The long dust and ashes

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Treatment

Thank you for that kind introduction.

I am going to present dosimetric results in my presentation *"Pre-dosing with lilotomab prior to therapy with 177Lu-lilotomab satetraxetan significantly increases the ratio of tumour to red marrow absorbed dose in non-Hodgkin lymphoma patients"* 177Lu-lilotomab satetraxetan (commercially Betalutin) is a novel antibody radionuclide conjugate targeting the CD37 antigen expressed on malignant B-cells. 177Lu-lilotomab satetraxetan is currently investigated in the multi-center phase 1/2 LYMRIT 37-01 study headed by Oslo University Hospital. Patients with relapsed indolent non-Hodgkin lymphoma are included.

Arms

Patients received 10, 15 or 20 MBq/kg 177Lu-lilotomab satetraxetan in the phase 1 study. Four different arms were investigated, in which the patients received different pre-treatment and pre-dosing regimens. Each arm is illustrated here as horizontal lines, it is a bit busy but if you follow each line we see that each arms contains pre-treatment of rituximab. Then predosing with either 40 mg of lilotomab, no pre-dosing, pre-dosing with another round of rituximab, and lastly 100 mg lilotomab per square meter body surface area of lilotomab. At time zero, all patients got administered 177Lu-lilotomab satetraxetan.

Then follows a series of SPEC/CT-scans, from which we calculated the tumour and red marrow absorbed doses.

SPECT/CT

Here we see sagital images of one patient from each arm, four days post injection. The patients received the same amount of activity per kilogram body mass A reduction in red marrow uptake can be observed for patients in arm 1 and 4 compared to patients that did not receive pre-dosing with lilotomab (arm 2+3).

Methods

We started with SPECT/CT-images that we used to create time activity curves. For the red marrow we meassured the activity concentration in lumbar L2 to L4, and corrected for tabulated values of trabecular bone. After calculating the time activity coeffients we used OLINDA/EXM to calculate the dose to tumours and red marrow. So, in this presentation we present the tumour doses, the red marrow doses and the ratio between them.

Results

For the dosimetric analyses, arms 2 and 3 were combined in a single group since neither arms had received pre-dosing with lilotomab. On the left we see the red marrow for the three patient groups We observed a significantly lower red marrow absorbed dose for patients that had received lilotomab as pre-dosing. However, the difference between arm 1 and 4, the groups with different amount of lilotomab, was not significant. On the right we see the tumour doses grouped likewise. The tumour absorbed doses varied substantially, and the mean dose was not significantly different between the groups The ratio of tumour to red marrow absorbed dose was significantly higher in both arm 1 and arm 4 compared to the group that did not receive unlabelled lilotomab.

Summary

So, to summarize: For all patient arms, red marrow was found to be the primary dose-limiting organ for 177Lu-lilotomab satetraxetan therapy, and pre-dosing with lilotomab had a mitigating effect on red marrow absorbed dose.

Both pre-dosage levels investigated significantly increased the tumour to red marrow absorbed dose ratio after treatment with 177Lu-lilotomab satetraxetan in patients with non-Hodgkin‘s lymphoma. Pre-dosing should be considered mandatory in this treatment regimen.