ISSN 1392-0138
eISSN 2029-1474

NATIONAL CANCER INSTITUTE
THE LITHUANIAN ACADEMY OF SCIENCES
VILNIUS UNIVERSITY

ACTA MEDICA LITUANICA

2022
Vol. 29, No 2 / Supplement

Published since 1994

Vilnius University Press
Vilnius, 2022

Blinatumomab in Pediatric ALL: a Lithuanian Case Series

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Background. Pediatric refractory / relapsed acute lymphoblastic leukemia (R/R-ALL) has a 5% long term survival rate when applying cytotoxic chemotherapy, hematopoietic stem cell transplantation (HSCT). Blinatumomab, a bispecific antibody linking CD19, CD3 cells, may induce beneficial effect before HSCT and has successfully been used as a frontline therapy for high risk (HR) patients [1,2].

Aim. To present 5 R/R-ALL cases treated with Blinatumomab.

Methods. Retrospective case series.

Results. A 4-month girl (pre-B, 11q23 MLL (KMT2A), CNS2, HR) received Interfant-21 followed by Blinatumomab (2 blocks). After remission allogenic HSCT (alloHSCT) was performed – complete remission (CR)1. A very early (VE) extramedullary relapse (EMR) was confirmed. 9-month boy (pre-B (11q23 MLL), CNS1) was treated with Interfant-06. After VE isolated EMR and IntReALL-HR 2010 Blinatumomab was given (2 blocks) – CR2. Both infants had no Blinatumomab toxicity. 2-y.o. (pre-B , CNS1, HR), 3-y.o. (pre-B, CNS2, standard risk) treated with Nopho ALL-2008 presented with 1st isolated early bone marrow relapse (BMR), Maintenance I and Maintenance II, respectively. 2-y.o. boy was resistant to IntReALL 2010 HR, post Blinatumomab measurable residual disease was 7%. FLAG (fludarabine, cytarabine, filgrastim), Bortezomib, Daratumumab were ineffective. 3-y.o. boy had inadequate response (IR) to IntReALL 2010 HR, after Blinatumomab (1 block) response was achieved, followed by alloHSCT. 2nd isolated BMR was treated with chimeric antigen receptor T-cell therapy – IR. After Blinatumomab (2 blocks) remission allowed for alloHSCT – CR4. Both had no Blinatumomab toxicity. 14-y.o. girl (pre-B, CNS1, HR) after Nopho ALL-2008 had 1st isolated VE BMR. No response to IntReALL 2010 HR, Blinatumomab (1 block). In this case Blinatumomab had neurotoxicity.

Conclusions. In Lithuania 2017–2021 4 R/R-ALL cases received Blinatumomab, 1 case as 1st line ALL treatment. About half of cases had good response with minimum toxicity.

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