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Experience in teaching cancer alertness to primary care doctors in the Republic of Kazakhstan

Relevance: Malignant neoplasms (MN) lead the structure of childhood mortality worldwide. At that, most cases are detected at advanced stages. Early diagnostics is required to improve treatment outcomes in children with cancer. The success mainly depends on oncological alertness and knowledge of primary care doctors.

The study aimed to analyze the results of training primary care doctors in early diagnostics of oncological and hematological diseases in children using MN staging.

Results: The paper shares the experience of teaching primary care doctors on early diagnostics of oncological and hematological diseases in children. The analysis used the patient data with staged diagnosed MNs. 3,092 primary care doctors were trained according to the programs we developed and implemented for training trainers and primary care and specialized doctors on early diagnostics of oncological and hematological diseases in children. The training of many primary care specialists has improved early children cancer detection rates. Thus, early cancer detection (stage I-II) in children has improved from 29% in 2015 to 37.2% in 2016, 38.2% in 2017, 40.3% in 2018, and 41.4% in 2019. Since 2020, early detection of MN in children prevails (53%).

Conclusion: Despite the extensive experience and fairly good results comparable to international indicators, the problem of late cancer detection in children remains urgent since it worsens survival forecasts and increases the cost of treatment of oncohematological diseases in children.

Keywords: malignant neoplasms (MN), early diagnostics, children, oncological diseases.

Introduction: Malignant neoplasms (MN) lead the structure of childhood mortality worldwide [1, 2]. The International Agency for Research on Cancer (IARC) reports higher cancer prevalence in children than previously expected. 215 000 new cancer cases are diagnosed each year worldwide in children before 15 and about 85 000 cases – in children at the age of 15-19. In mature countries, childhood cancer amounts to less than 1% of all cancers, while in limited resources and poor medical care, the share of childhood cancers can be five times higher [1].

In the Republic of Kazakhstan (RK), about 600 children are diagnosed with primary cancer every year. In general, childhood cancer prevalence remains stable over the past seven years and amounts to 10 per 100 000 childhood population, which is below the global rate to 14-15 per 100 000 children [1].

Since 1993, the Scientific Center for Pediatrics and Pediatric Surgery conducts protocol treatment of children with hematological and oncohematological diseases according to German treatment programs. Till 2013, children with solid tumors and lymphomas were treated together with adult patients in adult dispensaries and the Kazakh Institute of Oncology and Radiology [3]. In 2013, the specialties of “pediatric oncology” and “pediatric hematology” were combined in the RK, and the nomenclature of medical specialties was supplemented with “Pediatric oncology and hematology.” From that moment, the introduction of new medical technologies, laboratory diagnostic methods began,

new clinical protocols for oncological specialties were developed, personnel training was intensively carried out both abroad and through master classes with the participation of foreign specialists [3].

It is known that early detection of cancer delivers better treatment results. Thus, early and accurate diagnostics followed by effective treatment are required to improve the treatment outcome in children with cancer. This mainly depends on oncological alertness and knowledge of primary care doctors [4].

The study aimed to analyze the results of training primary care doctors in early diagnostics of oncological and hematological diseases in children using MN staging.

Materials and methods: The authors utilized the statistical data on the number of doctors trained at seminars, training sessions, and professional development cycles on early diagnostics and oncological alertness of primary care doctors in 2015-2019 and during six months of 2020 by specialists of the Scientific Center of Pediatrics and Pediatric Surgery (SCPPS, Almaty, Kazakhstan) as one of the main coordinators for oncological and hematological diseases in children in the RK, and the number of children with staged forms of cancer. The analysis utilized the database materials collected from the RK regions and taken from the Roadmap of the RK Ministry of Healthcare for the improvement of pediatric oncological and hematological care in the RK for 2019-2021 [5]. Traditional methods of statistical processing of data were used.

Results and Discussion: In children, tumor development has certain specifics and requires a comprehensive approach. The clinical manifestations of oncological and hematological diseases are polymorphic. Often, these patients are seen by other specialists. Some receive hormone therapy which complicates the diagnosis and worsens the prognosis. The rapid progression of the disease without specific treatment leads to poor outcomes and serious complications.

