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LENINGRAD PEDIATRIC MEDICAL INSTITUTE IN 1943–1944. ON THE 80th ANNIVERSARY OF THE COMPLETE LIBERATION OF LENINGRAD FROM THE FASCIST BLOCKADE

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ABSTRACT. The article is dedicated to the event of enormous historical significance — the 80th anniversary of the complete liberation of Leningrad from the fascist blockade. The employees of the Leningrad Pediatric Medical Institute (LPMI, now St. Petersburg State Pediatric Medical University) contributed to the overall victory of the Leningraders, who remained in the city throughout the days of the Great Patriotic War and the siege, fought to save the lives of children, trained medical personnel, and were engaged in scientific work. During these years, the scientific research of LPMI employees was focused on the most vital problems: war trauma, nutritional dystrophy and vitamin deficiencies; nutrition and search for milk substitutes; anemia; treatment and care of newborns and premature babies; childhood infectious diseases; tuberculosis and a number of other diseases; dynamics and specificity of morbidity, indicators of physical development, infant mortality, as well as numerous organizational problems of treatment and preventive care for children during different periods of the blockade. Since May 1942, the Scientific Society of Children’s Doctors resumed its work, meetings were held monthly, reports were heard on the results of the research, joint conferences of pediatricians with obstetricians, therapists, and phthisiatricians were held on topical issues of obstetrics and pediatrics, collections of scientific papers were published, monographs, articles were published, training manuals. All this contributed to the rapid implementation of scientific research into practice. Having survived the incredible difficulties of the blockade years, the Institute’s staff continued to fight for the lives of children, eliminate the consequences of severe blockade pathology, strive to maintain sanitary and epidemiological well-being and prevent the development of epidemics of childhood infectious diseases. The article provides a qualitative and quantitative analysis of the main performance indicators of the LPMI during the war and blockade.

KEYWORDS: Great Patriotic War, siege of Leningrad, Leningrad Pediatric Medical Institute, training of doctors, scientific problems, scientific society of children’s doctors of Leningrad, children

ЛЕНИНГРАДСКИЙ ПЕДИАТРИЧЕСКИЙ МЕДИЦИНСКИЙ ИНСТИТУТ В 1943–1944 гг. К 80-ЛЕТИЮ ПОЛНОГО ОСВОБОЖДЕНИЯ ЛЕНИНГРАДА ОТ ФАШИСТСКОЙ БЛОКАДЫ

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РЕЗЮМЕ. Статья приурочена к событию огромной исторической значимости — 80-летию полного освобождения Ленинграда от фашистской блокады. В общую победу ленинградцев внесли вклад сотрудники Ленинградского педиатрического медицинского института (ЛПМИ, ныне СПбГПМУ), которые все дни Великой Отечественной войны и блокады оставались в городе, боролись за спасение жизней детей, готовили врачебные кадры, занимались научной работой. В эти годы научные изыскания сотрудников ЛПМИ были сосредоточены на самых насущных проблемах: военная травма; алиментарная дистрофия и авитаминозы; питание и поиски заменителей молока; анемии; лечение и выхаживание новорожденных и недоношенных детей; детские инфекционные заболевания; туберкулез и ряд других заболеваний; динамика и специфика заболеваемости, показатели физического развития, детской смертности, а также многочисленные организационные проблемы лечебно-профилактической помощи детям в разные периоды блокады. С мая 1942 г. возобновило работу Научное общество детских врачей, заседания проводились ежемесячно, заслушивались доклады по результатам исследований, проводились совместные конференции педиатров с акушерами, терапевтами, фтизиатрами по актуальным вопросам акушерства и педиатрии, выпускались сборники научных трудов, печатались монографии, статьи, учебные руководства. Все это способствовало быстрому внедрению научных изысканий в практику. Пережив неимоверные трудности блокадных лет, сотрудники Института продолжали и в дальнейшем бороться за жизни детей, ликвидировать последствия тяжелой блокадной патологии, стремились поддерживать санитарно-эпидемиологическое благополучие и не допустить развития эпидемий детских инфекционных заболеваний. В статье приводится качественный и количественный анализ основных показателей работы ЛПМИ в годы войны и блокады.

КЛЮЧЕВЫЕ СЛОВА: Великая Отечественная война, блокада Ленинграда, Ленинградский педиатрический медицинский институт, подготовка врачей, научные проблемы, научное общество детских врачей Ленинграда, дети

Comes again in January
Our Leningrad Victory Day!
A. Molchanov

There has been written a lot about the war and the blockade. But the unparalleled feat of Leningrad citizens both adults and children, displays of heroism and courage, fortitude and willpower — never stop surprising us, making us revisit these days again and again to try to understand how people lived, created and gave the warmth of their hearts to other people in those incredible conditions. Among them were the staff of our Leningrad Paediatric Medical Institute (LPMI), who, thanks to their profession, adherence to their duty and conscience, stood guard over children's health. And this mission during the Great Patriotic War was especially responsible and difficult.

In connection with the great date of the complete lifting of the siege of Leningrad, which took

place on the 27th of January 1944, this article focuses on the work of the LPMI staff in the fateful years of 1943–1944, when the city, and with it its citizens, gradually began to recover from the experience of 1941–1942.

On the 27th of January 1944 the jubilation of Leningrad residents was unprecedented. Together with all the citizens, the staff and students of LPMI were rejoicing. Here is how the teacher of the Department of General Chemistry Y.N. Berg wrote about this day: "In January 1944 we heard an intense cannonade. It was our troops launched a vigorous offensive against the Germans. It was both joyful and anxious, especially for those who had any of their relatives on the Leningrad front. Finally, the Germans were driven far away from Leningrad, and in January 1944, for the first time during the war we had a celebratory salute in Leningrad. Joyful, we all left the building, admiring the victory salutes..."[1]. Professor N.I. Lopatina, a student of LPMI in 1944, remembered: "On 27th January at 8 p.m., my mother and I, like all Leningraders, went out into the street, on the International (Mezdunarodniy) Avenue, to watch the salute in honour of the lifting of the blockade. It was an unforgettable hour — for the first time in 2 years and 7 months, the streets of Leningrad became bright with celebratory rockets. The ground was covered with white snow, multicoloured lights sparkled in the sky, and the houses were dark and severe, because the light cloak had not been removed yet. There were not a lot of people on International (Mezdunarodniy) Avenue, for the Moskovsky district was a front-line neighbourhood, and the majority were women. Almost everyone was crying, shouting "Hooray", softly singing songs. This is how that unforgettable day remained in my memory"[2]. Professor A.B. Volovik, head of the Department of Propaedeutics of Paediatric Diseases of LPMI, wrote: "Leningrad citizens took a full breath" [4].

