCLC).

METHODS: Ninety three patients were included in this retrospective study. The patients received 66 Gy radiotherapy and weekly 20 mg/m^2 docetaxel and 20 mg/m^2 cisplatin chemotherapy concomitantly. One month later than the end of CRT, consolidation chemotherapy with four cycles of docetaxel 75 mg/m^2 and cisplatin 75 mg/m^2 were administered at each 21 days.

RESULTS: Median age of the patients was 57 (range, 30-74). Following concomitant CRT, 14 patients (15%) showed complete and 50 patients (54%) showed partial response (total response rate was 69%). The median follow-up was 13 months (range: 2-51 months). The median overall survival was 18 months (95% confidential interval [CI]: 13.8-22.1 months); local control was 15 months (95% CI: 9.3-20.6 months); progression-free survival was 9 months (95% CI: 6.5-11.4 months). Esophagitis in eight (9%) patients, neutropenia in seven (8%) patients and pneumonitis in eight (9%) patients developed as grade III-IV toxicity due to concomitant CRT.

CONCLUSION: Concomitant CRT with docetaxel and cisplatin followed by docetaxel and cisplatin consolidation chemotherapy might be considered as a feasible, and well tolerated treatment modality with high response rates despite the fact that it has not a survival advantage in patients with locally advanced unresectable NSCLC.

Key words:

Cisplatin, concomitant chemoradiotherapy, docetaxel, non-small cell lung cancer

Eighty-seven percent of lung cancers are non-small cell lung cancer (NSCLC) and one-third of this NSCLC patients are locally, advanced, unresectable stage III (A and B) diseases at the time of diagnosis.[1,2] Despite standard treatment was thoracic radiotherapy alone in 1990s, following demonstration of the superiority of chemotherapy and radiotherapy combination over radiotherapy alone in phase II clinical trials, that tendency changed.[3-5] In latest meta-analysis of six randomized trials[6-11] that compared concomitant and consecutive chemoradiotherapy (CRT) in locally advanced NSCLC cases, it was shown that concomitant CRT especially provided better loco-regional control and improved survival.[12] However, the optimal chemotherapy regimen in patients with stage III NSCLC is still controversial. Standard modality in concomitant CRT of local advanced NSCLC is the combination of cisplatin with one of the new generation chemotherapy agents.[13] Following demonstration of third generation chemotherapeutic agents like vinorelbine, docetaxel and gemcitabine improved survival in combination with cisplatin in cases with advanced/metastatic NSCLC, that combination was started to be administered in locally advanced non-metastatic NSCLC patients.[14-17]

Standard radio-sensitizing agent is cisplatin.[18] It was shown that docetaxel that was a semi-synthetic taxane had radio-sensitizing effect by pausing cell cycle at G2/M phase, the most sensitive period against radiation.[19] The combination of docetaxel with cisplatin was shown to be one of the most effective treatment modalities in NSCLC.[14,16]

In this study we presented the results of consolidation chemotherapy following weekly cisplatin and docetaxel combination administered concomitantly with radiotherapy in locally advanced stage III NSCLC patients.

Methods

This retrospective study was performed at Mehmet Kemal Dedeman Oncology Center, Erciyes University Medical School. The data of 124 consecutive patients who were treated with this protocol for locally advanced NSCLC (stage IIIA and IIIB) between January 2006 and June 2010 were evaluated retrospectively in a single center experience. Of the 124 patients, 93 were enrolled in this present study. Twenty-three patients who could not been reached their information, and 8 early stage NSCLC patients who medically unresectable or rejected the surgery, were excluded from study although they were treated with the same protocol. The study was approved by the local ethic committee of Erciyes University.

