Positron Emission Tomography–Computed Tomography (PET-CT) After Induction Therapy Is Highly Predictive of Patient Outcome in Follicular Lymphoma: Analysis of PET-CT in a Subset of PRIMA Trial Participants

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Abstract

Purpose The utility of [18F]fluorodeoxyglucose (FDG) positron emission tomography–computed tomography (PET-CT) in assessing response at the end of induction therapy is well documented in Hodgkin’s and diffuse large B-cell lymphomas, but its role in follicular lymphoma (FL) remains undetermined. We investigated the prognostic significance of PET-CT performed after first-line therapy in patients with FL treated in the prospective Primary Rituximab and Maintenance (PRIMA) study.

Patients and Methods Results of PET-CT scans performed after induction immunochemotherapy were recorded retrospectively. Patients went on to either observation or rituximab maintenance per protocol independent of the PET-CT result. Patient characteristics and outcomes were then evaluated.

Results Of 122 PET-CT scans performed at the end of the induction immunochemotherapy, 32 (26%) were reported as positive by the local investigator. Initial demographic or disease characteristics did not differ between PET-CT–positive (PET-positive) and PET-CT–negative (PET-negative) patients. PET status correlated with conventional response criteria ($P < .001$). Patients remaining PET positive had a significantly ($P < .001$) inferior progression-free survival at 42 months of 32.9% (95% CI, 17.2% to 49.5%) compared with 70.7% (95% CI, 59.3% to 79.4%) in those who became PET negative. PET status, but not conventional response (complete response or complete response unconfirmed partial response) according to IWC 1999, was an independent predictive factor for lymphoma progression. The risk of death was also increased in PET-positive patients (hazard ratio 7.0; $P = .0011$).

Conclusion [18F]FDG PET-CT status at the end of immunochemotherapy induction in patients with FL is strongly predictive of outcome and should be considered a meaningful clinical end point in future studies.