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Liver Directed Therapy is Associated with Improved Survival in Metastatic Gastroenteropancreatic Neuroendocrine Neoplasms with Concurrent Bone Metastasis

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BACKGROUND

Bone metastasis from gastroenteropancreatic neuroendocrine neoplasms (GEP-NENs) was once considered rare, but prevalence has recently been reported as high as 12%. Although bone metastasis has been associated with poor prognosis, the most frequent cause of mortality in this population remains liver failure when liver metastases are present. Thus, it remains unclear whether patients with concurrent liver and bone metastasis who receive liver directed therapy (LDT) would derive survival benefit.

METHODS

The California Cancer Registry (CCR) dataset merged with the California Office of Statewide Health Planning and Development (OSHPD) was used to perform a retrospective study of patients diagnosed with GEP-NENs metastatic to both liver and bone between 2000 and 2012. Univariate analysis was performed using Student's t-test, Pearson chi-square, and Mann-Whitney U test. Median overall survival (OS) was compared using the method of Kaplan and Meier and log-rank test.

RESULTS

Two hundred and three patients were identified. Seventy five (36.9%) patients underwent LDT including resection, ablation, or embolization, of whom 30 (14.8%) received LDT after diagnosis of bone metastasis and 45 (22.1%) prior to that diagnosis. 128 (63.1%) never received LDT. Eighteen patients had a stomach primary tumor (8.9%), 88 (43.3%) pancreatic, 33 (16.3%) small bowel, and 64 (31.5%) colorectal. There were no significant differences in age, sex, race, primary site, grade, or proportion of patients with additional sites of metastasis between these groups, although those who underwent LDT after a diagnosis of bone metastasis were more likely to have a higher Charlson comorbidity score when compared with those that had had LDT prior (60.0% vs 24.4%, p=0.001) and also were more likely to have received radiation therapy (33.3% vs 8.9%, p=0.008). Median OS from time of initial diagnosis was significantly longer in patients that received LDT compared to those who did not (29.9 vs 13.5 months, p=0.004). There was no significant difference in OS between those who never received LDT and those who received it only after diagnosis of bone metastasis (13.5 vs 18.6 months, p=0.638). However, when calculated from time of bone metastasis diagnosis, median OS was significantly longer in those that received LDT after that diagnosis than those that never received LDT (9.3 vs 2.3 months, p=0.005) and was not significantly different in those that had received LDT prior to diagnosis (9.3 vs 5.6 months, p=0.256).

CONCLUSIONS

LDT is associated with improved median OS in GEP-NENs, even after diagnosis of concurrent bone metastasis.

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