Patients

The diagnosis of locally advanced unresectable stage III NSCLC was confirmed by a multidisciplinary council before the initiation of the treatment. Staging work-up included chest plain radiographs, computed tomography scan of the chest and abdomen (in some cases abdominal sonography), magnetic resonance imaging of the brain, radionuclide bone scan, bronchofiberscopy, and mediastinoscopy. Patients were staged according to the Tumor Nodes Metastasis (TNM) classification.[20] Inclusion criteria were; Eastern Cooperative Oncology Group (ECOG) performance status 0 or 1; the absence of drainable pleural fluid; normal renal functions (serum creatinine ≤1.5 mg/dL, creatinine clearance ≥60 mL/min); normal hepatic functions (serum total bilirubin ≤1.6 mg/dL, serum transminase levels < 2.5 times higher than upper limit); normal complete blood count level (hemoglobin >10 g/dL, white blood cells ≥4000/μL, platelet ≥100 000/μL); the absence of severe cardiac disease like coronary artery disease or congestive heart failure; the absence of previous radiotherapy/chemotherapy history.

Radiotherapy

Two-dimensional treatment planning system was used by conventional X-ray simulator and RT was delivered by a linear accelerator device including 6-18 Million Volts photons. Concurrent RT began on day 1 of chemotherapy and a total dose of 66 Gy in 2.0 Gy fractions was given concurrently with weekly docetaxel and cisplatin infusion for 6,5 weeks. The initial planning target volume consisted of the primary tumor, the ipsilateral hilum and mediastinum with a margin of 2 cm. Special blocks were employed in order to prevent the exposure of normal tissues to radiation. This initial field was treated by parallel-opposed anterior and posterior fields to 46 Gy in 23 fractions. Boost dose of radiotherapy was administered after 46 Gy to the primary tumors and the involved nodes were included with a margin of 0.5-1.5 cm from oblique parallel-opposed fields with protecting spinal cord. The target dose to the boost volume was 20 Gy in 10 fractions. No corrections for lung or bone attenuation were made. In this study, patients were excluded if the initial radiation field exceeded half of the ipsilateral lung. The dose was prescribed to isocentre, and portal imaging films were taken in every week of treatment. If grade IV hematologic toxicity occurred during the course of CRT, it was suspended and restarted after recovery to grade III or less. If grade III or greater esophagitis occurred and the physician decided that the RT could not be continued, it was suspended and restarted, after recovery to grade II or less.

Chemotherapy

During radiotherapy docetaxel 20 mg/m^2 and cisplatin 20 mg/m^2 were administered concomitantly at the 1st day of the week. One month later after the completion of CRT, response rate of the patients were evaluated and those who were evaluated to show complete response (CR), partial response (PR) or stable disease (SD) received consolidation chemotherapy with docetaxel 75 mg/m^2 and cisplatin 75 mg/m^2 at each 21 days for four cycles.

Treatment and toxicity evaluation

Treatment response evaluation was made according to Response Evaluation Criteria in Solid Tumors 1 month later after the completion of CRT by computerized tomography of the thorax,[21] based on only the longest diameter of all lesions: CR – the disappearance of all lesions; PR – at least a 30% reduction of the sum of the longest diameters of all lesions, referring to the sum of baseline longest diameters; progressive disease (PD) – at least a 20% increase in the sum of the longest diameters of target lesions, referring to the smallest sum of longest diameters recorded since the treatment started or the appearance of one or more new lesions; SD – neither sufficient lesion shrinkage to qualify for PR nor sufficient lesion growth to qualify for PD, referring to the smallest sum of longest diameters since the treatment started. Toxicity evaluation of the treatment was evaluated according to National Cancer Institute Common Toxicity Criteria version 3.0.[22]

Body mass index

BMI classification was made according to the cut-off values recommended by the World Health Organization (WHO).[23] The BMI values were classified as follows: <18.5 kg/m^2, low; 18.5-24.9 kg/m^2, normal; 25.0-29.9 kg/m^2, overweight; 30.0-39.9 kg/m^2, obese; and >40.0 kg/m^2, morbidly obese. Patients with a BMI of 25.0 or greater were classified as overweight by WHO criteria.[24] In the present study, patients were divided into two groups on the basis of their BMI prior to CRT. Patients with a BMI ≥25 kg/m^2 were classified as overweight, and patients with a BMI < 25 kg/m^2 were deemed not to be overweight and were classified as non-overweight.

