Tositumomab

Tositumomab is a murine IgG2a lambda monoclonal antibody directed against the CD20 antigen, produced in mammalian cells.[1] Combined with radioisotope iodine 131[2] it was called **Iodine I 131 Tositumomab**. Unlabelled tositumomab together with iodine-labelled tositumomab was called **Bexxar**[1] and a personlized regimen using Bexxar was approved for the treatment of relapsed or chemotherapy/rituxan-refractory Non-Hodgkin lymphoma in 2003.[3][4][5]

The treatment regimen was personalized for each person receiving the drug in order to maximize the radiation delivered to the tumor and to minimize the amount of radiation to which the person would be exposed.[1][6]:14-15 A first dose of labelled antibody was given once, and whole-body radiation was measured with a gamma camera over seven days. Analysis of that imaging data allowed an optimal dose of labelled antibody to be calculated, which was then administered once a day, for up to seven days.[1][6]:14-15 Each time the labelled antibody was administered, it was always preceded by unlabelled antibody because early clinical trials had shown that total body residence times of radioactivity were longer in people who first received unlabelled antibody, so that a lower dose of labelled antibody was needed to deliver the required total dose of radiation; additionally labelled antibody targeted tumors better in people pre-treated with unlabelled antibody.[6]:21

This drug combination was developed by Corixa which was purchased by GlaxoSmithKline in 2005.[7] It was sold for about $25,000 for one round of treatment.[3]

Sale of Bexxar was discontinued and marketing approval was withdrawn in February 2014 due to the decline in usage (fewer than 75 patients in 2012) even though it had a 70% response rate; the lack of demand was due to the fact that oncologists could not sell it directly to patients but had to refer patients to third parties, and the emergence of other drugs that were as good and could be administered by the oncologists.[2][8]

1 References

[1] GlaxoSmithKline and FDA> Bexxar label. Last updated August 2012. Page accessed January 18, 2016

[2] "Why Good Drugs Sometimes Fail: The Bexxar Story".

[3] Srinivasan A, Mukherji SK. Tositumomab and iodine I 131 tositumomab (Bexaar). AJNR Am J Neuroradiol. 2011 Apr;32(4):637-8. PMID 21436340. Free full text

[4] New York Times. July 1, 2003 Company News: Corixa and Glaxo's Cancer Drug Wins FDA Approval

[5] Product Approval Information - Licensing Action

[6] FDA Description of the Product. December 17, 2002. Linked from index page [http://www.fda.gov/ohrms/dockets/ac/02/briefing/3916b1.htm here.

[7] Carla Mozee for MarketWatch. April 29, 2005 Glaxo to acquire Corixa for $300 million

[8] Notice by the Food and Drug Administration on October 23, 2013. GlaxoSmithKline LLC; Withdrawal of Approval of the Indication for Treatment of Patients With Relapsed or Refractory, Low Grade, Follicular, or Transformed CD20 Positive Non-Hodgkin's Lymphoma Who Have Not Received Prior Rituximab; BEXXAR

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