The terrible days and nights of artillery bombardment (up to 8–12 per day) were left behind, as LPMI was listed on the German shelling map as object No. 708, subject to special destruction. Even after the partial breakthrough of the blockade on 18 January 1943, Leningrad continued to be a front-line city, and its population was subjected to fierce shelling, sometimes bombing, there were also attacks on the Institute's buildings. But none of the Institute's staff, students or children were harmed by the shelling. Behind were cold, hunger, lack of basic living conditions, long stay in bomb shelters. The autumn and winter of 1941–1942 were especially difficult. Transport did not run, there was not enough food, people died of cold and hunger, the overwhelming number of Leningraders had manifestations of alimentary dystrophy and avitaminosis. LPMI clinics were overcrowded with sick children who needed qualified help. Due to lack of electricity, water supply, fuel we had to work in limited premises, in bomb shelters, heated by temporary shelters. There was no firewood, we collected and carried it on our shoulders, there was no water — we went to the Neva for water and brought it in tubs, cans, buckets, on sledges or pumped it with a pump through a long rubber hose directly from the river. In the wards children were bathed once in 10 days, and in the neighbouring wards they washed by hand, dried and ironed linen... In the spring of 1942 the whole staff and students eliminated the consequences of the first blockade winter, dismantled the rubble, improved the premises, broke the ice, cleared the territory from snow, procured fuel, made elementary repairs of the premises, adjusted electric lighting, restored the water supply, performed everyday feats.

A great achievement of the LPMI administration, its director Professor Y.A. Mendeleva and the head doctor of the clinic D.S. Tumarkin (Fig. 1) was the preservation in those difficult conditions of our unique university — the only paediatric institute in the world, which continued to train personnel, treat children, conduct scientific and organisational work during all the years of war and blockade. This would have been impossible if the administration had not taken measures to preserve the lives of staff and students, who were allowed to live on the territory of the Institute in the buildings that had not been damaged by bombing. They were provided with therapeutic food, food oil extracted from natural olive oil and vitamin C from pine needles, obtained at the Department of Inorganic Chemistry by the head of the local industrial defence chemical laboratory, docent M.M. Koton, as well as fruits and vegetables.

LPMI did not stop educating doctors. During the war there were 7 planned and early gradua-

[1] Berg Y.N. Memories. Manuscript. Stored in the Museum of History of SPbSMU.

[2] Lopatina N.I. Memories. Manuscript. Stored in the Museum of History of SPbSMU.

Fig. 1. Director of LPMI Professor Yu.A. Mendeleva and chief physician of the clinic D.S. Tumarkin

Рис. 1. Директор ЛПМИ профессор Ю.А. Менделева и главный врач клиники Д.С. Тумаркин

tions, 947 doctors were educated for the front, health care institutions of Leningrad, Leningrad Region, and other territories of the RSFSR. Amazingly, from the end of June 1941 until the blockade was broken in 1944, 904 doctors were educated. The seventh graduation of 43 doctors took place in July 1944. Accordingly, the enrolment of students did not stop. In 1941–1943 there were 5 admission campaigns, 1200 students were enrolled, and in October 1944 during the sixth military admission 400 people were enrolled in the 1st course, i.e. 1600 people were enrolled in total during the war years.

The fact that in these hardest years the administration of LPMI took into account the needs of the time and promptly solved the most acute problems of training of wartime doctors is evidenced by the organisation of new departments: the department of hospital surgery in 1942 and the department of hospital therapy in 1944. The staff of these departments carried out a lot of practical and advisory work in military and civilian hospitals, where they also had classes with students.

In 1944 the question of improving the education of medical personnel became acute. Until that time, according to the resolution of the Council of People's Commissars (CPC) of the USSR of 02.07.1941 and the order of the Administration of Medical Universities of the RSFSR of 05.08.1941, the five-year period of training of medical students was reduced to three and a half years, which caused early training and graduation of doctors.

But time demanded more thoroughly trained doctors. On 19 June 1942, the All-Union Committee for Higher Education under the USSR Council of People's Commissars decided to restore the five-year term of study in the country's medical institutes (Decree No. 113/m) [26]. And on the 1st of December 1944, the resolution of the CPC of the USSR "On measures to improve the training of doctors" was issued, and the gradual transition of medical institutes to a 6-year term of study began [11]. The new curriculum was based on the following principles: strict consistency in the study of theoretical and clinical disciplines; increasing the number of hours in the main disciplines; strengthening practical training, establishing the correct ratio between lecture and practical courses. Our Institute was commissioned to develop a teaching programme for paediatric faculties for a 6-year period of study.

In addition to students' education in LPMI, since 1943 the work on improvement of all ranks of medical personnel has been intensified. Only in 1943 were upgraded:

1. Wartime nurses — 500 people.
2. By May 1, 1943, 157 doctors were prepared for the work of a "single paediatrician" on one-month courses.

3. Courses for doctors of neonatal departments in November-December 1943 — 6 people.
4. Courses on dietetics of healthy and sick children — 263 persons.
5. Training in nutrition:
   a) courses for cooks of nurseries and other institutions — 65 persons;
   b) Courses for doctors in nutrition and dietary school canteens — 35 doctors;
   c) courses for managers and cooks in children's establishments in the Vyborg district RONO — 30 persons.
6. Professional development courses for state inspectors and their assistants — 25 persons.

In 1944 the following courses were organised:

1. Short-term courses for district paediatricians of the Regional Healthcare: from 17.02 to 04.03 — 5 persons, from 18.03 to 11.04 — 9 persons.
2. Courses on dietetics of healthy and sick child from 02.03 to 22.04 — 31 persons.
3. Courses on infectious diseases from 03.03 to 19.04 — 31 persons.
4. Courses on blood transfusion — 85 specialists were trained.
5. Advanced training courses for school doctors from 07.03 to 23.05 — 35 people.

