Radioimmunotherapy deemed safe and effective for lymphoma patients

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A new treatment option for patients with relapsing follicular, mantle cell and other indolent B-cell lymphomas has been determined safe and feasible by researchers exploring the potential of a low energy beta-emitter radiopharmaceutical. According to data published in the July issue of *The Journal of Nuclear Medicine*, the use of 177Lu-DOTA-rituximab as a radioimmunotherapy results in a high rate of tumor response while using less radiation than current therapies.

"Twelve years ago, when we started the study, it seemed that radioimmunotherapy could be a highly interesting tool that was both easy for clinicians to use and well-tolerated in patients. It also was clear that the use of iodine radionuclides was inconvenient for handling and not practical for patients because of the need for prolonged in hospital days due to radiation protection measures," said Andreas Lohri, MD, lead author of the study "Radioimmunotherapy with 177Lu-DOTA-Rituximab: Final Results of a Phase I/II Study in 31 Patients with Relapsing Follicular, Mantle Cell, and Other Indolent B-Cell Lymphomas." "Although 90Y ibritumomab tiuxetan—Zevalin—was introduced shortly after we started the study, we felt it was important to do clinical experiments with other radionuclides."

The prospective study included 31 patients with histologically confirmed relapsed or refractory CD20-positive B-cell lymphoma. All patients received an initial dose of 740 MBq/m2 body surface area of 177Lu-DOTA rituximab.. Doses were increased in steps of 185 MBq/m2 over a maximum of seven doses. Hematologic and nonhematologic toxicity was

measured weekly up to week 10 or until recovery from the lowest level of blood cell count. Imaging with whole body computed tomography (CT) and 18F-FDG positron emission tomography (PET) or 18F-FDG PET/CT was conducted at baseline and at 8-12 weeks.

The maximum tolerated dose using 177Lu-DOTA rituximab was 1,665 MBq/m2. Toxicity was mainly hematologic, with thrombocytopenia and leukopenia noted as the dose-limiting toxicities, and nonhematologic toxicity was minor. Clinical responses occurred at all dose levels for patients with follicular (82 percent overall response rate) and mantle cell (21 percent response rate) lymphomas. With a median follow-up of almost seven years, the estimated median time of survival after radioimmunotherapy was four years.

"With 177Lu-DOTA Rituximab we can essentially do CD20 imaging," said Lohri. "At the moment, this may be academically interesting and could potentially be used in daily practice if compared to all forms of current PET imaging."

More information: "Radioimmunotherapy with 177Lu-DOTA-Rituxmab: Final Results of a Phase I/II Study in 31 Patients with Relapsing Follicular, Mantle Cell, and Other Indolent B-Cell Lymphomas" *The Journal of Nuclear Medicine*, 2013.

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