Background

Limited-field radiotherapy is a standard treatment for stage I/IIs diffuse large B-cell lymphoma (DLBCL). Radiotherapy in this combined treatment plays an important role for achieving good local control. It is controversial on radiation field.

Purpose

To evaluate the treatment outcomes of CHOP or R-CHOP plus radiotherapy and seek the possibility of reducing the field size for limited-stage DLBCL in head and neck, by analyzing the failure patterns.

Materials & methods

Patient selection

From 1990 to 2011, ninety-two patients with stage I/IIs DLBCL in head and neck were reviewed. (Table 1)

Initial stage according to the Ann Arbor classification

Treatment & Response

Chemotherapy: R-CHOP or CHOP

No. of cycles of chemotherapy: 3-8 (median: 3)

R-CHOP: 42 (46%) , CHOP: 50 pts. (54%)

Start of radiotherapy: 3-4 week after last chemotherapy

Radiotherapy: 1205 Gy in 38 fractions (95.1%)

Primary site: GTV 2 cm

Stage: I 48, II 44

B symptom: A 84, B 8

Primary site: Thyroid 27, Nasal 11, Tonsil 30, Parotid 3, Oral cavity 16, Other 2

Summary of Results

• Follow-up period: 5 to 257 months (median: 50 months)

• Response rate: 98.9%, PD in: one pt. (CHOP group)

• Relapse: 24 pts. (26%) (CHOP : R-CHOP = 21 : 3)

Failure patterns (Table 2).

• 7 (7.7%) in-field relapse, 17 (18.7%) out-of-field relapse.

• (CHOP group) in-field relapse: 5 pts. (5.5%) 

• (R-CHOP group) in-field relapse: 2 pts. (2.2%) (Table 3)

• Adverse risk factors:

- Age >60, PS >2, abnormal LDH level, present B symptom, CHOP chemotherapy, 3 or 4 stage-modified IPI adverse risk.

- PFS in >2, abnormal LDH level, present B symptom, CHOP chemotherapy, primary site

• Radiation field size was not significant for OS and PFS.

Survival

OS: 5-year OS 80%, 5-year PFS 71% (Figure 1, 2)

Multivariate analysis (Table 4)

Prognostic factors: (OS) age, LDH level chemotherapy

PFS rates at 5 years: 92% (R-CHOP group), 54.8% (CHOP group) (Figure 3).

Discussion

• R-CHOP can improve the treatment outcome of DLBCL compared with CHOP alone (3). Some authors showed good results of short-term of R-CHOP with radiotherapy for stage I/IIs DLBCL (4,5). In our study the survival rates of R-CHOP group was significantly better than those of CHOP group. The rates of in-field relapse and out-of-field relapse in R-CHOP group were lower than those in CHOP group. These results mean that R-CHOP could control local and distant disease compared with CHOP.

• In systemic therapy alone main failure pattern was local recurred (6, 7). However, in chemotherapy plus radiotherapy local recurred was not main failure pattern (8, 9). In our study seven of 24 relapsed patients experienced in-field relapse and 17 patients relapsed outside the irradiated field.

• In our study main failure pattern of chemotherapy plus radiotherapy was out-of-field relapse. We concluded that radiotherapy after chemotherapy for limited-stage DLBCL made a contribution to control in-field disease.

• There are controversies regarding radiation field size after chemotherapy for limited-stage DLBCL. Belinda et al. showed that distant relapse was the most common site of failure in both IFRT and INTT, and in INTT group marginal recurrence was infrequent (2%). Even if radiation field was set to encompass the prechemotherapy tumor volume with an adequate margin, marginal recurrence was few (10). In our study marginal relapse of prechemotherapy lymphoma volume was not identified. Especially, in R-CHOP group not only marginal but also locoregional relapse was not identified. Radiation field size was not significant adverse factor for OS and PFS. In short term R-CHOP chemotherapy plus radiotherapy for limited-stage DLBCL in head and neck, radiation field could be reduced to the extent of prechemotherapy lymphoma volume with an adequate margin.

Conclusion

• R-CHOP plus radiotherapy provided an excellent outcome for limited-stage diffuse large B-cell lymphoma in head and neck by controlling both local and distant lesions. In a combined treatment of R-CHOP plus radiotherapy, it might become feasible to shrink the radiation field to the extent of gross tumor with an adequate margin.

References


Table 1. Patient characteristics

Table 2. Failure patterns of 24 relapsed patients

Table 3. Univariate analysis for OS and PFS

Table 4. Multivariate analysis for OS and PFS

Figure 1. Overall survival curve

Figure 2. Progression-free survival curve

Figure 3. Progression-free survival curves according to chemotherapy options

Figure 4. R-CHOP: 5yr OS: 92.0% CHOP: 5yr OS: 54.8%