A total of 111 people took the courses [22].

In addition, twice a month the clinics of the LPMI held rounds of professors and associate professors for the city's paediatricians, with a review and demonstration of patients.

Bombing and shelling caused enormous damage to the buildings of the Institute. After the blockade was lifted, it was necessary to start rebuilding the damaged buildings. Building materials, glass, labour force, etc. were needed. The Institute's employees themselves had to get involved in this work. For example, the premises of the Department of Physiology, the roof of which was particularly damaged, were restored by the efforts of teachers and other staff members.

By May 1, 1944 the following restoration works were done: 2500 m^2 of windows were glazed; plywood was laid on the floor, walls and other surfaces with the area of 4500 m^2; the central heating network of 97 662 cubic metres was restored. The roof was repaired over an area of 2,700 m^2; cosmetic repairs were carried out on 4,950 m^2 of premises. This made it possible to hold classes with students and doctors, to hospitalise children in more or less acceptable conditions.

As of 1 July 1944, the main clinical building and the food block were restored, and some other buildings were repaired on a small scale. In 1944 all 20 theoretical departments worked in their old premises, located in four buildings with a total of 182 rooms. There were a number of laboratories for student classes, 7 classrooms, 2 libraries, 2 prosectories and a vivarium. In addition, there was an experimental workshop, whose tasks included the manufacture of precision instruments for the departments of the Institute, meeting the current technical needs, glass blowing, improvement of equipment, etc.

But the Institute itself was not able to repair all the buildings. In the autumn of 1943, the question of reconstruction works was put before the People's Commissariat of Health of the USSR. The plan and scope of works were approved, and all the documentation was handed over to Lengorispolkom for implementation. The works were started at the end of 1944.

The issue of student dormitory was especially acute. Before the war, the Institute did not have its own dormitory and when admitting students it focused exclusively on Leningrad youth. After the blockade was broken, a course was taken to admit students from other territories, and the construction of a dormitory became one of the priority tasks of the administration. It was planned to build a 5-storey building for 500 student places and 100 places for doctors of advanced training courses. The construction of the dormitory was finished after the war.

All the years of war LPMI did not stop its clinical and scientific activities. In the clinics of LPMI there were wounded and sick children, with various pathologies, as well as children in physiological departments, whose parents died or were at the front (Fig. 2). From November 1941 until April 1942, all the work of the clinics took place in bomb shelters.

During the most difficult period, from 01.07.1941 to 01.10.1942, the scientific work in its volume was certainly not as intensive as in peacetime, but it did not stop, was relevant and responded to the needs of the time. Unique data were collected, which were then generalised, conclusions were drawn, and new approaches to treatment were developed. The main topics concerned the development of special wartime issues were: the war trauma (N.E. Berg, N.E. Surin, etc.); alimentary dystrophy and avitaminosis (A.F. Tur, A.B. Volovik, S.A. Gavrilov, E.I. Friedman,

Fig. 2. Wounded children at the LPMI clinics

Рис. 2. Раненые дети в клинике ЛПМИ

R.M. Muravina, G.A. Nikolaev, M. V. Miller-Shabanova, etc.); anaemias (A.F. Tur, A.N. Antonov, Y.A. Kotikov, etc.); treatment and nursing of newborns and premature infants (A.F. Tur, M.A. Singer, A.N. Antonov, I.I. Bogorov, etc.); childhood infectious diseases (A.B. Volovik, M.B. Danilevich, V.G. Danilevich, V.I. Bogorov, etc.); tuberculosis (A.E. Pevzner, S.B. Adelberg, C.L. Bibikova, etc.) and a number of other diseases; the dynamics of morbidity, child mortality, and physical development indicators (Y.A. Mendeleva, S.A. Novoselsky, A.N. Antonov, A.F. Tur, A.B. Volovik, A.N. Tipolt, R.P. Levitina, etc.); numerous organisational problems of therapeutic and preventive care for children under blockade (Y.A. Mendeleva, D.S. Tumarkin, S.I. Volchok, N.G. Sinyavskaya, etc.).

One of the most urgent was the problem of nutrition: the search for milk substitutes, the development of recipes for the nutrition of healthy and sick children of different ages in conditions of food shortages and the mass absence of breast milk. Much merit in this belongs to Professors A.F. Tur and M.N. Nebytova-Lukyanchikova, employees of the food station and dairy kitchen S.I. Polyakova, N.V. Balinskaya, V.B. Kisileva and others [24]. The Institute undertook the development of children's diet, the introduction of new dishes from various substitutes and substances not previously used for the purposes of mass, especially children's, nutrition. To coordinate issues related to the rational nutrition of children, in June 1942, under the chairmanship of Y.A. Mendeleva and the head of the Department of Hospital Paediatrics, Professor A.F. Tur, the Children's Nutrition Council began to operate under the City Health Department.

From the spring of 1943 the research work was intensified despite the ongoing blockade and increased artillery bombardment. The work of the laboratories of the Institute resumed, which made it possible to study various special issues of treatment and nutrition in greater depth. The scientific subject matter expanded with the study of hypertension. As Y.A. Mendeleva wrote, "nothing broke the research thought and creative initiative of the Institute's scientific workers. Despite their employment in the educational process, in the work of helping the wounded, in the defence and reconstruction work, in the absence of journal literature, the team worked with enthusiasm and great productivity" [15]. All departments of the Institute were included in research work.

Undoubtedly, paramount importance was given to a comprehensive study of alimentary dystrophy, its external manifestations, lesions of various organs, individual course of the disease, layering of other diseases (pneumonia, tuber-

culosis, dysentery, scarlatina, measles, chronic infections, etc.), significantly complicating the course and treatment of dystrophy and avitaminosis. Cases of alimentary dystrophy began to be registered already in November 1941 due to a sharp lack of protein in the food, and in December this disease became so widespread that all other diseases receded into the background (Fig. 3). In the winter of 1941/42, hospitals were overcrowded with such patients in the most serious condition, some of whom died within the first day or even in the first hours of admission.

