Pattern Analysis of Lymph Node Metastasis and the Prognostic Importance of Number of Metastatic Nodes in Ampullary Adenocarcinoma

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Background/Aims: Although lymph node (LN) metastasis is one of the most important prognostic factors for ampullary carcinoma, a detailed pattern of LN spread has not fully been identified. The number and ratio of positive LNs have been emphasized as strong prognostic factors in periampullary carcinoma. The aims of this study were to clarify the distribution and spread pattern of metastatic nodes and to evaluate the importance of the number, ratio, and location of positive nodes in ampullary adenocarcinoma.

Methods: We analyzed the clinicopathologic data and survival of 52 patients who received curative pancreatoduodenectomy for ampullary adenocarcinoma between June 1994 and May 2009. Precise classification of the LNs was based on the rules proposed by the Japanese Society of Biliary Surgery.

Results: Metastatic LNs were found in 32 (61.5%) patients. The median number of evaluated nodes and positive nodes were 26 (range 10～60) and 2 (range 1～15), respectively. The most commonly involved nodes were the posterior pancreaticoduodenal nodes (26 patients) followed by the anterior pancreaticoduodenal nodes (11 patients). No positive hepatoduodenal and common hepatic artery nodes were found. In univariate analysis, number of positive nodes, and their ratio and location were significantly associated with survival. Only the factor of three or more metastatic nodes had the independent power in predicting a poor outcome in multivariate analysis ($p < 0.001$).

Conclusions: The posterior pancreaticoduodenal lymph nodesnode plays an important role as the main route of lymphatic metastasis in ampullary adenocarcinoma. Metastatic posterior and/or anterior pancreaticoduodenal lymph nodes then tend to spread to the superior mesenteric artery and paraaortic nodes. The presence of three or more metastatic nodes is the most important prognostic factor in patients with ampullary cancer. Therefore, the number of metastatic LNs should be considered for staging and adjuvant treatment in addition to, or even instead of, conventional nodal staging.