A successful early detection mainly depends on the oncological alertness and knowledge of the primary care doctors. To improve early detection, SCPPS spe-

cialists developed and implemented training cycles for trainers and training programs in early detection of cancer and hematological diseases in children for primary care physicians and other related specialists. The developed programs were approved by SCPPS and the Republican Educational and Methodological Council [6].

3,092 primary care doctors were trained in 2015-2020 under the educational and methodological block developed by SCPPS, which included a working curriculum, presentation material, cases, situational tasks, and tests to measure the baseline/ final level of student knowledge (Figure 1).

Figure 1 – Number of primary care doctors trained in oncological alertness, by year

Taking into account the need to maximize the coverage of primary care doctors and other single-discipline specialists, in 2019, SCPPS organized training of 25 trainers

in clinical and paraclinical departments who subsequently trained doctors of medical organizations in the regions of the Republic of Kazakhstan (Table 1).

Table 1 – Number of trainers trained in oncological alertness in the RK

Trained trainers	Quantity
Pediatric oncologists and hematologists from the regions of the RK	16
Higher school teachers of the RK	9
Of them:	
Asfendiyarov Kazakh National Medical University	2
Kazakh Medical University of Continuing Education	2
Al-Farabi Kazakh National University	2
Kazakh-Russian Medical University	1
West Kazakhstan State Medical University	1
Semey Medical University	1
TOTAL:	25

Our employees and trainers have delivered training courses onsite and at SCPPS, both online and offline; since 2020, the training is provided remotely. Figure 2 shows the results of training specialists by the cascade method in 2019.

The trained trainers amongst regional children's oncologists and hematologists, SCPPS employees, and higher school lecturers allowed increasing the number of doctors trained in 2019 more than three times (1,176 students vs. 385 in 2017 and 378 in 2018) (Figure 1).

Training of a large number of primary care specialists affected indicators such as early cancer detection. Thus, in 2015, only 29% of tumors in children were detected at stage I-II vs. 37.2% in 2016, 38.2% in 2017, 40.3% in 2018, and 41.4% in 2019 (Figure 3). In 6 months of 2020, 145 (53%) children with staged forms of cancer were diagnosed at stage I-II. Another 127 (47%) children were diagnosed with stage III-IV cancer.

Figure 2 – Number of doctors trained in early detection in 2019

Figure 3 – Early MN detection dynamics in children in the RK, 2015-2020

Conclusion

The problem of early cancer detection in patients of any age is vital worldwide. Difficulties in diagnosing oncological diseases in children are associated not only with the rarity of these diseases but also with the peculiarities of the course. In children, especially at an early age, many MN forms remain hidden for a long time, masked by many other diseases; the clinical picture is general; tumors with hidden localizations prevail. Primary care doctors who are the first to face such patients shall possess enough knowledge about the disease course, early manifestations of malignant tumors in childhood since early MN diagnostics and new treatment technologies can achieve better treatment outcomes. Given the variety of types of childhood tumors, we invited to our courses both pediatricians, general prac-

tioners, dentists, ENT doctors, rheumatologists, cardiologists, etc. The developed curricula were simplified; they are easily presented and taught by professional doctors.

Takeaways:

1. Since 2020, early MN detection in children prevails – 53% of cases are detected at stage I-II.
2. Despite the extensive experience and quite promising results comparable to international indicators, the problem of late MN detection in children remains acute. This worsens the survival prognosis and increases expenses on treating oncohematological diseases in children.

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ТҰЖЫРЫМ

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Қазақстан Республикасындағы бастапқы буын дәрігерлерін онкологиялық сақтық шараларын үйренуге оқытудың тәжірибесі

Өзектілігі: Қатерлі ісіктің соңғы сатысында анықталған науқастар, бүкіл әлем бойынша бала өлімінде жетекші орын алады. Ерте диагноз қою, балалар онкологиялық ауруларының нәтиже көрсеткішін жақсарттады. Бұл бастапқы буын дәрігерлерінің онкологиялық ауруларға деген мұқияттылығы мен олардың білімдеріне байланысты.

