

Scientific and Methodological Foundations for Developing Communication and Speech Activity in Children with Oncohematological Diseases

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Abstract: This article discusses how children with oncohematological diseases require medical treatment and how this process can affect various aspects of their development. In addition to the illness itself, two factors are highlighted as having the strongest impact on a child’s development: the neurotoxic effects of therapy and prolonged hospital-based treatment. Among the problems addressed in the article, potential delays in speech development occupy a special place, as they may negatively influence the child’s communicative abilities and overall development.

Keywords: Treatment, neurotoxic effects, speech development, communicative abilities, communication, cancer.

Introduction: Oncohematological diseases, including cancer as well as disorders of the blood and lymphatic systems, often require long-term treatment. Among children, the two most common types of cancer are acute lymphoblastic leukemia (ALL) and brain tumors (neuroblastoma). Today, in зарубежных странах, five-year survival rates for these diseases reach 84% and 75%, respectively. As a result of treatment, survivors may develop various physical, cognitive, and emotional problems. Therefore, even after treatment is completed, the child’s everyday life requires strengthened and sustained attention [1]. Stress and anxiety observed in children undergoing treatment for oncohematological diseases may also contribute to delays in language and speech development.

Speech and language skills develop rapidly and individually during the first three years of a child’s life. However, because each organism is different, these processes occur in accordance with age-specific developmental stages. Children with hematological and oncological diseases may also demonstrate a range of communicative disorders. These include difficulties

related to pragmatic aspects of speech, voice, resonance, and fluency; in such cases, intervention by speech-language specialists is required [2].

Cognitive consequences associated with illness and treatment

The treatments required to overcome the disease have been studied as factors that gradually affect children’s cognitive functioning [3]. One reason is that neurocognitive impairments may not become apparent immediately upon completion of treatment. Research indicates that children who were diagnosed with ALL in childhood and subsequently survived may exhibit impairments in verbal abilities, core executive functions, and working memory tasks [4], as well as declines in intelligence and academic achievement. Children who survived brain tumors and ALL have also performed various executive-function tasks at significantly lower levels than expected [5].

Articulation is a cognitively demanding activity that includes several stages. These involve forming meaning, selecting and pronouncing words correctly, activating their phonological representations, and

using the motor system to produce sounds. Although children with oncohematological diseases may successfully perform many of these stages, they can encounter difficulties at the final stage due to high cognitive load [6]. Psychological factors such as anxiety during treatment stages, fear, or a lack of motivating social interaction may also negatively affect a child's desire or ability to engage in verbal communication [7].

Speech disorders related to illness and its treatment

Research on developing language and speech in children with oncohematological diseases has shown that even children treated only with chemotherapy may experience speech-related difficulties as well as challenges associated with memory functions [8].

Chemotherapy required for the patient may have long-term negative effects on the central nervous system and on speech development. This outcome often becomes more pronounced during adolescence, because at this developmental stage the cognitive and communicative demands placed on language and speech become significantly more complex. The areas most frequently affected are higher-level language and speech competencies, including understanding figurative meanings, resolving semantic ambiguities, and using new, non-standard speech expressions. These processes require advanced cognitive information-processing mechanisms [9]. At the same time, some patients may also show clinically significant difficulties in understanding literal and metaphorical speech.

Although these problems may not always remain stable, they can emerge as late effects of medications within a period of 5 to 20 years after treatment [9]. Such deficits can substantially negatively influence children's daily functioning and become especially evident in education and social relationships [10].

Neurocognitive impairments are frequently observed in preschool children with ALL. In particular, problems related to attention, memory, and short-term verbal memory may lead to language and speech difficulties, limiting the ability to store and process verbal information. Therefore, continuous monitoring of language and speech development in children with ALL is of great importance.

CONCLUSION

To address communicative, language, and speech-

development problems that arise in children battling oncohematological diseases, individualized approaches by medical staff, psychologists, and, importantly, speech therapists are required. If a child's developmental indicators show relatively better-than-expected outcomes, it is possible to begin with individualized language intervention [11]. Working in partnership with parents, applying methods adapted to the child's abilities, providing psychological support to overcome emotional stress related to the illness and its treatment, and reducing potential delays and difficulties all contribute to improvement. This, in turn, supports the child's communication, language, and speech development and helps enhance quality of life and achieve positive outcomes.

