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Pancreas & head

Nomogram for Predicting the Prognoses of Patients With Pancreatic Head Cancer After Pancreaticoduodenectomy: A Population-Based Study on SEER Data

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OBJECTIVE

In this study, we retrieved the data available in the Surveillance, Epidemiology, and End Results database to identify the prognostic factors for patients with pancreatic head cancer who had undergone pancreaticoduodenectomy and developed a prediction model for clinical reference.

METHODS

We screened the data between 1973 and 2015. Propensity score matching (PSM) was used to control for the confounding factors. Kaplan-Meier (log-rank test) curves were used to compare the survival rates. A nomogram was established using multifactorial Cox regression.

RESULTS

In total, 4099 patients were identified. Their median survival was 22 months, with 74.2%, 36.5%, and 26.2% survival after 1.0, 3.0, and 5.0 years, respectively. The median cancer-specific survival was 24.0 months, with 71.1%, 32.6%, and 21.9% survival after 1.0, 3.0, and 5.0 years, respectively. The results of the Cox proportional risk regression showed that age, insurance status, gender, histological type, degree of tissue differentiation, T and N stages, tumour size, extent of regional lymph node dissection, and postoperative radiotherapy or chemotherapy are independent factors affecting prognosis. PSM was used twice to eliminate any bias from the unbalanced covariates in the raw data. After PSM, the patients who had received postoperative radiotherapy were found to have a better survival prognosis and disease-specific survival prognosis than those who had not received radiotherapy [HR = 0.809, 95% CI (0.731-0.894), $P < 0.001$ and HR = 0.814, 95% CI (0.732-0.904), $P < 0.001$; respectively]. A similar result was observed for the patients who had received postoperative chemotherapy versus those who had not [HR = 0.703, 95% CI (0.633-0.78), $P < 0.001$ and HR = 0.736, 95% CI (0.658-0.822), $P < 0.001$, for survival and disease-specific survival prognoses, respectively]. Finally, the β coefficients of the Cox proportional risk regression were used to establish a nomogram.

CONCLUSION

Age, insurance status, gender, histological type, degree of differentiation, T and N stages, tumour size, regional lymph node dissection, and postoperative radiotherapy or chemotherapy are factors affecting the prognosis in pancreatic head cancer after pancreaticoduodenectomy. Postoperative radiotherapy and chemotherapy can improve patient survival. These still need to be further validated in the future.