Introduction

In China, esophageal cancer is a malignant tumor with a high incidence. Esophageal cancer has non-specific symptoms and is difficult to detect in an early stage. More often, esophageal cancer is diagnosed in the middle-advanced stage at which time symptoms occur, and thus most patients are inoperable. At present, the use of concurrent chemoradiotherapy in the treatment of patients with inoperable middle-advanced stage esophageal cancers is the standard treatment and can significantly improve the survival rate, but the treatment-associated toxicity is significantly increased (Urba et al., 2003; Polee et al., 2003; Zhao et al., 2005). Therefore, how to choose effective chemotherapeutics with low toxicity, improve the efficacy, and reduce adverse reactions in patients is essential. Lobaplatin (LBP) is a third-generation platinum anti-cancer drug developed by the German company, ASTA. LBP is a platinum agent with the highest efficiency for single drug treatment of esophageal cancer (Schmoll, 1995; Chinese Society of Esophageal Cancer, Chinese Anti-Cancer Association, 2011), and some clinical studies have confirmed that LBP is safe and effective in the treatment of esophageal cancer (Xingya et al., 2007; Yu et al., 2012). We retrospectively analyzed the data of 60 patients with middle-advanced stage esophageal squamous cell cancer who received LBP plus 5-Fu combined with concurrent radiotherapy, which we report as follows.

Materials and Methods

General data

The inclusion criteria were as follows: 1) during initial treatment, the pathologic evaluation confirmed the diagnosis of esophageal squamous cell carcinoma, and there were objective and measurable lesions; 2) age ≤75 years and Karnofsky score > 70 points; 3) there was no surgical indication and no contraindication for chemoradiotherapy, and the patients underwent treatment for the first time; 4) blood, liver, and kidney functions were normal, and there was no apparent abnormality in cardiopulmonary function; 5) there were no esophageal...
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Results

Treatment results

All patients completed treatment, including 10 patients with CR, 41 with PR, 7 with SD, and 2 with PD. The total effective rate was 85.0% (51/60). Thirty-nine patients had increased KPS scores, with an average increase of 10 points.

By the end of the follow-up period, 35 patients had died and 25 patients had survived; the median survival time was 27 months. One-, 2-, and 3-year survival rates were 85.3%, 57.5%, and 41.7%, respectively. Some patients with good efficacy and patients with SD had improved subjective symptoms, and the body weights were increased slightly compared with pre-chemotherapy.

Adverse reactions

Routine blood testing was carried out 0.5, 1, 3, and 6 months after treatment. The number of leukocytes was decreased (degree-II, 45.3%; and degree III, 10.1%). The hemoglobin level was decreased (degreeI-II, 15.7%; and degree III, 5%). Blood platelet count was decreased (degree I-II, 20.1%; and degree III-IV, 5.4%). Gastrointestinal reactions including vomiting (25.8%), stomatitis (15.2%), and radiation esophagitis and mucosal ulcers (17.5%). No obvious liver and kidney toxicity, neurotoxicity, and alopecia were reported.

Discussion

It has been reported (Hongxun, 2002; Jiazhuan, 2002) that radiotherapy is the main treatment option for inoperable middle-advanced stage esophageal cancer, but the curative effect of radiotherapy alone is poor. The leading causes of death include uncontrolled local disease, recurrence, and distant metastases (Brenner et al., 2004). Combined chemoradiotherapy can produce an additive or synergistic effect, and the treatment effect of chemotherapy on distant metastasis can compensate for the limitations of the radiotherapy. The randomized clinical trial, RTOG-8501 (Herskovic et al., 1992), promoted the use of the concurrent chemoradiotherapy in the treatment of esophageal cancer. The curative effect of cisplatin plus 5-Fu combined with radiotherapy in the treatment of the middle-advanced stage esophageal cancer is definite and stable, but the toxic reaction of cisplatin is greater and some patients have a poor quality of life after its use. LBP is a third generation platinum anticancer drug developed by the German company, ASTA. LBP has been reported in the international literature to have equivalent or better effects than cisplatin and carboplatin, no renal toxicity, and no need for hydration; the gastrointestinal reactions are also mild (Mckeage, 2001).

The results of the current study showed that the total effective rate of LBP plus 5-Fu combined with concurrent radiotherapy in the treatment of patients with inoperable middle-advanced stage esophageal cancer was 85.0% (51/60), and the median remission duration was 18.5 months. The 1-, 2-, and 3-year survival rates were 85.3%, 57.5%, and 41.7%, respectively. The main adverse reactions included the following: (1) myelosuppression (all white blood cells, platelets, and hemoglobin were decreased, but which were mainly demonstrated as degree

Figure 1. Survival Curve of the Patient
and II, and the duration was short; the occurrence rate of platelet decline was 25.6%, and the occurrence rate of degree III was 5.4%; and (2) gastrointestinal reactions (the occurrence rate of degree I and II vomiting was 25.8%; the occurrence rate of stomatitis was 15.2%, and all were reactions of degree I and II). When this group of patients were treated, it was not necessary to give hydration or diuretic measures, no significant toxic and adverse effects, such as hepatic and renal toxicity, neurotoxicity, ototoxicity, and allergic reaction were observed. In addition to mild fatigue and hair loss, no other obvious adverse reactions were observed.

In summary, LBP plus 5-Fu combined with concurrent radiotherapy in the treatment of esophageal cancer has obvious advantages in controlling the local lesions, eliminating the potential metastatic lesions, and prolonging the survival time, which has a significant curative effect, milder adverse reactions, and better tolerance, thus providing a new choice for patients with middle-advanced esophageal cancer. The late course accelerated hyperfractionated three-dimensional conformal radiotherapy can be used as one of the preferred treatment methods for middle-advanced esophageal cancer, so as to improve the local control and survival rates, and short-term radiation reaction and long-term radiation injury can be tolerated. The chemotherapy regimen is more reasonably optimized, and is expected to be able to achieve a better curative effect because LBP has appeared on the market only for a short time. Further collection of cases are needed and long-term clinical observations should be carried out to determine the optimal doses of radiotherapy and chemotherapy drugs and the best combined chemoradiotherapy program.

References