

IN-HOUSE RADIO-LABELLING OF ¹³¹I-RITUXIMAB IN TREATMENT OF CD20+ B-CELL NON-HODGKIN'S LYMPHOMA: A PIONEER EXPERIENCE IN MALAYSIA

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Background

Radioimmunotherapy (RIT) is an established treatment modality in Non-Hodgkin's lymphoma (NHL). The only two commercially available RITs - ⁹⁰Y-ibritumomab tiuxetan (Zevalin®) is expensive and ¹³¹I-tositumomab has been discontinued from commercial production. In resource limited environment, ⁹⁰Y-ibritumomab tiuxetan and autologous haematopoietic stem cell transplantation (HSCT) might not be possible. Self-labelling ¹³¹I-rituximab might be the only viable practical option. There is no randomized controlled trial comparing RIT versus autologous HSCT in NHL to examine the possibility of RIT substituting autologous HSCT. We reported our pioneer experience in Malaysia on self-labelling ¹³¹I-rituximab, substituting autologous HSCT and a patient, whom to our knowledge, is the first reported case received high dose ¹³¹I-rituximab (6000 MBq or 163 mCi) combined with BEAM conditioning for autologous HSCT.

Clinical Presentation

Six patients (Diffuse Large B-cell Lymphoma (DLBCL) ($n = 4$), Follicular Lymphoma (FL) grade 2 ($n = 2$)), who were primary refractory/progressive except one and indicated but unable to receive autologous HSCT, and one primary refractory and progressive Primary Mediastinal (thymic) Large B-cell Lymphoma (PMBL), median age 60 (range 26-62), M:F = 6:1, received self-labelling ¹³¹I-rituximab from August to October 2014. Six patients received the usual dosage and one patient with PMBL received high dose combined with BEAM

conditioning autologous HSCT. Median follow-up was 15.5 months (range 12.5-16.5). They achieved complete response (CR) (except PMBL - partial response (PR)) as the best response. At the latest follow-up, all the DLBCL remained in CR, one FL had slow progressive disease not symptomatic nor requiring intervention, one FL died after three months of ¹³¹I-rituximab due to rectal papillary mucinous adenocarcinoma which was symptomatic and diagnosed after ¹³¹I-rituximab, and the PMBL remained in PR. In our very limited experience young patients age less than 60 tolerated the treatment well without grade 4 neutropaenia or thrombocytopenia. Three out of four elderly patients age 60 or above developed grade 4 haematological toxicity, which might be related to undiagnosed bone marrow infiltration because two of them had FL. Except for the patient who had developed rectal carcinoma and pre-existing myelodysplastic syndrome (MDS), none developed febrile neutropaenia or required antibiotics. None developed hypothyroidism, myelodysplastic syndrome or acute myeloid leukaemia, albeit follow-up is still short.

Intervention (& Technique)

The usual dosage: 5 mCi on Day 0 (dosimetry dose) and total-body dose 0.75 Gy on Day 7 (therapeutic dose).

High dose: 6000 MBq (163 mCi) on Day -18 combined with BEAM conditioning, started on Day -8, for autologous HSCT.

Discussion/Conclusion

Self-labelled ¹³¹I-rituximab may be a viable option to substitute autologous HSCT in refractory/relapse NHL, especially when autologous HSCT is not feasible. It is definitely cheaper and halves the cost of Zevalin®. Its use in PMBL warrants further study.

Keyword: Radioimmunotherapy; ¹³¹I-rituximab; Iodine-131; Rituximab; lymphoma; Non-Hodgkin's lymphoma.