Statistical analysis

Overall survival was considered as time from initiation of the treatment to death of any cause or last follow-up. Progression-free survival was considered as time from initiation of the treatment to progression of the disease (local recurrence and/or distant metastasis) or death. Local control was considered as time from initiation of the treatment to pulmonary progression. Distant metastasis time was accepted from beginning of the treatment until the time that distant metastasis was detected. For every patient, a dose density was calculated from the scheduled dose and the dose applied. Median relative dose density was estimated from the dose densities of all patients. Response time was defined in patients who were detected complete and PR as the time, which from 1st month after CRT until to progression of disease or to death. Median follow-up time was calculated with the reverse Kaplan-Meier method. Kaplan-Meier method was used in survival analysis. Statistical differences between gender (female or male), age (≥65 or < 65), BMI (≥25 or < 25), stage (IIIA or IIIB), and histopathology (Adeno or Others) were calculated with logrank test. Univariate Cox regression analyses were performed to identify risk-factors and

P values < 0.05 (*P* < 0.05) were considered to be significant. SPSS, version 15.0, was used for statistical analysis.

Results

Patients and treatment characteristics

Median age of the patients were 57 (range, 30-74); nine of them (10%) were females and 84 patients (90%) were males; 27 patients (29%) were in stage IIIA and 66 patients (71%) were in stage IIIB. Histopathologic diagnosis was adenocarcinoma in 16 patients (17%), epidermoid carcinoma in 47 patients (50%) and NSCLC with indefinite subclass in 27 patients (29%) [Table 1].

Radiotherapy was applied as 66 Gy to 74 (80%) patients. Median numbers of concomitant chemotherapy cycles and relative dose density were 6 and 0.91 (range: 0,52-1,16) respectively. Consolidation chemotherapy was administered for a median of four cycles (range: 1-4). Second line chemotherapy was started in cases that showed progression in any stage of the treatment. Treatment characteristics was shown in Table 2.

Response

When response to concomitant CRT was evaluated, 14 patients (15%) showed CR, 50 patients (54%) showed partial response, 12 patients (13%) showed SD and 17 patients (18%) showed progression. Median duration of the response was 6, 5 months (range: 1-48 months) in cases who showed response.

Survival data

The median follow-up was 13 months (range: 2-51 months). At the cut-off date, 66 (71%) deaths have occurred in the patients. The median overall survival was 18 months (95% confidential interval [CI]: 13,8-22,1 months); local control was 15 months (95% CI: 9,3-20,6 months); progression free survival (PFS) was 9 months (95% CI: 6,5-11,4 months). Overall survival for one and 2 years, local control and PFS were 67% and 36%; 57% and 32%; 42% and 18%, respectively. Median survival times according to risk-factors in the overall survival were shown in Table 3.

Toxicity

Grade III-IV toxicities due to concomitant CRT was esophagitis in 8 (9%), neutropenia in 7 (8%) and pneumonitis in 8 (9%) patients [Table 4]. The treatment was suspended in six patients who developed esophagitis and in five patients who developed neutropenia. Generally, consolidation chemotherapy was well-tolerated, and there were no treatment-related deaths. The most common adverse events were neutropenia (33%) and nausea (28%) in all grades. Similarly, the most common grade III and IV toxicities were also neutropenia (8%) and nausea (3%). All the side effects were improved after dose delays with no further dose modifications.