Зерттеудің мақсаты: Әртүрлі кезеңдердегі қатерлі ісік ауруларымен ауыратын науқастардың деректерін қолданып, бастапқы буын дәрігерлерінің балалардағы онкологиялық және гематологиялық ауруларын ерте диагностикалау оқу процесіне талдау жүргізілді.

Нәтижелері: Балалар жасындағы онкологиялық және гематологиялық ауруларды ерте диагностикалау мәселелері бойынша бастапқы буын дәрігерлерін оқыту нәтижелеріне талдау жүргізілді. Талдау үшін қатерлі ісік диагнозы қойылған пациенттердің сатылары бойынша деректері пайдаланылды. Жаттықтырушыларды, сондай-ақ БМСК дәрігерлерін және басқа да медициналық ұйымдарды оқыту бойынша білім беру қызметіне енгізілген және әзірленген бағдарламалар бойынша балалардағы онкологиялық және гематологиялық ауруларды ерте диагностикалауға 3092 бастапқы буын дәрігері оқытылды.

Көптеген бастапқы буын дәрігерлерінің оқытылуы қатерлі ісікті ерте сатыда диагностикалаудағы тиімділікті көрсетті. Балалардағы қатерлі ісік ауруларын I-II сатыда диагностикалау 2015 жылы – 29%, 2016 жылы – 37,2%, 2017 жылы – 38,2%, 2018 жылы – 40,3%, 2019 жылы – 41,4% құрды. Ал 2020 жылдан бастап балалардағы қатерлі ісік ауруларын I-II сатысында анықтау (53%-ға) жетті.

Қорытынды: Үлкен тәжірибеге және халықаралық көрсеткіштермен салыстырылатын жеткілікті жақсы нәтижелерге қарамастан, балалардағы қатерлі ісіктерді кеш анықтау проблемасы өзекті болып қалуда. Бұл өмір сүру болжамын нашарлатады және балалардағы онкогематологиялық ауруларды емдеу шығындарын арттырады.

Түйінді сөздер: қатерлі ісіктер, ерте диагностикалау, балалар, онкологиялық аурулар.

АННОТАЦИЯ

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Опыт обучения онконастороженности врачей первичного звена в Республике Казахстан

Актуальность: Злокачественные новообразования (ЗН) во всем мире лидируют в структуре смертности детей, при этом большинство случаев выявляются на распространенных стадиях. Для улучшения показателей исхода болезни у онкологических больных детского возраста необходима ранняя диагностика. Её успех зависит главным образом от онкологической настороженности врачей первичного звена и их знаний.

Цель исследования: провести анализ результатов обучающего процесса врачей первичного звена по вопросам ранней диагностики онкологических и гематологических заболеваний детского возраста с использованием стадирования злокачественных новообразований.

Результаты: Представлен опыт обучения врачей первичного звена по вопросам ранней диагностики онкологических и гематологических заболеваний детского возраста. Для анализа использованы данные пациентов с диагностированными ЗН по стадиям. По разработанному и внедренному нами в образовательную деятельность программ по обучению тренеров, а также врачей первичной медико-санитарной помощи и других медицинских организаций ранней диагностике онкологических и гематологических заболеваний у детей обучено 3092 врача первичного звена.

На улучшение диагностики рака у детей на ранних стадиях наряду с другими факторами повлияло обучение большого количества специалистов первичного звена. Так, в 2015 году диагностика ЗН у детей на I-II стадии составляла 29%, в 2016 году – 37,2%, в 2017 году – 38,2%, в 2018 году – 40,3%, в 2019 году – 41,4%. С 2020 года отмечается превалирование выявления ЗН у детей на I-II стадиях заболевания (53%).

Заключение: Несмотря на большой опыт и достаточно хорошие результаты, сравнимые с международными показателями, остается актуальной проблема поздней выявляемости ЗН у детей. Это ухудшает прогнозы выживаемости и увеличивает расходы на лечение онкогематологических заболеваний у детей.

Ключевые слова: злокачественные новообразования (ЗН), ранняя диагностика, дети, онкологические заболевания.