According to data from the LPMI hospital for dystrophy patients, 64.5% of all patients were between 9 and 15 years of age. Children of this age found themselves in particularly unfavourable conditions during the hungriest months of the blockade (from November 1941 to March 1942). The dependent food rations they received were insufficient; most of them were not covered by public meals, many children experienced great physical strain, helping the family, working, participating at night in extinguishing incendiary bombs, etc. [7]. About 25–30% of dystrophy patients had clinically diagnosable oedema. Innovative were the developments of pathogenetic treatment of dystrophy and its complications proposed by our paediatricians A.F. Tur, A.B. Volovik, E.I. Fridman and others. Depending on the indications, a complex of measures was applied: the diet therapy, enzyme therapy, vitamin therapy, blood transfusion, physiotherapy, physical therapy, therapeutic exercise, antibacterial therapy, as well as "the correct construction of the daily regime and education of the child in relation to unusual living conditions", strict consideration of the individual characteristics of each child, and most importantly "it is impeccably devoted, conscientious and loving attitude to the work of all the staff" [29]. Hospitalism was actively controlled (Fig. 4).

Fig. 3. A child with nutritional dystrophy in the LPMI clinic. 1942

Рис. 3. Ребенок с алиментарной дистрофией в клинике ЛПМИ. 1942 г.

Table 1

Distribution of sick children by disease diagnoses (as a percentage of the total) as of January 1, 1941–1944 in the clinics of the Leningrad State Pediatric Medical Institute (according to the report of the chief physician D.S. Tumarkin) [7]

Таблица 1

Распределение больных детей по диагнозам болезней (в % к итогу) по состоянию на 1 января 1941–1944 гг. в клиниках Ленинградского государственного педиатрического медицинского института (по данным отчета главного врача Д.С. Тумаркина) [7]

Заболевания / Diseases	На 01.01.1941 г. (за 1940 г.) / On 01.01.1941 (for 1940)	На 01.01.1942 г. (за 1941 г.) / On 01.01.1942 (for 1941)	На 01.01.1943 г. (за 1942 г.) / On 01.01.1943 (for 1942)	На 01.01.1944 г. (за 1943 г.) / On 01.01.1944 (for 1943)
Инфекции острые и хронические / Infections acute and chronic	34,6	20,6	9,7	19,1
Болезни органов дыхания / Respiratory diseases	22,0	10,8	5,1	16,4
Болезни органов пищеварения / Digestive diseases	8,4	6,4	3,4	13,9
Травмы бытовые / Domestic injuries	4,5	2,2	0,5	3,7
Болезни нервной системы / Diseases of the nervous system	3,9	3,1	4,3	6,4
Авитаминозы / Vitamin deficiencies	0,4	1.1	4,1	3,2
Прочие болезни / Other diseases	20,2	20,6	20,0	19,4
Военные ранения / War wounds	–	7,4	1,4	–
Дистрофии алиментарные / Nutritional dystrophies	–	27,8	45,6	17,9
	100%	100%	100%	100%

Fig. 4. At the LPMI clinic

Рис. 4. В клинике ЛПМИ

Table 1 gives information on the structure of patients in the LPMI clinic, depending on the diagnosis.

As can be seen from Table 1, in 1942 there was a sharp rise in diseases of dystrophies and avitaminosis; this group of children accounted for almost 50% of all patients in our clinics. Since 1943, with the improvement of material and living conditions of the inhabitants of Leningrad, there was a decrease in the incidence of dystrophies. Thus, according to the materials of our hospital, the number of patients with dystrophies in 1943 decreased to 17.9% (almost 3 times), and the number of patients with avitaminosis — to 3.2%. In 1944 single cases of dystrophy in children were observed, if we do not count chronic forms such as atrepsia and hypotrepsia [22]. The efforts of doctors in 1944 were aimed at complete elimination of specific blockade pathology.

Fig. 5. Professor A.N. Antonov

Рис. 5. Профессор А.Н. Антонов

A.F. Tur was an active member of the Committee for the study of alimentary dystrophy and avitaminosis, established at the State Health Department of Leningrad Region on 21 April 1943, headed by the famous therapist Professor M.V. Chernorutsky. Along with the organisational, methodological and clinical study of symptomatology, pathogenesis and pathogenetic treatment of alimentary dystrophy, in 1944–1945 the Committee had the task to focus on the symptoms, pathogenesis and pathogenetic treatment of alimentary dystrophy. The Committee set a task to focus on complications and consequences of dystrophies, pellagra and

neuropsychiatric disorders in them. It was found that the LPMI staff prepared the largest number of papers on this subject — a total of 85 [12].

Throughout the war and blockade years, the LPMI operated an obstetric clinic and a department for newborns and premature babies. In the winter of 1941–1942, the total mortality rate of newborns increased, reaching 35–37%. A detailed clinical and statistical characteristic of newborns during the blockade of Leningrad was given by Professor A.N. Antonov of the Department of Hospital Paediatrics (Fig. 5). He wrote: "During the period of particularly deep starvation (the 1st half of 1942), the number of stillbirths more than doubled against the usual (up to 5.6%), the number of children born prematurely reached unprecedentedly high figures (41.2%). The number of high birth weight babies born prematurely fell sharply and, conversely, the number of low birth weight babies rose sharply. Physiological weight loss lasted longer than usual and the average weight loss was higher than usual. The morbidity of newborn infants during this period was unusually high (32.3%), which must be partly attributed to their low vitality. Among the diseases, scleredema and scleraemia and pneumonia ranked first" [1].

All this was due to the severe degree of quantitative and qualitative starvation experienced by Leningrad women during the blockade, which affected the course and outcome of pregnancy and the condition of newborns.

According to A.F. Tur, in pre-war times the number of premature babies in Leningrad did not exceed 9–10% of all live newborns, in January 1942 the number of premature babies reached 40.8%; in March — 62%; in the fourth quarter of 1942 — 20.0%; in December 1943 — 17.0%, in the first half of 1944 — 11.8% [28].

I.I. Bogorov, head of the LPMI Department of Obstetrics, noted: "We were losing more than one third of the babies born; this, of course, was very sensitive given the extremely limited number of children born at that time" [2]. The high rate was explained mainly by the high percentage of premature babies. At the same time, all groups of newborns had a higher mortality rate compared to peacetime. Thus, up to 50% of premature babies died (before the war this figure was no more than 22–26%), and 12% of full-term babies died (before the war this figure was no more than 1.5–2%).