Distant metastases

The median distant metastases time was 6 months (range: 1-22 months). The median survival time without distant metastases was 17 months (95% CI: 14.26-19.73 months). The locations of distant metastases were as follow: Brain in 15 cases (16%), liver in eight patients (9%), bone in eight patients (9%), adrenal glands in four patients and skin in one patient (1%). Of these patients in whom distant metastases developed, five patients (14%) had

Table 1: General characteristics of the patients

Characteristics	*n* (%)
The count of cases	93 (100)
Age (median, range)	57 (30-74)
Gender	
Female	9 (10)
Male	84 (90)
Performance status	
0	10 (11)
1	83 (89)
Body mass index (kg/m^2)	
≥25	40 (43)
<25	53 (57)
T status	
T0	5 (5)
T1	1 (1)
T2	20 (22)
T3	14 (15)
T4	53 (57)
N status	
N0	44 (47)
N1	4 (4)
N2	32 (35)
N3	13 (14)
Stage	
IIIA	27 (29)
IIIB	66 (71)
Histopathology	
Adenocarcinoma	16 (17)
Epidermoid Ca	47 (51)
Adenosquamous Ca	1 (1)
Pleomorphic Ca	1 (1)
Giant cell Ca	1 (1)
Unclassified	27 (29)

Table 2: Treatment characteristics of the patients

Characteristics	*n* (%)
Radiotherapy	
60 Gy	9 (10)
62 Gy	3 (3)
64 Gy	7 (7)
66 Gy	74 (80)
Concurrent CT	
1 cycle	-
2 cycles	-
3 cycles	7 (7)
4 cycles	13 (14)
5 cycles	20 (22)
6 cycles	35 (38)
7 cycles	18 (19)
Consolidation CT	
1 cycle	6 (8)
2 cycles	5 (6)
3 cycles	10 (13)
4 cycles	58 (73)
Second line CT	32 (34)

CT = Chemotherapy

adenocarcinoma, six patients (17%) had epidermoid carcinoma, and two patients (6%) had unclassified carcinoma.

Univariate and multivariate analyses

Overall survival was statistically higher in patients whose BMI is ≥25 kg/m^2 (P = 0.049) [Figure 1]. PFS was also higher in patients both whose BMI is ≥25 kg/m^2 (P = 0.033) [Figure 2]. On the other hand, there was no any difference in survival rates according to gender, age, stage, and histopathology (P > 0.05). In univariate analyses, BMI ≥25 kg/m^2 (hazard ratio, 0.605; 95% CI: 0.373-0.981; P = 0.042) found a statistically significant variable for progression-free survival. Additionally, BMI ≥25 kg/m^2 has a trend statistically significant difference for the overall survival (P = 0.068). Univariate analyses, according to risk-factors for overall survival of the patients are only presented in Table 5. In multivariate analyses, no significant difference was observed in the overall survival, local control, and progression-free survival rates according to age, gender, BMI, stage, distant metastasis, and histophatology (P > 0.05).

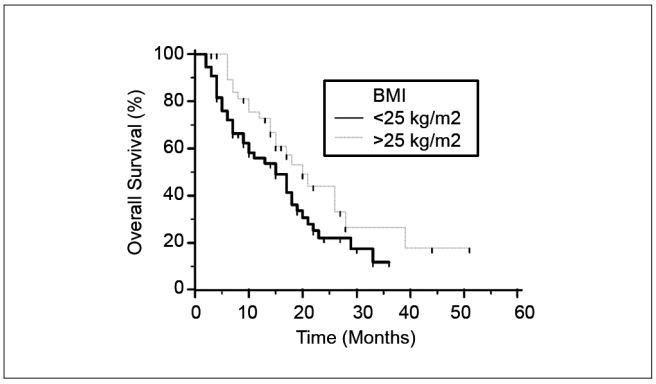

Figure 1: Overall survival rates of Body mass index (BMI) ≥25 kg/m^2 (n=40) and BMI <25 kg/m^2 (n=53) patients with locally advanced NSCLC. Overall survival was significantly better in the BMI ≥25 kg/m^2 group than in the BMI <25 kg/m^2 group (P=0,049).

