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Clinical Investigation

Patterns of Failure After Radical Cystectomy for pT3-4 Bladder Cancer: Implications for Adjuvant Radiation Therapy

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Summary

A total of 334 patients with pT3-4 bladder cancer underwent radical cystectomy and pelvic lymph node dissection with or without adjuvant chemotherapy. Local-regional failures (LF) were identified on follow-up imaging, and a recurrence map was generated. On multivariate analysis, pT and pN stages were associated with a higher risk for LF. pT4 and N1 patients had a >30% risk of LF at 2 years; 34% of patients with LF had only local-regional disease at the time of recurrence.

Purpose: In patients with muscle-invasive bladder cancer, local-regional failure (LF) has been reported to occur in up to 20% of patients following radical cystectomy. The goals of this study were to describe patterns of LF, as well as assess factors associated with LF in a cohort of patients with pT3-4 bladder cancer. This information may have implications towards the use of adjuvant radiation therapy.

Methods and Materials: Patients with pathologic T3-4 N0-1 bladder cancer were examined from an institutional radical cystectomy database. Preoperative demographics and pathologic characteristics were examined. Outcomes included overall survival and LF. Local-regional failures were defined using follow-up imaging reports and scans, and the locations of LF were characterized. Variables were tested by univariate and multivariate analysis for association with LF and overall survival.

Results: A total of 334 patients had pT3-4 and N0-1 disease after radical cystectomy and bilateral pelvic lymph node dissection. Of these, 46% received perioperative chemotherapy. The median age was 71 years old, and median follow-up was 11 months. On univariate analysis, margin status, pT stage, and pN stage, were all associated with LF ($P<.05$), however, on multivariate analysis, only pT and pN stages were significantly associated with LF ($P<.05$). Three strata of risk were defined, including low-risk patients with pT3N0 disease, intermediate-risk patients with pT3N1 or pT4N0 disease, and high-risk patients with pT4N1 disease, who had a 2-year incidence of LF of 12%, 33%, and 72%, respectively. The most common sites of pelvic relapse included the external and internal iliac lymph nodes (LNs) and obturator LN regions. Notably, 34% of patients with LF had local-regional only disease at the time of recurrence.

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