A.F. Tur already at that time paid special attention to the cause of death of such children, which was not yet recognised by all: "We take the liberty to state categorically that although these were premature babies, although they were born to mothers who were severely malnourished, often with severe manifestations of scurvy and sometimes even died soon after birth, the main cause of death of such children was not their congenital inferiority, but those defects of service, which, unfortunately, took place in individual cases, in particular, improper nutrition and severe cooling of the nevborn... This is confirmed by the fact that we have been able to preserve the lives of the great majority of such defective children from the same sick and weak mothers, if they were not subjected to significant cooling in maternity institutions, if at the time of admission to the clinic they did not have extensive and sharp manifestations of scleraedema, and their rectal temperature was not lower than 36.0–36.5 °C" [29].

According to the city maternity hospitals, gradually, beginning in the second half of 1943, the negative impact of the blockade on women's reproductive health began to recede, and this can be clearly seen in the birth rates both in the city and in the maternity hospital at LPMI. The birth rate in Leningrad in 1940 was 25.1 per 1000 population, in 1941 — 25.0‰, in 1942 — 6.4‰, in 1943 — 12.6‰, in 1944 — 30.5‰, in 1945 — 38.0‰ [10]. Accordingly, the number of births decreased compared to 1940: in 1942 — 7.9 times, and in 1943 — 10.4 times. The real growth of the birth rate begins in 1944.

And here are the data for the LPMI maternity hospital on the number of births that were delivered by quarters 1941–1944:

- 1941: III quarter — 651, IV quarter — 418.
- 1942: I quarter — 450, II quarter — 176, III quarter — 65, IV quarter — 20.
- 1943: I quarter — 88, II quarter — 135, III quarter — 118, IV quarter — 280.
- 1944: I quarter — 338.
- Number of children born by half-years 1941–1944:
- 1941 2nd half-year — 1049;
- 1942 1st half-year — 409, 2nd half-year — 84;
- 1943 1st half-year — 217; 2nd half-year — 387;
- 1944 1st half-year — 636 [22].

With the improvement of nutritional and daily living conditions of pregnant women, there was a gradual recovery of the physical condition of newborns and their reactions to various pathogenic factors approaching to the norm.

The study of physical development indicators of children, including newborns, in LPMI was conducted at the Department of Health Care Organisation under the guidance of Y.A. Mendeleva and S.A. Novoselsky [20]. The materials included case histories of the obstetric clinic of LPMI and other maternity hospitals, as well as reporting data from 18 nurseries in Leningrad. The war and the blockade had an extremely unfavourable effect on the physical development of Leningrad newborns: according to the data of the LPMI obstetric clinic, in 1942 their average body weight decreased, compared to 1940, on average by more than 600 g, height — by 2 cm, head and chest circumference — by almost 1.5 cm [17]. The scientists of our Institute developed recommendations providing for a significant strengthening of measures to protect the health of pregnant women and children, especially with regard to their proper nutrition (proteins, fats, vitamins). The restoration of the physical development of newborns in Leningrad to the pre-war level was facilitated by careful measures for antenatal prophylaxis.

Anthropometric examination of creche kids also showed some lag in weight and height of these children from average norms, and it was more pronounced for weight than for height. The lag in height of creche children (by 4–5%) was observed at all ages from the first month of life to 3 years of age [20].

A sharply reduced nutrition was observed in 1942 among children of preschool age. 50–60% of children in kindergartens had signs of dystrophy of II–III degree. According to medical examinations, in some schools 96 % of children suffered from dystrophy and rickets. These children were taken under careful observation and were given appropriate therapy. Surveys of preschool and school-age children in kindergartens and schools in Leningrad at the end of 1943 also revealed a lag in their physical development. The average height lagged behind in all age groups within 1.5–5.5 cm. There was no lag in average weight at the age of 3–5 years, while children aged 6–14 years had a lag of 1–3 kg, more pronounced in the groups of 13–14 years [20]. Improvement of physical development indicators began in 1944. According to the data of polyclinics, in 1945, 83–93% of children had normal physical development.

The pathology of children changed significantly during different periods of the blockade, and paediatricians carefully monitored these changes. Thus, in 1941–1942, during the most severe period, a number of diseases became very rare, for example, children were almost free of croup pneumonia, rheumatism, sore throats, scarlatina, acute nephritis, bronchial asthma, i.e. diseases in the pathogenesis of which the increased reactivity of the organism plays a decisive role. In addition, paediatricians noted significant changes in the course of some diseases: while some diseases took a more benign character (the same scarlatina), others were very severe. Tuberculosis took one of the first places among the diseases that were characterised by a particularly severe course during this period. The nature of dysentery changed: the acute toxic forms disappeared — prolonged forms with scanty clinical manifestations began to dominate, which, however, adversely affected the course and outcome of alimentary dystrophy.

In 1943, according to the memoirs of A.B. Volovik: “Living conditions in the autumn-winter period of 1942–1943 became more favourable. This had a positive impact on the work of children’s institutions. Alimentary dystrophy, avitaminosis became less frequent. The state of health of women in labour improved, lactation of mothers increased, and milk donation points at children’s consultations began to work again. Nutrition of children in crèches and kindergartens, school canteens approached the pre-war norms in caloric content. The therapeutic capabilities of children’s hospitals improved; paediatricians began to use haemotransfusions, sulphonamides, vitamins more widely. This led to a further reduction in hospital lethality. At the end of 1942 it was 5%, by the summer of 1943 it decreased to 0.94%, i.e. almost 5½ times” [4].

In 1943 there was a sharp decline in the incidence of dystrophies and avitaminosis. At the same time, a number of other diseases, such as tuberculosis, diphtheria, bronchopneumonia, acquired a more favourable course. Chicken pox, mumps, and pneumonia also had more typical clinical picture, which was then regarded as an increase in resistance, immunity, and general reactivity of the children’s organism compared to 1942 [5]. In 1943 bronchial asthma, diffuse nephritis, rheumatism, and croup pneumonia were not widespread. However, in the first half of 1943, according to A.F. Tur, the number of children with severe rickets, mainly children aged 3–4 years, increased sharply [28]. The number of children with neuropsychiatric diseases increased.

