

COLLOQUIUM

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Lymph node ratio or estimating the probability of understaging in rectal and breast cancer

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Abstract

The number of metastatic lymph nodes is one of the most prognostic factors in rectal and breast cancer. One weakness of the staging system is that it does not take into account the total number of lymph nodes evaluated. E.g. 1 positive LN of 4 and 1 positive lymph nodes of 20 has different implications, but is not accounted for in the current staging system. Lymph node ratio (LNR) is defined as the ratio of the number of positive lymph nodes to the total number of lymph nodes examined. This has been proposed as a prognostic factor to stratify outcome. In our study we examined the prognostic significance of LNR. Alternatively, the accuracy of staging was estimated using a Bayesian probability model. The probability of understaging was calculated as a function of the number of lymph nodes examined. Study groups consisted of patients with at least one positive lymph node undergoing curative resection for rectal cancer (n=548, 1990-2006) and breast cancer patients who underwent axillary dissection (n=449, 1997-2004).

Staging, lymph node ratio, or an estimated probability of stage misclassification provide different rules for clinicians or patients to decide when to opt for more aggressive treatments. Utilizing estimated probabilities of understaging improves our ability to predict cancer specific survival and recurrence free survival in particular in patients with low lymph node yield. The probabilities allow for a simple rule in patient counseling and clinical decision making that would add information to nodal staging.

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