

PET-CT predicts lymphoma survival better than conventional imaging

September 17 2014

Positron emission tomography/computed tomography (PET-CT) is more accurate than conventional CT scanning in measuring response to treatment and predicting survival in patients with follicular lymphoma, and should be used routinely in clinical practice, according to new research published in *The Lancet Haematology*.

"Our findings have important implications for patients with [follicular lymphoma](#), a common and usually slow-growing lymphoma. Compared to conventional CT scanning, PET-CT is more accurate in mapping-out the lymphoma, and better identifies the majority of patients who have a prolonged remission after treatment", explains Professor Judith Trotman, study leader and Associate Professor at Concord Hospital, University of Sydney, Australia.

Almost all patients with follicular lymphoma, a common type of non-Hodgkin lymphoma, respond very well to initial treatment with immunochemotherapy, but relapse is common. Current practice is to use CT imaging to evaluate treatment response. However CT cannot easily distinguish patients who are likely to remain in a prolonged remission for several years from those at high risk of early relapse. This creates considerable uncertainty for patients.

PET-CT is performed using a very small amount of a tracer called 18F-fluorodeoxyglucose (FDG)—glucose containing a radioactive tag—which is injected into the patient. The FDG is highly concentrated in [lymphoma cells](#) and so the PET-CT scan will light-up in areas of

lymphoma activity. An important goal of therapy is to 'switch-off' these lighted areas, obtaining a PET-negative remission.

By assessing imaging performed in three clinical trials, Dr Trotman and her French and Italian colleagues examined the link between PET-CT status and survival following first-line immunochemotherapy for advanced follicular lymphoma. Independent, masked reviewers evaluated the scans of 246 patients who underwent both PET-CT and traditional CT imaging within 3 months of their last dose of therapy.

The predictive power of PET-CT was much stronger than conventional CT, accurately identifying patients with an unfavourable prognosis—a PET-positive population with a high rate of disease progression and an almost seven fold increased risk of death—in whom the cancer should be closely monitored. PET-CT also identified that the 83% of patients who achieved PET-negativity had a reassuringly favourable prognosis, with average remission duration beyond 6 years.

According to Prof Trotman, "Our study shows that PET-CT is much better in evaluating treatment response and is an early predictor of survival. This greater accuracy will assist physicians to more effectively monitor their patients. We expect this research will result in PET-CT imaging replacing CT, becoming the new gold standard to evaluate patients with follicular lymphoma after treatment. Importantly, it will be a platform for future studies of response-adapted therapies aimed to improve the poor outcomes for those patients who remain PET positive."

Writing in a linked Comment, Professor Bruce Cheson, Deputy Chief, Hematology-Oncology and Head of Hematology at Lombardi Comprehensive Cancer Center, Georgetown University, Washington DC, USA, says, "Trotman and colleagues' results might lead to several clinical research opportunities. One such possibility would be to assess if an early reaction to the PET scan result improves patient outcome. Thus,

[patients](#) with a positive PET scan after induction therapy could be randomly assigned to either deferred treatment until disease progression or immediate intervention. A preferable alternative would be to introduce a unique agent at that time, such as the newly developed small molecules (eg, idelalisib, ibrutinib, or ABT-199) in a novel combination."

More information: *The Lancet Haematology*,
[www.thelancet.com/journals/lan ... \(14\)70008-0/abstract](http://www.thelancet.com/journals/lan... (14)70008-0/abstract)

Provided by Lancet

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