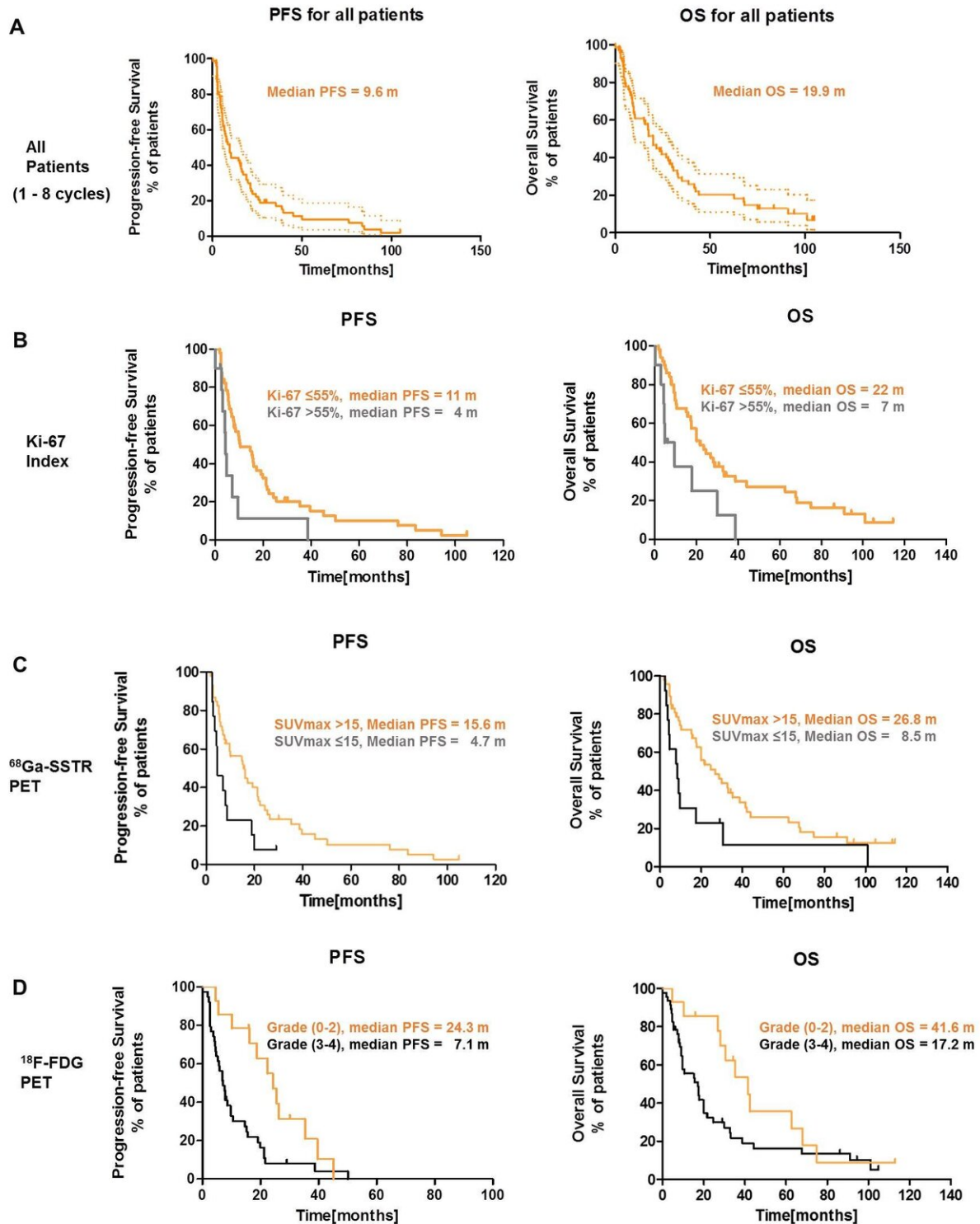


Radionuclide therapy effective in high-grade neuroendocrine neoplasms

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Kaplan-Meier curves for progression-free survival (PFS) and overall survival (OS) (in months) from start of PRRT for all patients with G3 NENs (A), and in subgroups with Ki-67 index of $\leq 55\%$ and Ki-67 index of $> 55\%$ (B), in

