Predictors of short-term mortality in head and neck cancer patients with and without emergency department visits

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Introduction

Although there has been much research on the treatment of HNC, survival rates have improved little during the past 30 years, and the number of patients presenting to the ED has inversely increased, inducing overcrowding in many countries. In addition, avoiding mortality has always been the ultimate goal in the management of HNC patients with ED visits; We verified factors affecting patients' short-term mortality in HNC patients who visited the ED, using a national population-based in Taiwan.

Methods

In this retrospective cohort study using the Longitudinal Health Insurance Database 2000 (LHID2000) from 2000 to 2012, we compared 636 HNC patients with ED visits and 636 controls without ED visits matched for sex, age, teaching level of hospital, residential geographic area, diagnostic positions of HNC, treatment modalities and comorbidities. The Cox proportional hazards model was used to identify risk factors for all-cause mortality.

Results

The 1-, 3-, 6-, 9-, 12-month overall survival (OS) rates of HNC patients with ED visits was poorer after 6 months, compared with the non-ED visitor group. Crude survival was worse in patients with ED visits (HR = 1.31, *p* < .05) in 1-year mortality. The factors associated with 1-year mortality risk were ages 40-49 years (HR = 1.42, *p* = .0402), medical center visit (HR = 1.23, *p* = .0487), oral cavity cancer (HR = 1.5, *p* = .0045) and received surgery (HR = 1.62, *p* = .0215).

Table Cox proportional hazard model for risk factors associated with mortality among HNC patients who made ED visits.

	Univariate HR	95%CI	*p*-value	Multivariate HR	95%CI	*p*-value
Gender						
Male vs. Female	1.22	0.95–1.58	0.1233	1.00	0.76–1.29	0.9381
Age group						
≥65 years vs. age <65 years	1.57	1.35–1.83	<0.0001	1.58	1.34–1.85	<0.0001
Hospital characteristics						
Others vs. Medical center	1.22	1.06–1.42	0.0069	1.05	0.90–1.22	0.5241
Geographic region						
Central vs. Northern	1.16	0.98–1.37	0.0927	1.20	1.01–1.43	0.0384
Southern vs. Northern	1.23	1.05–1.45	0.0105	1.38	1.17–1.63	0.0001
Eastern vs. Northern	1.44	0.99–2.11	0.0594	1.21	0.82–1.78	0.3494
Site						
Non-oral cavity vs. Oral cavity	1.44	1.25–1.66	<0.0001	0.94	0.80–1.09	0.4095
Surgery						
Yes vs. No	0.57	0.50–0.65	<0.0001	0.61	0.53–0.70	<0.0001
Radiotherapy						
Yes vs. No	2.22	1.90–2.61	<0.0001	1.80	1.49–2.17	<0.0001
Chemotherapy						
Yes vs. No	1.97	1.72–2.26	<0.0001	1.68	1.43–1.99	<0.0001
Acute myocardial infarction						
Yes vs. No	1.96	1.05–3.65	0.0347	2.01	1.07–3.78	0.0303
Diabetes mellitus						
Yes vs. No	1.56	1.28–1.91	<0.0001	1.60	1.29–2.00	<0.0001
Hypertension						
Yes vs. No	1.38	1.16–1.63	0.0002	1.08	0.89–1.31	0.4673
COPD						
Yes vs. No	1.77	1.45–2.16	<0.0001	1.51	1.21–1.87	0.0002
Number of ED visits						
2–3 vs. 1	1.13	0.95–1.34	0.1677	0.93	0.77–1.11	0.3942
≥4 vs. 1	1.02	0.86–1.20	0.8418	0.69	0.57–0.85	0.0003
Number of admissions						
1 vs. 0	1.71	1.46–2.00	<0.0001	1.54	1.31–1.81	<0.0001
≥2 vs. 0	1.56	1.32–1.84	<0.0001	1.48	1.21–1.82	0.0002

HNC: Head and neck cancer; ED: emergency department; COPD: chronic obstructive pulmonary; HR, hazard ratio.

Conclusions

In the present study, HNC patients with ED visits had poorer 1-year OS, especially those aged 40-49 years and those with medical center visits, oral cavity cancer and ever having received surgery. As we know, surgery itself has long been the cornerstone treatment modality for HNC patients, especially for oral cavity cancers. Unsurprisingly, most complications have their origin during surgery. To improve short-term survival, a set of protocols needs to be followed for patients with postoperative hemorrhage in the ED.

Key word: emergency department, head and neck cancer, prognostic factor, survival, Taiwan National Health Insurance Research Database (NHIRD)

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