ABSTRACT

Background: Dysphagia is one of the late treatment side effects after chemoradiotherapy for Head and Neck cancers, and may lead to malnutrition and aspiration pneumonia. Nasopharyngeal carcinoma (NPC) is a common neoplasm in southern China, Hong Kong and Taiwan. With the advancement of radiation techniques and chemotherapy treatment, excellent long-term survival can be achieved in most patients with NPC without metastatic diseases. However, late treatment toxicity has become an important issue among survivors. Taiwan launched a National Health Insurance program in 1995. As of 2007, over 98% of the 22.96 million people in Taiwan were enrolled in this program. The National Health Institute Research Database (NHIRD), which contains de-identified personal information derived from the registration files and original claims data of the National Health Insurance program. In this study, we studied data from the NHIRD to investigate the incidence of late-onset toxicities in irradiated patients with NPC. To the best of our knowledge, this is the first report about the incidence of late onset pneumonia in patients with NPC after radiotherapy.

METHODS AND MATERIALS

Data of this study were retrieved from the NHIRD covering a period from January 2005 to December 2010. We identified cases of NPC (ICD-9-CM code 147) from January 2005 to December 2008 who received curative radiotherapy as the study cohort. Incidences of pneumonia and related sequelae after 90 days of radiotherapy were calculated. Results: A total of 3814 patients were enrolled in this study and 210 (5.5%) had late-onset pneumonia. Among the 210 patients who had late-onset pneumonia, 64 (30%) died within 2 months after the episode of pneumonia. The correlation coefficient between pneumonia and tube feeding was 0.332 (p<.001). The hazard ratio of pneumonia was 0.81 (95% CI = 0.57-1.15) between patients with and without chemotherapy, and was 2.37 (95% CI = 1.73-3.24) between patients with and without re-irradiation. Data files from the NHIRD of the study cohort were analyzed and the incidence of late-onset respiratory toxicities, including pneumonia (ICD-9-CM 480-486), related sequelae (respiratory failure: ICD-9-CM 5188; tracheostomy: ICD-9-CM 311-312; on endotracheal tube: ICD-9-CM 9604; on mechanical ventilation: ICD-9-CM 9671-9672), and dysphagia-related procedures (gastrostomy: ICD-9-CM 430-431; nasogastric feeding ICD-9-CM 9607) were calculated. Late-onset toxicities were defined complications that occurred or persisted beyond 90 days from the date of completion of radiotherapy. A total of 3814 patients who were diagnosed with NPC from January 2005 to December 2008 and had received curative radiotherapy were selected as the study cohort. Among them, 3281 patients received chemoradiotherapy (CRT group), and 533 patients received radiotherapy alone (RT group). Pneumonia in patients with and without chemotherapy and was 2.37 (95% CI = 1.73-3.24; p < 0.001, adjusted for age, sex, and comorbidities) between patients with and without chemotherapy, and was 2.37 (95% CI = 1.73-3.24; p < 0.001, adjusted for age, sex, and comorbidities) between patients with and without re-irradiation. The hazard ratios of pneumonia-related sequelae between patients with and without chemotherapy, and those with and without re-irradiation are listed in Table 3.

RESULTS

For assessment of covariates that may be associated with the development of late toxicities, we also retrieved the information on comorbidities, including hypertension (ICD-9-CM 401-405), diabetes mellitus (ICD-9-CM 250), hyperlipidemia (ICD-9-CM 272), cardiovascular diseases (ICD-9-CM 390-438), and chronic kidney disease (ICD-9-CM 585). The Charlson comorbidity index was calculated for each enrolled patient to estimate the prognostic effect of their comorbidity.

CONCLUSION

In summary, chemotherapy did not increase the risk of late-onset pneumonia and most related sequelae. In contrast, re-radiation significantly increased the risk of late onset pneumonia and related sequelae. Data were retrieved from the NHIRD to investigate the incidence of late-onset toxicities in irradiated patients with NPC. The clinical characteristics of study subjects with and without re-radiation are listed in Table 1. Five hundred twenty-nine patients received second-session radiotherapy. The clinical characteristics of study subjects with and without re-radiation are listed in Table 1. Five hundred twenty-nine patients received second-session radiotherapy. The clinical characteristics of study subjects with and without re-radiation are listed in Table 1. Five hundred twenty-nine patients received second-session radiotherapy. The clinical characteristics of study subjects with and without re-radiation are listed in Table 1. Five hundred twenty-nine patients received second-session radiotherapy. The clinical characteristics of study subjects with and without re-radiation are listed in Table 1. Five hundred twenty-nine patients received second-session radiotherapy.

REFERENCES