REFERENCES

1. Marusak H.A., Iadipalo A.S., Harper F.W., Elrahal F., Taub J.W., Goldberg E., Rabinak C.A. Neurodevelopmental consequences of pediatric cancer and its treatment: Applying an early adversity framework to understanding cognitive, behavioral, and emotional outcomes. *Neuropsychol. Rev.* 2018;28:123–175. doi: 10.1007/s11065-017-9365-1. Интернет ресурс: <https://pmc.ncbi.nlm.nih.gov/articles/PMC6639713/>
2. Taylor O.D., Ware R.S., Weir K.A. Speech pathology services to children with cancer and nonmalignant hematological disorders. *J. Pediatr. Oncol. Nurs.* 2012;29:98–108. doi: 10.1177/1043454212438963. Интернет ресурс: <https://pubmed.ncbi.nlm.nih.gov/22472483/>
3. Armstrong G.T., Oeffinger K.C., Chen Y., Kawashima T., Yasui Y., Leisenring W., Stovall M., Chow E.J., Sklar C.A., Mulrooney D.A., et al. Modifiable Risk Factors and Major Cardiac Events Among Adult Survivors of Childhood Cancer. *J. Clin. Oncol.* 2013;31:3673–3680. doi: 10.1200/JCO.2013.49.3205. Интернет ресурс: <https://pmc.ncbi.nlm.nih.gov/articles/PMC3804290/>
4. van der Plas E., Schachar R.J., Hitzler J., Crosbie J., Guger S.L., Spiegler B.J., Ito S., Nieman B.J. Brain structure, working memory and response inhibition in childhood leukemia survivors. *Brain Behav.* 2017;7:e00621. doi: 10.1002/brb3.621.

- Интернет ресурс: <https://pmc.ncbi.nlm.nih.gov/articles/PMC5318374/>
5. Winter A.L., Conklin H.M., Tyc V.L., Stancel H., Hinds P.S., Hudson M.M., Kahalley L.S. Executive function late effects in survivors of pediatric brain tumors and acute lymphoblastic leukemia. *J. Clin. Exp. Neuropsychol.* 2014;36:818–830. doi: 10.1080/13803395.2014.943695.
- Интернет ресурс: <https://pmc.ncbi.nlm.nih.gov/articles/PMC4229447/>
6. Alvarez-Benito G., Fernandez-Corbacho A., Machancoses F.H., Fonseca-Mora M.D.C. Cognitive and language-based disabilities of children diagnosed with cancer. *Zesz. Nauk. Zblizenia Cywilizacyjne.* 2019;15:12–37. doi: 10.21784/ZC.2019.009. <http://dx.doi.org/10.21784/ZC.2019.009>
7. Tremolada M., Taverna L., Bonichini S., Pillon M., Biffi A. The Developmental Pathways of Preschool Children with Acute Lymphoblastic Leukemia: Communicative and Social Sequelae One Year after Treatment. *Children.* 2019;6:92. doi: 10.3390/children6080092. <https://www.mdpi.com/2227-9067/6/8/92>
8. Miranda Pereira M., Befi-Lopes D.M., Soares A.J.C., Sassi F.C., de Andrade C.R.F. Linguistic-Cognitive Outcomes in Children with Acute Lymphoid Leukemia: An Exploratory Study. *J. Multidiscip. Healthc.* 2021;14:1285–1295. doi: 10.2147/JMDH.S313795. <https://www.dovepress.com/linguistic-cognitive-outcomes-in-children-with-acute-lymphoid-leukemia-peer-reviewed-fulltext-article-JMDH>
9. Lewis F.M., Perry M.L., Murdoch B.E. Longitudinal language outcomes following intrathecal chemotherapy for acute lymphoblastic leukaemia. *Int. J. Speech Lang. Pathol.* 2012;15:156–164. doi: 10.3109/17549507.2012.684888. <https://www.tandfonline.com/doi/full/10.3109/17549507.2012.684888>
10. Lewis F.M., Bohan J.K. Early adolescent language development following intrathecal chemotherapy for acute lymphoblastic leukaemia. *Int. J. Speech Lang. Pathol.* 2018;20:485–493. doi: 10.1080/17549507.2017.1309066.
11. Murdoch B.E., Docking K.M. An investigation of general and high-level language skills in children treated with central nervous system-targeted chemotherapy for acute lymphoblastic leukemia. *J. Med. Speech-Lang. Pathol.* 2011;19:27–37.