Heavy Tobacco Smoking is Associated with Poor Prognosis in Japanese Patients with Esophageal Cancer

Keitaro Matsuo

Keitaro Matsuo[1], Kohei Shitara[2], Shunzo Hatooka[3], Takashi Ura[2], Daisuke Takahari[2], Tomoya Yokota[2], Tetsuya Abe[3], Hiroki Kawai[4], Masahiro Tajika[4], Tsuneya Nakamura[4], Masayuki Shinoda[3], Kazuo Tajima[5], Kei Muro[2], Hideo Tanaka[6]

[1]Division of Epidemiology and Prevention, Aichi Cancer Center Research Institute, Japan, [2]Department of Clinical Oncology, Aichi Cancer Center Hospital, [3]Department of Thoracic Surgery, Aichi Cancer Center Hospital, [4]Department of Gastroenterology, Aichi Cancer Center Hospital, [5]Director, Aichi Cancer Center Research Institute, [6]Division of Epidemiology and Prevention Aichi Cancer Center Research Institute

Background

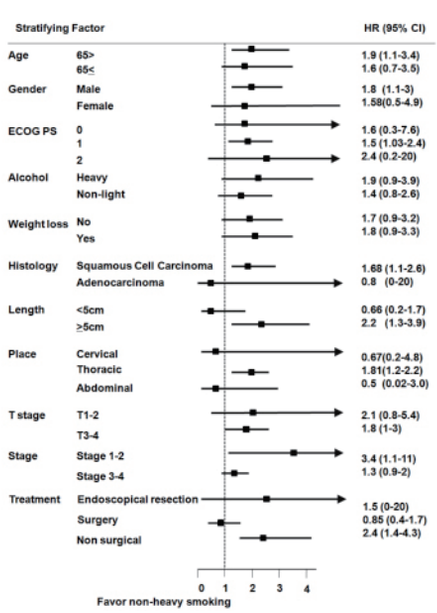
Smoking habit is recognized as one of the most important risk factors for esophageal cancer; however, it's significance in terms of survival after esophageal cancer treatment remains unclear.

Methods

We retrospectively analyzed 375 patients with esophageal cancer who were enrolled in comprehensive epidemiologic study, Hospital-based Epidemiologic Research Program at Aichi Cancer Center (HERPACC) between 2001 and 2005, and were treated as a primary esophageal cancer in our institution. Background characteristics, including smoking history, were analyzed as potential prognostic factors. Smoking history was based on a self-reported questionnaire before treatment and categorized into two group (heavy: PY >=20 and non-heavy: PY<20). A hazard ratios (HRs) and its 95% confidence intervals (CIs) in multivariate Cox proportional hazard models were defined as a measure of association. Factors considered in models were age, sex, ECOG performance status (PS, 1 vs. 0 and 2 vs. 0), alcohol consumption (heavy: average daily alcohol drinking >= 46g vs. non-heavy: <46g), histology (squamous cell carcinoma and adenocarcinoma), tumor length (>= 5cm vs. < 5cm), UICC stage (II vs. I, III vs. I, and IV vs. I) and modality of treatment (endoscopic resection, surgery with or without chemotherapy, and non-surgical).

Results

Of the 375 patients, 77 patients (20.5%) were non-smokers or light smokers (non-heavy), whereas 298 patients (79.5%) were heavy smokers. The five-year survival rate for non-heavy smokers and heavy smokers was 62.3% (95%CI: 50.1-72.6) vs. 45.1% (95%CI: 38.9-51.2), respectively. In a multivariate Cox model (adjusted for age, gender, performance status, alcohol consumption, histology, tumor length, UICC stage, and treatment), the hazard ratio (HR) for heavy smokers in comparison with non-heavy smokers was 1.82 (95% CI, 1.17 to 2.83; P = 0.007). The other significant factors in a multivariate model were ECOG PS [HR



1.93 (1.08-3.45) and 8.65 (3.81-19.7) for PS1 and PS2, respectively, relative to PS 0] and UICC stage [HR 3.91 (1.66-9.19), 6.29 (2.64-15.0) and 11.0 (4.73-25.5) for stage II, III and IV, respectively, relative to stage I].
Confounder stratified analyses also revealed consistently worse prognosis by heavy smoking (figure).

Conclusion

In this study, a heavy smoking history is strongly associated with a poor prognosis in patients with esophageal cancer independent of clinically significant factors such as PS or UICC stage. This suggests that smoking cessation may not only decrease the incidence of esophageal cancer, but also improve the prognosis of esophageal cancer. Future prospective study examining significance of smoking cessation before the treatment is needed.