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Does Liver Tumor Morphology Predict Outcomes after LDT, PRRT or CapTem?

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BACKGROUND

Patients with metastatic neuroendocrine tumor (NET) have multiple options for liver-directed therapy (LDT) and systemic therapies. Post hoc analysis of NETTER-1 suggested that tumor size but not tumor burden predicted PFS after PRRT, whereas a multicenter analysis of LDT found that tumor burden was predictive. We analyzed imaging datasets from completed multicenter prospective clinical trials to investigate whether morphologic subgroups of NET liver metastatic disease based on lesion size, lesion number and tumor burden might be more optimally treated with liver-directed therapy vs systemic chemotherapy vs systemic radiotherapy.

METHODS

All images from the CapTem arm of EA2211 were reviewed and categorized for liver metastasis number, maximum lesion diameter, liver tumor burden, and size of up to five index lesions (N=67). A similar number of cases from the RETNET trial imaging archive (N=76) and from an institutional cohort of patients treated with PRRT (N=77) were analyzed. Morphologic categories were then correlated with RECIST response and PFS. Descriptive and graphical analyses were followed by multivariable modeling to test treatment by stratum interaction.

RESULTS

The objective response rates for LDT, PRRT and CapTem were 65%, 38% and 25% respectively ($p < 0.001$) with an odds ratio favoring LDT of 5.66. The respective median PFS were LDT 18.9 months [95% CI 16.3-24], PRRT 21.6 mo [14.3-26.7], and 16.6 [11.5-29] for CapTem ($p=0.99$ for all comparisons).

Lesion number, maximum lesion diameter, and liver tumor burden were not associated with differences in response or PFS for any of the three therapies or for the entire analyzed population as a whole. Lesion size as a continuous variable did not correlate with tumor response for any therapy ($p=0.4$).

CONCLUSIONS

Liver-directed therapy provides superior debulking to systemic therapies. PFS is similar for all three modalities. No morphologic features of liver metastases were identified that correlated with treatment outcome within a particular treatment modality nor to favor one over another when triaging patients.

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