Prognosis of patients with colorectal cancer is associated with lymph node ratio: a single-center analysis of 3,026 patients over a 25-year time period.

Objective: We examined the prognostic impact of lymph node ratio (relation of tumor-infiltrated to resected lymph nodes) in comparison to the pN category and other prognostic factors in patients with colorectal cancer.

Summary Background Data: Although the high prognostic impact of lymph node metastases and the total number of lymph nodes to be resected are well established, studies still report large differences in lymph node numbers. The lymph node ratios relevant for prognosis are not clearly defined and not routinely reported.

Methods: We analyzed the clinical and histopathological data of 3,026 patients with colorectal cancer at a single surgical center over a 25-year time period (1982-2006).

Results: One thousand seven hundred sixty-three colon and 1,263 rectal carcinomas were documented. The rate of curative resection was 77.4% and the median number of resected lymph nodes was 16. The optimal cut-off values for prognostic differentiation of LNRs were statistically calculated as 0.17, 0.41, and 0.69. The 5-year overall survival of patients without lymph node metastases was 87%. Patients with lymph node metastases had 5-year overall survival rates of 60.6%, 34.4%, 17.6%, and 5.3% with increasing LNRs (P< 0.001). Multivariate survival analysis identified both the LNR and the pN category, the number of
resected lymph nodes, the patient's age, the tumor location (colon vs. rectum), the pT category, the pM status, the R status, the tumor grade, and the year of operation as independent prognostic factors. The LNR had better prognostic value than the pN category (P< 0.05). The analysis of the subgroup of patients separated into colon and rectal cancer patients confirmed the identified LNRs as independent prognostic factors (P< 0.001). CONCLUSIONS: The defined cut-off values of LNRs were strong independent prognostic factors for colorectal cancer patients and should be calculated for risk group stratification.