subgroups with SUVmax cutoff of >15 and SUVmax cutoff of ≤ 15 on baseline ^{68}Ga -SSSTR PET imaging (C) and in subgroups with grade 0-2 and grade 3-4 on baseline ^{18}F -FDG PET imaging (D). Credit: J Zhang et al., THERANOSTICS Center for Molecular Radiotherapy and Precision Oncology, Zentralklinik Bad Berka, Germany.

Peptide receptor radionuclide therapy (PRRT) has been shown to be safe and effective for patients with grade 3 (G3) neuroendocrine neoplasms (NENs), according to research presented at the Society of Nuclear Medicine and Molecular Imaging's (SNMMI) 66th Annual Meeting.

"While numerous studies have demonstrated the effectiveness of PRRT in well-differentiated grade 1 and 2 neuroendocrine neoplasms, limited data has been reported on PRRT in G3 NENs," noted Richard P. Baum, MD, Ph.D., chairman and clinical director at THERANOSTICS Center for Molecular Radiotherapy and Precision Oncology in Bad Berka, Germany. "Our study—which followed the largest cohort of G3 NEN patients for the longest period of time—aimed to assess the safety and efficacy of PRRT in terms of survival analysis. In addition, we evaluated the utility of positron emission tomography (PET)/computed tomography (CT) in predicting long-term prognosis."

In the study, 69 patients with various types of metastatic, progressive G3 NENs received PRRT with ^{177}Lu - and/or ^{90}Y -labeled DOTATATE or DOTATOC. For some patients this therapy was a first-line treatment, but for the majority, PRRT was a second- or third-line treatment. Patients were followed for a median of 94.3 months, and progression-free survival and overall survival rates were calculated.

The median progression-free survival rate for patients with G3 NENs was 9.6 months, and the overall survival rate was 19.9 months. When

taking into account the Ki-67 index, which measures a key protein associated with cell proliferation, researchers found a significant difference between survival rates. Patients with a Ki-67 index less than or equal to 55 percent responded more favorably to the PRRT than others, with a median [progression-free survival](#) rate of 11 months and an overall survival rate of 22 months.

"Compared to studies evaluating the efficacy of chemotherapy for NEN patients with a Ki-67 index less than or equal to 55 percent, PRRT has a longer overall survival rate—22 months versus 14 months," the researchers pointed out. "These results suggest that PRRT, rather than chemotherapy, may be a superior first-line therapeutic option in selected patients with a high level of SSTR expression and a Ki-67 index of less than or equal to 55%."

In addition to tracking survival rates, researchers also performed response assessments with 68Ga-SSTR PET/CT and 18F-FDG PET/CT. Patients with a good response and favorable outcome after PRRT were observed to have a relatively higher SUVmax with 68Ga-SSTR PET/CT imaging. Patients with no or minor 18F-FDG uptake responded well to PRRT, and the survival rates were significantly longer than for those with avid 18F-FDG uptake. In terms of stratifying patients, the mismatch pattern of low 18F-FDG uptake and high 68Ga-SSTR uptake was associated with a better long-term prognosis.

Jingjing Zhang and Richard P. Baum of Zentralklinik Bad Berka noted, "Overall, our findings demonstrated that PRRT was tolerated well, without any significant adverse effects, and was effective in [patients](#) with G3 NENs, even those for whom chemotherapy had failed. These findings provide the basis for the expansion of clinical indications of PRRT in the future."

More information: Abstract 560. "Peptide Receptor Radionuclide

Therapy (PRRT) in Patients with Progressive Grade 3 Neuroendocrine Neoplasms (NEN)"

Provided by Society of Nuclear Medicine and Molecular Imaging

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