Fig. 6. Professor A.F. Tour — the first chief pediatrician of Leningrad

Рис. 6. Профессор А.Ф. Тур — первый главный педиатр Ленинграда

In 1944, along with the almost complete elimination of alimentary dystrophy and avitaminosis, the incidence of croup pneumonia increased, characterised by a severe course and a rather high mortality rate, which was explained by the refusal of hospitalisation and the predominant treatment at home [3]. Bronchial asthma, rheumatism and acute nephritis appeared again.

Exceptional attention was paid to the epidemiological situation in Leningrad. In the first months of the war, due to the rapid advance of the Nazis, a mass of refugees arrived in the city, which created conditions for the outbreak of infectious diseases. This was aggravated by the fact that during air raids the population took refuge in bomb shelters. Children's institutions often completely switched to living in bomb shelters. Particular attention was paid to preventing the introduction of infections. There was no reduction in the requirements for strict isolation of groups of children, and contacts with outsiders and adults were restricted. The special situation in Leningrad during the siege period created conditions that had an inhibiting effect on the development of infections: the decline in the birth rate, the reduction and cessation of population migration, the transfer of children almost entirely to boarding school life, the fragmentation of children's contingents and limited meetings between them. Later, in 1944, A.F. Tur wrote that it was not quite possible to prevent intra-institutional infection of children [29]. This was explained by the fact that, for example, the bomb shelter of our Institute, where the children lived, at first had contact with adjacent compartments where outsiders took shelter and children living on the territory of the Institute slept. Measles and chickenpox spread from here; the source of diphtheria was unknown. There was a small outbreak of colitis-like intestinal diseases during the period of greatest difficulty with water and food supply. There was also a relatively large number of catarrhal conjunctivitis associated with the use of "smokestacks" for lighting, dust from concrete floors and poorly whitewashed walls.

An important scientific fact was the first inoculation of young children against typhoid fever, which was due to the fact that in February 1942, cases of typhoid fever appeared in the children's home on Zagorodny Prospect. A special inoculation commission headed by A.F. Tur was promptly set up, the tasks of which included control over the vaccination of children from the age of 2, which was the first in the country. This shows how responsive the Institute was to changes in the situation in the city and developed the measures required at that time.

Let us name two more examples of important organisational innovations in 1942–1943. Of great importance was the introduction of the

Fig. 7. Professor A.B. Volovik

Рис. 7. Профессор А.Б. Воловик

Fig. 8. Professor E.I. Friedman

Рис. 8. Профессор Э.И. Фридман

posts of children's doctor of the city, due to the Decree of the CPC of the USSR No. 1739 and the Order of the People's Commissariat of Health of the USSR of 3 November 1942 No. 531, which approved the Regulations on the children's doctor of the city, urban district, working settlement [30]. The children's or head doctor of the city was appointed in each city to ensure the organisation of proper medical and preventive care for the child population, he was responsible for the medical care of children of all ages and for the quality of work of children's institutions. In Leningrad at the end of 1942, the position of the first chief paediatrician was held by A.F. Tur, and district paediatricians by A.B. Volovik, E.I. Fridman and others (Figures 6–8). The introduction of these posts contributed to a more effective coordination of the paediatric service of the city.

During the war, the number of paediatric institutions decreased due to their location in the dangerous zone of the city and shelling, and the number of medical personnel also decreased. Thus, by 1942 there were only 28 children's consultations and 17 children's polyclinics [18]. The living conditions of besieged Leningrad forced to restructure the system of polyclinic care for children. At the end of 1942, the Department of Health Care Organisation (Head of the Department Y.A. Mendeleva) of the LPMI together with the management of Children's Consultation No. 16 and Children's Polyclinic No. 21 of the Sverdlovsk District (N.G. Sinyavskaya) developed a methodology for the work of a united institution: a children's consultation providing therapeutic and preventive care for children from 0 to 3 years old and a children's polyclinic providing therapeutic and preventive care for children from 4 to 16 years old [25]. In 1943 the unification of these institutions began in the city; the organised united consultation-polyclinic (35 in 1943 and 36 in 1944) worked on the principle of a single paediatrician and provided care to children from birth to 16 years of age. The main method of work was patronage of children of all ages. The transition to the new system in 1943–1944 had a positive effect on the health of children, allowed timely hospitalisation of the weakened and sick. At the All-Union meeting on children's health care, convened by the People's Commissariat for Public Health of the USSR, held in Moscow on 9–11 March 1943, with great interest and excitement was heard the speech of Professor Y.A. Mendeleva, Director of the LPMI, who told about the heroic everyday life of children's health care workers in Leningrad during the harsh days of the blockade. A.F. Tur told the participants of the meeting about the organisation of nutrition in blockaded Leningrad. Deputy People's Commissar of Health M.D. Kovrigina positively evaluated the new experience of polyclinic work in our city and proposed to spread this experience to other territories of the country [8].

The reorganisation of polyclinic care contributed to a more careful monitoring of children's morbidity, especially infectious diseases, and to the mandatory implementation of general and special anti-epidemic measures, including

vaccinations: compulsory smallpox vaccination, BCG vaccination and revaccination when, anti-diphtheria immunisation, and phagination of children as a measure to combat gastrointestinal diseases. In 1943, Leningrad was still a closed city, and there was no importation of infection from outside. However, wariness about the possible spread of epidemics among the child population contributed to the issuance of the Order of the Commissioner of the State Defence Committee for anti-epidemic measures of the People's Commissar of Health of the USSR No. 28 of the 22nd of July 1943 "On preventing the spread of acute infections among children" [23]. Clear instructions were given on measures to combat diphtheria, measles, whooping cough, as well as on smallpox vaccination.

In connection with the complete breakthrough of the blockade in the spring of 1944, the gradual return of Leningrad residents from evacuation to their native places, including the staff and students of LPMI, began. Reevacuation to Leningrad was carried out in accordance with the Decree of the USSR State Defence Committee of the 29nd March 1944 [9]. Unfortunately, among the staff there were those who died at the front, died during the blockade and in the evacuation. In LPMI, and now in SPbSMU, remember and honour their unparalleled feat and courage. In July-August 1944 the teaching staff of LPMI began active preparation for the new academic year in liberated Leningrad.

