Sentinel node staging of resectable colon cancer: Results of the CALGB 80001.

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Background
- The most important predictor of outcome in resected colon cancer is the locoregional nodal status. Currently, there exists a population of conventionally evaluated node negative patients that performs significantly worse following resection. This population might benefit from more extensive evaluation for nodal metastatic disease, prompting postoperative adjuvant treatment.
- Current evaluation of nodal regions may be inadequate by conventional H&E staining techniques. In addition, sentinel node sampling could be utilized as in breast cancer and melanoma to predict the status of the nodal basin for resected colon cancer, sparing the patient the morbidity of a more extensive lymphadenectomy in cases of sentinel node negative disease.
- This study was performed both to evaluate the correlation between sentinel node staging and conventional lymphadenectomy and to investigate the value of adding immunohistochemistry (IHC) to conventional staining evaluation of nodes to more extensively search for metastases.

Materials and Methods
- This multicenter prospective trial was conducted with 25 surgery-pathology teams at 12 institutions.
- 72 patients were enrolled out of 91 patients eligible.
- Sentinel lymph node resection was attempted in all patients followed by standard lymphadenectomy for correlation.
- Lymph nodes were evaluated by H&E staining with multi-level sectioning (MLS), followed by immunohistochemical analysis (IHC) targeting cells positive for cytokeratins (CK AE1/AE3) and/or carcinoembryonic antigen (CEA).

Results
- Sentinel nodes were successfully located in 66 out of 72 patients (92%) with an average of 2.1 nodes removed per patient.
- An average of 17.3 nodes per patient were removed during sentinel node and completion lymphadenectomy.
- All sentinel nodes were located within the margin of the completion lymphadenectomy.
- Sentinel nodes were negative by H&E staining with MLS in 13 out of 25 (52%) lymphadenectomy node positive cases, bringing the sensitivity of H&E with MLS to 48% in sentinel node specimens.
- Additional evaluation by IHC brought the total number of node positive cases using lymphadenectomy specimens to 50. Sentinel nodes were negative by IHC staining in 10 out of 50 (20%) lymphadenectomy node positive cases, bringing the sensitivity of IHC to 80% in sentinel node specimens.

Author’s Conclusions
- Sentinel node staging failed to predict nodal status in greater than half of cases evaluated by conventional pathological techniques (H&E with MLS).
- The addition of IHC increased the sensitivity of sentinel node staging, but there still remained a 20% false negative rate.
- Sentinel node staging is not useful in colon cancer.
- IHC should be used to examine all regional nodes in the lymphadenectomy specimen.

Clinical/Scientific Implications
The identification of metastatic disease by immunohistochemical techniques is labor-intensive and costly. Although it identifies more cases of metastatic disease, the clinical implications for those patients selected are unclear. Despite the utility of sentinel node biopsies in diseases such as breast cancer and melanoma, sentinel node staging has no current value in colon cancer. Overall the utilization of IHC remains investigational.

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