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Evaluating the Role of LVI as an Indicator for Adverse Outcomes in Patients with Upper Tract Urothelial Carcinoma and its Histological Subtypes

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Title: EVALUATING THE ROLE OF LVI AS AN INDICATOR FOR ADVERSE OUTCOMES IN PATIENTS WITH UPPER TRACT UROTHELIAL CARCINOMA AND ITS HISTOLOGICAL SUBTYPES

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Lymphovascular invasion (LVI) is recognized as an adverse prognostic factor in many cancers. Our aim is to assess the prognostic ability of LVI in UTUC urothelial carcinoma (UC) and micropapillary urothelial carcinoma (MPUC) subtypes as a predictor of overall survival (OS) using a large North American cohort.

Our cohort included 9750 cM0 UTUC patients who underwent a radical nephroureterectomy (RNU), between 2004 and 2015, within the National Cancer Database (NCDB). The main variable of interest was LVI status, and its interaction with pathological nodal (pN) status. Kaplan-Meier curves were used to estimate the OS. Cox regression analysis tested the impact of LVI status on OS after accounting for covariates.

In patients with UC at 5-years post-RNU, the OS rates were 60.2%, 29.9%, 28.9%, and 20.8% in patient with pN0 without LVI, pN0 with LVI, pN+ without LVI, and pN+ with LVI, respectively (p<0.001). In patients with MPUC at 5-years post-RNU, the OS rates were 65.3%, 40.2%, 54.7%, and 36.5% in patient with pN0 without LVI, pN0 with LVI, pN+ without LVI, and pN+ with LVI, respectively (p<0.001). On multivariable analysis, LVI was an independent predictor of less favorable OS outcomes, as those with LVI had a 1.82-fold higher risk of death (95% CI: 1.21-1.54, p<0.001), when compared to their counterpart without LVI.

Our report is the first to examine the impact of LVI on OS in a large North American nationwide cohort. It indicates that LVI is associated with reduced OS in patients with UTUC treated surgically.

