
Analysis of the Outcomes of Adjuvant Radiation Therapy and the Prognostic Factors for Stage II/III Pancreatic Cancer

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Purpose: To evaluate the treatment outcome for patients with stage II/III pancreatic cancer treated with adjuvant radiation therapy (RT) with or without chemotherapy (CT) following surgery.

Materials and Methods: Between January 2000 and December 2008, 17 patients who underwent surgery and post-operative RT with or without CT at Gachon University Gil Hospital were analyzed retrospectively. The patients with stage II and III were 7 (41%), and III 10 (59%), respectively. The majority of the patients were male (13 of 17; 76.5%). Age at diagnosis was ranged from 42 to 82 (median 69) years. Whipple's operation was performed in 9 patients (53%), distal pancreatectomy in 7 (41%), and subtotal pancreatectomy in 1 (6%). All the patients were treated by 3-dimensional RT technique to spare critical normal structures. Median dose was 54 Gy (range, 50.4~55.8 Gy). Variable chemotherapy regimens were combined in 10 patients (58.8%); 5-FU in 4, UFTE-G in 4, gemcitabine in 1, or xeloda in 1. The acute toxicity was evaluated according to RTOG toxicity criteria. The survival analysis were performed using Kaplan-Meier method. The univariate and multivariate prognostic factor analysis were performed using Log-rank test and cox's proportional hazards model, respectively.

Results: The median follow-up period was 12.6 months. Local and distant failures were occurred in 8 (47.1%) and 8 patients (47.1%), respectively. Five patients (29.4%) developed both loco-regional recurrence and distant metastasis. The metastatic sites were liver in 4 patients, lung in 3, peritoneum in 1, kidney in 1. The median overall survival was 12.6 months. The 1- and 2-year overall survival (OS) rates were 58.8% and 24.5%, respectively. The median disease-free survival was 8.3 months and the 1- and 2-year disease free survival rates were 46.3% and 30.9%, respectively. T stage and postoperative CA 19-9 level of ≥ 180 U/ml were significant prognostic factors for OS in both univariate and multivariate analysis. The acute toxicities were RTOG grade 1 (G1) nausea in 1 patient (5.9%), G1 vomiting in 2 (11.8%), and G1~2 enteritis in 5 (29.4%). The

hematologic toxicities were G1 leukopenia in 5 patients (29.4%), G2 leukopenia 1 (5.9%), G1 thrombocytopenia in 1 (5.9%), and G1~2 anemia in 6 (35.3%).

Conclusion: The survival results of the present study is comparable to other reports with acceptable toxicity. The significant prognostic indicator for overall survival in pancreatic cancer was tumor stage and postoperative CA 19-9 level. We report here our clinical experience in 17 patients with pancreatic cancer who treated with radiation therapy after surgery.