Divya Subburaj et al., Pediat Therapeut 2016, 6:3(Suppl)
http://dx.doi.org/10.4172/2161-0665.C1.024

Blood stream infections during induction chemotherapy in children with acute myeloid leukemia -Changing spectrum in developing countries

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Background & Aim: Infections are the most common cause of mortality and morbidity in children receiving chemotherapy for acute myeloid leukemia (AML).The aim of this study is to assess the epidemiology of blood stream infections (BSI) following AML induction chemotherapy.

Material & Methods: We performed a retrospective analysis of children undergoing AML induction chemotherapy at our centre from 2003 to 2015.

Results: A total of fifty four children had received induction chemotherapy consisting of duanorubicin, cytarabine and etoposide as per the UKMRC AML induction protocol were included in the study. Forty seven episodes of febrile neutropenia were recorded. Thirty four percent had culture positive gram negative sepsis. Fifty five percent of the febrile neutropenic episodes were blood culture negative. Enterocolitis was the most common focus of infection in these children. Over the last 3 years (2012-2015) the incidence of gram negative sepsis had risen to 38% when compared to 24% during the 2003 to 2011 period. Though the mortality rates had remained the same in both groups, the morbidity rates which included duration of hospital stay, need for pediatric intensive care support, the use of colistin due to carbapenam resistant infections and the use of granulocyte transfusions to help tide over the sepsis had dramatically increased.

Conclusion: Western data has shown a rising trend in gram positive infections during AML induction. However, our study has shown a rise in gram negative infections, especially carbapenam resistant *Klebsiella*, which has pushed up the cost of therapy, especially in a resource limited setting. We have introduced several interventions to reduce the incidence of drug resistant gram negative sepsis. An active infection control policy with support from the team to restrict the unnecessary use of high end antibiotics had been the first measure. Surveillance of children for Carbapenem resistance (Carba-R) organisms prior to induction therapy in order to risk stratify them and the early introduction of colistin in Carba-R positive children during febrile neutropenic episodes has been the main measure to reduce mortality. The introduction of neutropenic diet which is lactose and gluten free during mucositis phase to reduce translocation of intestinal bacteria and early use of granulocytes in the first 48 hours of onset of septic shock have helped keep mortality rates low.

Biography

Divya S is currently doing FNB (Fellowship under the National Board) in Pediatric Hematology and Oncology at Apollo Hospital, Chennai from Feb 2015. She completed her under-graduation in 2009 from Bangalore Medical College and Research Institute. She has done her specialization in Pediatrics (MD) from the same institute. She completed MRCPCH Part 1 & 2.

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