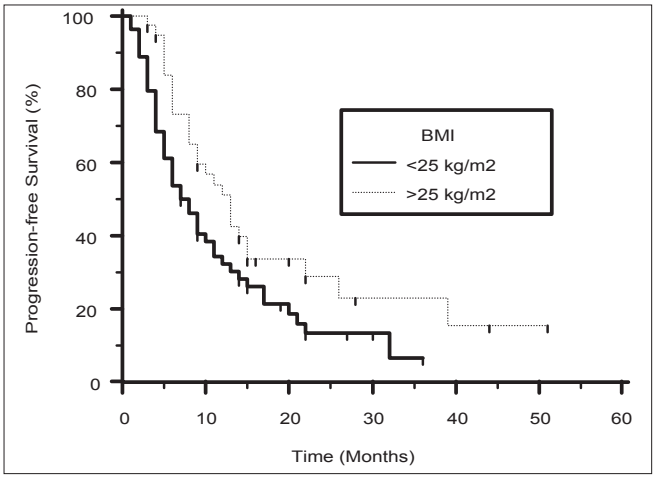

Figure 2: Progression-free survival rates of body mass index ≥25 kg/m^2 (n = 40) and BMI < 25 kg/m^2 (n = 50) patients with locally advanced non-small cell lung cancer. Progression-free survival was significantly better in the BMI ≥25 kg/m^2 group than in the BMI < 25 kg/m^2 group (P = 0.033)

Discussion

The gold standard of treatment for unresectable stage III NSCLC is CRT. However, since local recurrences and distant metastases are frequent, overall survival rates are low. Concomitant chemotherapy and radiotherapy administration not only increase the control of locoregional disease, but prevent the development of micrometastases. Since distant metastases are the major reason of treatment failure, addition of induction and/or consolidation chemotherapy regimens to concomitant CRT might improve survival rates. Gandara *et al*. showed the contribution of consolidation chemotherapy to survival rate in phase II Southwest Oncology Group 9504 trial

Table 3: Median survival times according to risk factors in the overall survival of Kaplan Meier analysis

Risk factors	*n*	Median OS	
		Months (95% CI)	*P*
Gender			0.551
Female	9	19 (0.46-36.51)	
Male	84	18 (14.15-20.84)	
Age (years)			0.315
≥65	13	15 (7.21-21.79)	
<65	80	19 (14.35-22.64)	
BMI (mg/m^2)			0.042
≥25	40	20 (14.58-25.41)	
<25	53	15 (9.26-20.73)	
Stage			0.103
IIIA	27	21 (14.85-27.14)	
IIIB	66	15 (11.80-18.19)	
Histopathology			0.709
Adenocarcinoma	16	17 (7.39-27.60)	
Epidermoid Ca	47	19 (13.25-21.47)	
Unclassified	30	15 (10.60-19.39)	

BMI = Body mass index, CI = Confidential interval, OS = Overall survival

Table 4: Treatment-related toxicity during chemoradiotherapy

Toxicity	Grade I-II *n* (%)	Grade III-IV *n* (%)
Nausea-vomiting	21 (23)	-
Esophagitis	28 (30)	8 (9)
Neutropenia	16 (17)	7 (8)
Pneumonitis	25 (27)	3 (3)
Thrombocytopenia	1 (1)	-
Neuropathy	1 (3)	-
Hepatotoxicity	1 (1)	-
Uremia	2 (2)	-
Allergic reaction	1 (1)	-

Table 5: Univariate analysis of risk factors in the overall survival

Risk factors	Univariate analysis	
	HR (95% CI)	*P* value
Gender (Female or Male)	0.77 (0.33-1.81)	0.560
Age (≥65 or <65)	1.40 (0.71-2.72)	0.328
BMI (≥25 or <25)	0.38 (0.13-1.07)	0.068
Histology (Adeno or Others)	1.09 (0.87-1.38)	0.435
Stage (Stage IIIA or IIIB)	1.60 (0.89-2.88)	0.114

BMI = Body mass index, HR = Hazard ratio, CI = Confidential interval

Table 6: Studies of synchronous chemoradiotherapy with docetaxel+cisplatin (±Consolidation chemotherapy)

