A pioneer experience in Malaysia on In-house Radio-labelling of $^{131}$I-rituximab in the treatment of Non-Hodgkin’s Lymphoma and a case report of high dose $^{131}$I-rituximab-BEAM conditioning autologous transplant

Jew Win Kuan a,*, Chiong Soon Law b, Xiang Qi Wong c, Ching Tiong Ko c, Zool Hilmi Awang b, Lee Ping Chew d, Kian Meng Chang e

a Department of Medicine, Faculty of Medicine and Health Sciences, Universiti Malaysia Sarawak, Kota Samarahan, Sarawak, 94300 Malaysia
b Department of Nuclear Medicine, Sarawak General Hospital, Jalan Hospital, Kuching, Sarawak, 93586 Malaysia
c Sterile Production Section, Department of Pharmacy, Sarawak General Hospital, Jalan Hospital, Kuching, Sarawak, 93586 Malaysia
d Haematology Unit, Department of Medicine, Sarawak General Hospital, Jalan Hospital, Kuching, Sarawak, 93586 Malaysia
e Department of Haematology, Ampang Hospital, Jalan Mewah Utara, Pandan Mewah, Ampang, Selangor, 68000 Malaysia

HIGHLIGHTS

- Usual dose: Day 0 (dosimetry) – 5 mCi, Day 7 (therapeutic) 0.75 Gy to whole body.
- High dose: 6000 MBq (163 mCi) on Day – 18, BEAM conditioning starts on Day – 8.
- Self-labelled $^{131}$I-rituximab is a viable treatment in resource limited environment.
- $^{131}$I-rituximab may substitute autologous transplant.
- High dose $^{131}$I-rituximab-BEAM is a feasible conditioning regime.

ARTICLE INFO

Article history:
Received 13 April 2016
Received in revised form
12 July 2016
Accepted 19 July 2016
Available online 20 July 2016

Keywords:
Radioimmunotherapy
$^{131}$I-rituximab
Iodine-131
Rituximab
Non-Hodgkin’s lymphoma

ABSTRACT

Radioimmunotherapy is an established treatment modality in Non-Hodgkin’s lymphoma. The only two commercially available radioimmunotherapies – $^{90}$Y-ibritumomab tiuxetan is expensive and $^{131}$I-tositumomab has been discontinued from commercial production. In resource limited environment, self-labelling $^{131}$I-rituximab might be the only viable practical option. We reported our pioneer experience in Malaysia on self-labelling $^{131}$I-rituximab, substituting autologous haematopoietic stem cell transplantation (HSCT) and a patient, the first reported case, received high dose $^{131}$I-rituximab (6000 MBq/163 mCi) combined with BEAM conditioning for autologous HSCT.

© 2016 Elsevier Ltd. All rights reserved.

1. Introduction

Radioimmunotherapy (RIT) is an established treatment modality in Non-Hodgkin’s lymphoma (NHL). To date, the commercially available RIT approved by United State Food and Drug Administration are $^{90}$Y-ibritumomab tiuxetan (Zevalin®; Spectrum Pharmaceuticals, Irvine, California, United States) and $^{131}$I-tositumomab (Bexxar®, GlaxoSmithKline LLC, Wilmington, Delaware, United States). However in February 2014, GlaxoSmithKline discontinued the manufacture of $^{131}$I-tositumomab, primarily because of commercial reason (Prasad, 2014).

The registered indication of $^{90}$Y-ibritumomab tiuxetan is as consolidation after achieving complete response (CR) or partial response (PR) following first line treatment (Morschhauser et al., 2008, 2013; Rose et al., 2012; Provencio et al., 2014) in previously untreated follicular NHL and as the sole treatment in relapse/refractory low-grade or follicular B-cell NHL (Zinzani et al., 2010a; Vanazzi et al., 2014). It has been used in low grade B-cell NHL as