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Editorial: Pediatric acute lymphoblastic leukemia: what's next?

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Editorial on the Research Topic
Pediatric acute lymphoblastic leukemia: what's next?

Word limit consideration

Adhering to the prescribed word limit, this editorial concisely synthesizes the key themes and findings from the four contributing articles. The objective is to provide a comprehensive overview without being an exhaustive table of contents, respecting the guidelines that govern the editorial's length.

Introduction

Acute lymphoblastic leukemia (ALL) is the most common hematological cancer in children. The survival rates have improved significantly in recent decades, and the current therapy strategies focus on limiting toxicities and improving outcomes in very high risk and relapsed patients. The benefit of emerging treatments such as targeted drugs and immunotherapy (antibodies, CAR-T-cells) is being explored, and thus basic and clinical research will provide the knowledge to better understand and manage pediatric ALL. This research topic aimed to discover what's next in ALL. This hematologic malignancy has been analyzed from different points of view.

Contributing articles

A mini-review conducted by Stolpa et al. examined the prognostic role of CD34+CD38− lymphoblasts in B-cell precursor acute lymphoblastic leukemia (BCP-ALL) at the time of diagnosis. Despite the lack of statistically significant differences in the initial treatment response, the presence of CD34+CD38− lymphoblasts is identified as a potential unfavorable prognostic factor for disease recurrence. Similar studies have investigated the prognostic impact of specific cell surface markers in leukemia (1, 2). Beyond the

assessment of specific cell populations at diagnosis, research on minimal residual disease (MRD) has consistently shown its significance in predicting treatment response and long-term outcomes in ALL (3).

An original research conducted by Terra Correa et al. focused on the overall and event-free survival rates of pediatric ALL patients in a Brazilian center. The study revealed that despite advancements in treatment, the survival rates are comparable with previous studies conducted in Brazil, which are lower than those observed in developed countries. The challenges in risk stratification, prognostic testing, and the impact of treatment-related adverse effects highlight the complexities in improving outcomes for pediatric ALL. Comparative studies from different regions have reported variations in survival rates and treatment outcomes. For example, a global analysis conducted by Hunger et al. (4) emphasized the disparities in survival rates for pediatric ALL on a global scale, pointing to the need for region-specific strategies and improvements in treatment protocols to enhance survival outcomes.

Velasco et al. provided a perspective introducing the Relapsed ALL Network (ReALLNet), a pioneering initiative that connects patient care with expert groups in relapsed or refractory ALL. This network, established under the European strategic plan, aims to facilitate interdisciplinary collaboration, preclinical research, and data collection to address the unique challenges posed by this patient population. Similar initiatives, such as the Children's Oncology Group (COG) in the United States and the UKALLR3 trial in the United Kingdom, have demonstrated the efficacy of collaborative networks in conducting clinical trials, sharing data, and advancing the understanding of relapsed ALL. In the same line, molecular platforms, such as the LEAP consortium project (5) in the United States and INFORM (6) in Germany, demonstrated that between 8% and 12% of patients with a relapsed malignancy can benefit from a targeted treatment based on oncogenomic studies guided by a multidisciplinary national board. These networks play a crucial role in providing precision medicine in pediatric oncology.

Onyije et al. presented a viewpoint regarding the risk factors associated with childhood ALL, which are important for identifying modifiable factors for effective prevention. Noteworthy findings include the association between maternal exposure to pesticides and childhood ALL risk, as well as the upgraded evidence on childhood exposure to domestic radon. These updates contribute to our ongoing efforts to understand and mitigate the risk factors associated with childhood ALL. Similar findings have been reported in meta-analyses and systematic reviews. For instance, a meta-analysis conducted by Bailey et al. (7) supported the association between maternal pesticide exposure and childhood leukemia risk. In addition, studies on environmental factors, including radon exposure, have indicated their potential role in developing leukemia, contributing to the ongoing efforts to identify modifiable risk factors (8, 9).

In conclusion, the research topic "Acute Lymphoblastic Leukemia: What's Next" exemplifies the dynamic nature of ALL research, presenting findings that propel us toward a deeper understanding of the disease and its management.

Author contributions

JG: Writing – original draft, Writing – review & editing. JR: Writing – original draft, Writing – review & editing. ML: Writing – original draft, Writing – review & editing.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

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