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<p>Red Marrow Dosimetry and Peripheral Blood Stem Cell Reinfusion in High Activity Treatments with ⁹⁰Y-Ibritumomab Tiuxetan (Zevalin®) - The Milan Experience</p> <p>Marta Cremonesi, Anna Vanazzi, Chiara Grana, Mahila Ferrari, Giovanni Martinelli, and Giovanni Paganelli</p> <p>Istituto Europeo di Oncologia, Milano, Italy</p> <p>Purpose: The absorbed dose to the red-marrow (RM) is crucial in radioimmunotherapy with Zevalin, especially when administered at myeloablative activities. Dosimetric methods (blood) and alternative approaches (image analysis, marrow aspirations (MA)), were introduced in order compare RM doses and to evaluate the best timing for Autologous Stem Cells Transplantation (ASCT). ASCT is conventionally considered at low risk when the dose to reinfused stem cells (rSC) is <50 mGy.</p> <p>Methods: Twenty-six patients affected by resistant/refractory B-cell NHL were enrolled in a phase I/II study of high activity Zevalin therapy followed by ASCT. The activities administered were: 30 MBq/kg (4pts); 45 MBq/kg (4pts); 56 MBq/kg (18pts). Patients underwent dosimetry with ¹¹¹In-ibritumomab-tiuxetan; ASC were reinfused 13 days after therapy. The absorbed dose to RM and to rSC was estimated based on the activity evaluated in serial blood samples, L2-L4 vertebrae (planar imaging), and MA.</p> <p>RESULTS: Considering ACST after 13 days, the median(range) dose to rSC was 11(4-28) mGy with the blood method. Based on the MA method, the dose to rSC was 25(9-89) mGy. Despite bone marrow biopsy was negative in all patients, scintigraphies showed spine marrow uptake in almost all patients. Based on imaging, the dose to rSC was 27(8-76) mGy.</p> <p>Conclusion: Although MA and imaging methods are affected by uncertainty (blood contamination of MA, difficult L2-L4 uptake quantification), both indicate comparable results, suggesting that the blood method may underestimate the RM dose. In patients receiving >45 MBq/kg of Zevalin it is not advisable to anticipate ASCT before 13 days.</p>	