Gradually, the population in the city, including children, increased. In 1944 the re-evacuation was still in very small numbers, but there was an outbreak of diphtheria and a measles epidemic in Leningrad. Thanks to the widespread use of anti-mumps serum, measles was quite easy to get. Employees of the Institute closely monitored the disease pattern, took all necessary measures to break the chain of infection. Immediately special classes were organised for paediatricians at the LPMI, where recommendations were given on the necessity of thorough patronage of arriving children, on methods of early diagnosis, treatment and prevention of measles. In 1944, the Leningrad State Health Department developed the "Instruction on the procedure for monitoring children arriving in Leningrad". Control over the necessary measures was entrusted to the Anti-Epidemic Department of the Leningrad Health Department, where information on arrivals was concentrated.

In the same year, there was an increase in the number of pyoderma and scabies, Leiner's desquamative erythroderma and eczema. Therefore, in 1944, the number of patients increased in the skin department of the LPMI, which had 35 beds.

Peculiarities and dynamics of morbidity dictated the profiling of beds in children's hospitals, and in 1944 the number of beds for infectious patients increased. Here are the data on the Clinical Hospital of LPMI. If in some months of 1941–1942 the number of beds was reduced to 500–600, then for 1943 and 1944 the USSR People's Commissariat for Health was determined by the USSR Ministry of Health to increase the number of beds for infectious patients. People's Commissariat of Health of the USSR determined 800 full-time beds. By 1944 the bed fund of the Clinical Hospital was distributed by specialities as follows:

- somatic paediatric beds — 225;
- tuberculosis beds — 50;
- surgical — 50;
- obstetric-gynaecological — 110;
- infectious — 130;
- dermatological — 35;
- beds for premature babies — 45;
- beds for adult therapeutic patients — 50;
- paediatric physiological beds — 35;
- beds for nervous patients — 15;
- for newborns — 55 [22].

The mass re-evacuation of Leningrad residents was already taking place in 1945. Children with their parents and children's groups were returning from various parts of the Soviet Union. Children fell ill while travelling and arrived in Leningrad at the full extent of the disease. For example, malaria, intestinal infections, etc. were brought in.

The indicators of infant mortality, which in those years was called child mortality, were studied by S.A. Novoselsky and his colleagues throughout all the years of the war and blockade (Fig. 9). The most unfavourable year for infant mortality was 1942, when, as a result of the deprivation of the blockade, the rate reached a huge 74.8% [19]. In 1943, the mortality rate began to decline sharply, and in 1944 it almost reached the pre-war level — 17.8%. Among the causes of mortality in the first year of life in Leningrad in 1944 the leading place was occupied by pneumonia — 75.3% (3.7% in 1939). The second place was occupied by acute gastro-

intestinal diseases — 47.3% (50.4 % in 1939). In 1944 mortality from prematurity and congenital weakness decreased — 9.8 and 0.5% respectively (14.1 and 2.8% in 1939). There were no cases of deaths from dystrophy and avitaminosis in the group of children aged 0 to 1 year in 1944.

Thus, the experience of the war period and the experience gained by LPMI doctors during the war and the blockade in the treatment and prevention of somatic and infectious pathology in children, in the study of the dynamics of their physical and psychomotor development, in the analysis of morbidity and mortality, and in the organisation of therapeutic and preventive care for children, made it possible to create a whole body of information and ideas concerning the physiology and pathology of children, including newborns and premature babies, and to develop a set of recommendations for treatment, nursing and rehabilitation. Many health indicators by the end of the war had reached pre-war levels, and the infant mortality rate in 1945 was even lower than in 1940.

The quantitative results of the scientific work of the LPMI staff are also impressive. In 1942, 26 papers were drawn up and monographs and textbooks were prepared for printing. In 1943 several monographs and textbooks, dozens of journal articles were prepared, 1 doctoral and 7 candidate dissertations were defended. In the first quarter of 1944 10 journal articles were finished, one doctoral dissertation and two candidate dissertations were defended, and for the whole 1944 130 works were completed. In total, during the war 6 doctoral and 23 candidate dissertations were defended, 165 journal articles were presented, 6 collections of works were published, which reflected the collective experience of our scientists [16].

The works of Leningrad paediatricians made up the entire fourth issue of the journal "Paediatrics" for 1944. The editorial article of the journal stressed: "Let this issue of «Paediatrics» remain a historical monument to the selfless work of paediatricians of Leningrad for the benefit of the children of that long-suffering city, the desire of paediatricians to scientific work, which could not be hindered by any external conditions. Honour and glory to the heroic paediatricians of the city of Lenin!". [21]. In addition, this issue contains a bibliography compiled by A.F. Tur, including 127 works of Leningrad paediatricians, performed in 1941–1944.

Fig. 9. A. Novoselsky is one of the founders of sanitary and demographic statistics

Рис. 9. Профессор С.А. Новосельский — один из основателей санитарной и демографической статистики

Since 1943, the Institute was again able to train postgraduate students, in 1944, 6 postgraduate students were trained in the spring, and since autumn 1944, according to the deployment of the People's Commissariat of Agriculture of the USSR, their number was increased to 11.

Students were also involved in the scientific work of the departmental staff. The first student scientific circles in LPMI were organised as early as 1934, they were established at the departments of hospital and faculty paediatrics, hospital surgery, inorganic chemistry, physics, psychiatry. The student scientific society at the Department of Therapy under the leadership of Professor V.A. Waldman was very active. Students were involved in the scientific work of the department, helped doctors in studying the outbreak of hypertension in Leningrad. V.A. Waldman organised a student scientific conference, which was a great success, at which 10 reports were presented by students of all courses.