Study	*n*	Stage IIIA/B (*n*)	PS 0/1/2 (*n*)	Concurrent/consolidation chemotherapy scheme (mg/m²)	Total RT dose (Gy)	Response rates (%)	Survivals				Dose limiting toxicity (%)
							OS (Median, Months)	PFS (Median, Months)	1 years rates (%)	2 years rates (%)	
Mudad[27]	23	9/14	1/15/7	Docetaxel: 15-25 mg/m² Cisplatin: 25 mg/m² Weekly, 6 weeks	60	OR: 37	10.5	-	-	-	Esophagitis 20-80
Segawa[28]	33	33	33	Docetaxel: 20-45 mg/m² Cisplatin: 30-40 mg/m² 1,8,29,36 days	60	OR: 70	23	-	74	-	Esophagitis 15 Leukopenia, neutropenia and anemia 6
Yamamoto[29]	21	4/7	6/13/2	Docetaxel: 20-25 mg/m² Cisplatin: 25 mg/m² 1,8,15,29,36 or 43 days	60	OR: 91 CR: 24 PR: 67	23.1	-	-	-	Esophagitis 24 Neutropenia 29 Fatigue 9,5
Wu[30]	18	3/15	6/12/0	Docetaxel: 0-30 mg/m² Cisplatin: 20 mg/m² Weekly, 6 weeks	63	OR: 66 CR: 5,5 PR: 61	-	-	-	-	Esophagitis 11 Neutropenia 5,5
Kiura[16]	42	8/34	18/24/0	Docetaxel: 40 mg/m² Cisplatin: 40 mg/m² 1,8,29,36 days	60	OR: 78 CR: 2 PR: 76	23,4	-	76	54	Esophagitis 19, anemia 24, leukopenia 71, granulocytopenia 60
Nakamura[31]	34	3/31	30/4/0	Docetaxel: 20 mg/m² (1,8,15, 29,36,43 days) Cisplatin: 80mg/m² (1,29 days)	60	OR: 62 CR: 2,9 PR: 58,8	26,4	16	76,5	41,2 (3 years)	Neutropenia 23.5, Esophagitis 17,6 Pulmonary toxicity 11,8
Kaya[32]	54	13/41	7/47/0	Docetaxel: 20 mg/m² Cisplatin: 20 mg/m² weekly Con; D and C: 75 (21 days)	60	OR: 62 CR: 22,2 PR: 58,8	22	14	73	-	Nausea, vomiting 1,9 Neutropenia 13 Esophagitis 9,3
Huber[26]	23	0/23	23/0	Docetaxel: 20 mg/m² Cisplatin: 25 mg/m² weekly Con; D and C: 60mg/m² (21 days)	66	OR: 48 CR: 12 PR: 36	27,6			52	Esophagitis 22 Pneumonia 13
Segawa[33]	99	33/66	46/53/0	Docetaxel: 40 mg/m² Cisplatin: 40 mg/m² 1, 8, 29, 36 days	60	OR: 78 CR: 4 PR: 74	26,8	13,4	-	60,3	Neutropenia 22 Esophagitis 14 Pneumonia 10
Current study	93	27/66	10/83/0	Docetaxel: 20 mg/m² Cisplatin: 20 mg/m² weekly Con; D and C: 75mg/m² (21 days)	66	OR: 69 CR: 15 PR: 54	18	9	67	36	Eesophagitis 9 Neutropenia 8 Pneumonitis 9

PS = Performans status, Con = Consoldation, D = Docetaxel, C = Cisplatin, OR = Overall response, CR = Complete response, PR = Partial response, OS = Overall survival, PFS = Progression free survival

and other studies.[25,26] In our study, we evaluated the safety and effectiveness of consolidation treatment with docetaxel and cisplatin following weekly administration of these agents concomitantly with radiotherapy.

