Clinicopathological Characteristics and Survival Outcomes of Invasive Papillary Carcinoma of Breast: A SEER Population-Based Study

Yi-Zi Zheng (Department of Breast Surgery, Key Laboratory of Breast Cancer in Shanghai, Fudan University Shanghai Cancer Center, China), Xin Hu (Department of Breast Surgery, Key Laboratory of Breast Cancer in Shanghai, Fudan University Shanghai Cancer Center, China), Zhi-Ming Shao (Department of Breast Surgery, Key Laboratory of Breast Cancer in Shanghai, Fudan University Shanghai Cancer Center, China)

BACKGROUND: Invasive papillary carcinoma (IPC) is a rare histologic subtype among breast cancers. The prognostic value of clinicopathological characteristics in IPC is relatively unclear. Of the limited number of studies reported, most are case reports, or small retrospective studies due to the low disease incidence. We sought to investigate the clinicopathological characteristics and survival outcomes of IPC. HYPOTHESIS: It was hypothesized that IPCs might present different clinicopathological characteristics and better survival outcomes compared with infiltrating ductal carcinoma (IDC). METHODS: The Surveillance, Epidemiology, and End Results (SEER) database was used to identify 233,171 female patients with IPC (n = 524) or IDC (n = 232,647) diagnosed from 2003 to 2012. Disease-specific survival (DSS) curves of IPC and IDC were generated by the Kaplan-Meier method, and differences between the curves were analyzed using the log-rank test. Univariate and multivariate Cox proportional hazard models were applied to identify factors associated with DSS, with hazard ratios (HRs) and 95% confidence intervals (CIs) reported. A 1:1 paired match was carried out on demographic and clinicopathological characteristics using propensity score matching methods, followed by a matched case-control analysis. The HRs of IPC versus IDC were summarized by subgroup analyses and illustrated in a forest plot. In estrogen receptor (ER) positive tumors, baseline characteristics and DSS were also analyzed. RESULTS: Generally, IPCs occurred in older women (≥50 years) and presented smaller size, lower grade, higher ER and progesterone receptor (PR) positive rate, less human epidermal growth factor receptor 2 positive rate, less lymph nodal (LN) involvement, and were less likely to be treated with mastectomy compared to IDCs. Five-year DSS rate was significantly better for patients with IPC than for patients with IDC (97.5% vs. 93%, P < 0.001). After adjustment for common demographic and clinicopathological factors in the multivariate analysis, patients with IPC showed similar DSS with the IDC group (HR = 0.556, 95% CI 0.289 - 1.070, P = 0.079). No significant difference in DSS was observed in matched groups between IPC and IDC either (P = 0.085). Survival analysis in different tumor grade, LN status, ER status or PR status subgroups showed no significant difference between IPC and IDC. Analysis among ER-positive patients revealed similar prognostic factors as among all patients. Conclusively, IPCs have unique clinicopathological characteristics and portend more favorable prognosis compared to the overall IDC population. The different outcome may be partially explained by differences in tumor grade, LN status, ER and PR status between the 2 groups. Improved clinical and biological understanding of IPC might lead to more tailored and effective therapy.