The work of the Scientific Society of Paediatric Physicians of Leningrad, which resumed its work in May 1942, also contributed to the intensification of scientific work and the rapid introduction of new achievements into practice. Before the war, Professor M.S. Maslov, Head of the Department of Paediatrics at the LPMI, was the Chairman of the Society. Since he also

headed the Department of Paediatric Diseases at the Military Medical Academy, he was in Samarkand with the beginning of the war. The duties of chairman during these years were entrusted to Y.A. Mendeleva and A.F. Tur, who had been vice-chairmen of the Society before the war. The secretary of the Society, as in the pre-war years, was O.P. Timofeeva, an assistant professor of the Faculty Department of Paediatrics. Y.A. Mendeleva recalled: "During the difficult period of the blockade the Society played a great positive role; in those days its meetings were especially crowded and the most burning issues requiring urgent solution were solved. Reports were made on dystrophy, scorbuta, nutrition, preventive and therapeutic services for children, etc. The accumulated experience was shared with the doctors who remained in Leningrad, who in large numbers, despite the danger of the moment, flocked to these meetings, showing us the keenest interest. I should note that the main workers of our Institute were always active members of the Society and brought to its discussion all their scientific and practical achievements. The work of scientific thought did not weaken. All of us fought to save children's lives, fought hard, while accumulating great experience" [15]. The meetings were held on the LPMI campus in the 3rd auditorium. There was so much interest from paediatricians that the auditorium was always full [6].

The meetings were organised quite often: in 1942, 18 meetings were held, attended by 1900 people and 20 reports were heard [27]. The most urgent topics were discussed: the organisation of care for children in war and blockade conditions, dystrophies and avitaminosis, their influence on the course of other diseases, the fight against gastrointestinal and infectious diseases, including typhoid and typhus in children, and others.

In the same year several joint meetings were held with the Society of General Practitioners, phthisiatrists and obstetricians and gynaecologists, at which common topics were discussed, including pneumonias, specific anti-tuberculosis prophylaxis, organisation of care for premature babies, etc. On 26–27 December 1942 at the joint conference of therapists and paediatricians on alimentary dystrophy, hypo- and avitaminosis in adults and children, organised by the Leningrad State Health Department, 6 reports were presented by the Society of Children's Physicians, among the authors were professors A.F. Tur, E.I. Fridman, A.B. Volovik, docent E.I. Rautenstein.

In 1943 at 17 meetings of the Society, which gathered 1672 people, 33 reports were heard. On 21.07.1943 a solemn meeting dedicated to the 25th anniversary of the People's Commissariat of Health of the RSFSR was held, at which Professor Y.A. Mendeleva made a report "25 Years of Health Protection in the Soviet Union and the tasks of the Society of Children's Doctors". Professor S.S. Mnukhin made a report "On mental disorders in the case of alimentary dystrophy". Two special meetings in 1943 aroused great interest: at one of them N.G. Sinyavskaya made a report "Experience of the work of a single paediatrician", and as a result of the discussion a number of practical conclusions of an organisational nature were drawn. At the second session, held jointly with representatives of the city health department, measures were proposed to prevent and combat summer diarrhoea in children, which is the main cause of death in children, especially in the early years. At this session, reports were made by Associate Professor S.I. Volchok and P.M. Budrevich. In the same year, 5 combined sessions were given. Two of them jointly with therapists: 24.03 — on blood transfusion and 21.09 — on infectious jaundice. Two meetings of paediatricians and phthisiologists discussed specific prophylaxis of tuberculosis. A joint meeting of paediatricians and obstetricians was devoted to the management of the neonatal ward and the development and nursing of premature babies (speakers — Professors A.F. Tur and M.S. Frangulova.

In 1944 at the meetings of the Society were heard the reports acquainting doctors with new clinical observations and wartime experience: the report of Professor A.B. Volovik "On the peculiarities of the course of pneumonia in dystrophics", Associate Professor V.N. Ofitserov "Clinical observations on the course of dysentery in Leningrad in 1943" Kazakova and Cherna "Coprological Characteristics of Dysentery", Shumyatskaya "Saliva Secretion in Dystrophic Children", Professor E.I. Friedman "Pathogenesis of Some Forms of Anaemia", K.P. Glukhova "Capillaroscopy and Venous Pressure in Dystrophies and Scorbuta in Children" and others. Just as in the previous two years, several joint meetings with topical agenda were held.

In 1944, the Soviet government issued several decrees on maternal and child welfare aimed at strengthening assistance to mothers, pregnant women and children. The most important of them was the Decree of the Presidium of the Supreme Soviet of the USSR dated the 8th of July 1944 "On increasing state aid to pregnant women, mothers with many children and single mothers, on strengthening the protection of motherhood and childhood, on establishing the honorary title «The heroine mother» and on establishing the Order «The mother's glory» and the medal «The medal of motherhood»". According to this Decree, the maternity period for mothers was increased from 63 to 77 days, from the 4th month of pregnancy women were exempted from overtime work, and nursing mothers were exempted from night duty. The decree was issued shortly after the lifting of the siege of Leningrad and coincided with the moment of mass return of the population to Leningrad and an increase in the birth rate. The implementation of the decree was carried out simultaneously with the restoration and expansion of the network of paediatric and obstetric institutions [14]. Leningrad paediatricians and obstetricians, including LPMI specialists, were actively involved in the work to improve medical and preventive care for women and children. Already in 1946, 9 children's polyclinics, 4 children's homes, 16 nurseries, 9 milk kitchens were opened in Leningrad, specialised care for mothers and children was developed, and the health indicators of Leningrad children improved.

For its work during the Great Patriotic War, the LPMI received many commendations and diplomas from the People's Commissariat of Health of the USSR, Leningrad City Council and Vyborg District Council. The Motherland highly appreciated the heroic work of the LPMI staff: over 200 employees of the Institute were personally awarded with certificates of the District Council and the Leningrad City Council, 50 people were awarded with the badge "An excellent healthcare worker", 42 were awarded with orders and medals of the USSR, 1420 were awarded with the medal "For the defence of Leningrad".

Let the lines of the poet Vera Inber, who lived in Leningrad during these years, was well acquainted with Y.A. Mendeleva, visited the Institute and wrote about its work, be a dedication to all employees who worked during the war and blockade in LPMI [13].

Glory to you, who in battles
Defended the banks of the Neva.
Leningrad, which never knew defeat,
You shone a new light on Leningrad.
Glory to you too, great city,
which united front and rear.
In unprecedented hardships
Did stand firmly. Did fight. Did win the fight.

ADDITIONAL INFORMATION

Author contribution. Thereby, all authors made a substantial contribution to the conception of the study, acquisition, analysis, interpretation of data for the work, drafting and revising the article, final approval of the version to be published and agree to be accountable for all aspects of the study.

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