In various studies that were performed in patients with stage III NSCLC, it was shown that median survival time was 17 months and 2 years survival rate was about 40% when vindesine, mitomycin, vinblastine, paclitaxel, gemcitabine was used in combination with cisplatin and concomitant radiotherapy.[7-12,14,15,17,18] The list of studies in which docetaxel, a novel agent that was known to have radiosensitizing effect, was used in combination with cisplatin and concomitant radiotherapy (± consolidation chemotherapy) was presented in Table 6. In phase I/II studies employing docetaxel and cisplatin concomitantly with radiotherapy, median survival rate was reported as 10.5-27 months and dose limiting toxicity was determined as esophagitis with various doses and administrations.[16,26,28-32]

Recently, Segawa *et al*. performed a phase III study with cisplatin, vindesin and mitomycin as reference arm in concomitant CRT and found that median survival was longer in cisplatin and docetaxel arm although the difference was not statistically significant (26.8 months vs. 23.7 months, $P > 0.05$). They suggested that combination as an alternative. Docetaxel and cisplatin were administered at a dose-level of 40 mg/m^2/week for 6 weeks and response rate was reported as 79%, median PFS was reported as 13.4 months, 2-year survival rate was reported as 60% and dose limiting toxicities were reported as esophagitis and radiation pneumonia.[33]

When we compared our sample size with previous studies, we saw that we had a larger sample size except the study of Segawa *et al.* [Table 6]. Since, we used lower doses than Kiura *et al*. we obtained lower toxicity levels. Hence, lower response an survival rates might be related with lower doses as well.[16] We also used similar doses and administrations with Kaya *et al.* However, they had higher response and survival rates, which may related with success of surgery.[32] The only difference with the study of Nakamura *et al.* was higher dose of cisplatin; we found higher response rate, However, our survival rate was lower.[31] The differences of our study from the study of Huber *et al.* were determination the dose of concomitant cisplatin as 25 mg/m^2 and recommending the dose of cisplatin and docetaxel as 60 mg/m^2 during consolidation period; they found higher survival rates and lower response rates.[26] Segawa *et al*.[33] was used cisplatin and docetaxel at a dose level of 40 mg/m^2 and did not administer consolidation treatment; their survival rates were similar to the results of Huber *et al*.[24] However, particularly CR rates were lower than from other studies.[27-32]

The investigators of Southwest Oncology Group evaluated 2531 cases and reported that performance status, gender, age, and cisplatin based chemotherapy were independent prognostic factors for advanced stage NSCLC.[34] On the other hand, North Central Cancer Treatment Group performed a study on 1053 patients and reported high leukocyte count (WBC), low-hemoglobin level, ECOG performance >0, BMI < 18.5 kg/m^2 and being at stage IV were prognostic factors.[35] Ademuyiwa *et al*. found that high-hemoglobin levels and forced expiratory volume (1) over 2 L were related with increased survival rates.[36] In a study on patients with NSCLC, which aimed to identify predictors of survival, low BMI (<18.5 lb/in^2), advanced stage (IIIB or IV), higher neutrophil count (>8 × 10^3/mcl) and platelet count (300-826 × 10^{12}/L) were found to be independent prognostic factors for shorter survival.[37] In another study on patients with advanced NSCLC (45 years old or younger), male gender, low BMI (<25 kg/m^2), stage IV disease, and anemia were found to be associated with shorter survival.[38] We did not find any relationship between survival rate and gender, age, stage, distant metastases, and histopathologic classification, but low BMI (<25 kg/m^2) is found to have significantly shorter survival time although it was not a prognostic factor.

We think that, consolidation chemotherapy with 4 cycles docetaxel plus cisplatin after concurrent CRT with the same agents could not show survival advantage according to usage of fewer chemotherapy cycles or not. That's why we decided not to routinely give consolidation chemotherapy to all patients. Although lack of using modern radiotherapy techniques is a limitation of this study, planning with modern radiotherapy methods, concomitant use of cisplatin and docetaxel at higher doses and surgery following CRT, could have improved our results.

Conclusion

As a, concomitant CRT with docetaxel and cisplatin followed by docetaxel and cisplatin consolidation chemotherapy might be considered as a feasible, and well tolerated treatment modality with high response rates despite the fact that it has not a survival advantage in patients with locally advanced unresectable NSCLC.

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