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THE MAIN RISK FACTORS FOR DEVELOPING ACUTE PRIMARY AND RECURRENT STENOSING LARYNGOTRACHEITIS IN CHILDREN IN OUR REGION

²Kobilov E. E., ¹Uralov Sh. M., ¹Mamutova E. S., ²Tuxtaev M. K., ²Nekbaeva F. Z., ³Jamolov A. K.,
³Tuxtaeva N. M.,

¹Samarkand State Medical Institute, ²Samarkand State University,

³Siyabsky Medical College

✓ Resume

Acute stenosing laryngotracheitis (OSLT) is one of the most frequent and severe manifestations of acute respiratory viral infections accompanied by respiratory disorders - является острый стенозирующий ларинготрахеит (ОСЛТ). OSLT belongs to the category of life-threatening conditions, which require urgent medical and diagnostic intervention. Features of OSLT in children are the predominant occurrence at an early age and the rapid increase in the picture of acute respiratory failure. Mortality among children with OSLT varies from 0.4 to 5 %, and with the development of end-stage, laryngeal stenosis reaches 70%. A number of risk factors that can affect the formation of the disease plays an important role in the development of OSLT. To develop evidence-based measures to provide emergency care to children with acute respiratory infections (ARI) accompanied by OSLT, it is necessary to establish relationships between health indicators and risk factors for the adverse course of this pathology in children.

Keywords. Children, acute primary and recurrent stenosing laryngotracheitis, risk factors for development.

ОСНОВНЫЕ ФАКТОРЫ РИСКА РАЗВИТИЯ ОСТРОГО ПЕРВИЧНОГО И РЕЦИДИВНОГО ЛАРИНГОТРАХЕИТА У ДЕТЕЙ В НАШЕМ РЕГИОНЕ

²Кобиллов Э. Э., ¹Уралов Ш. М., ¹Мамутова Э. С., ²Тухтаев М. К., ²Некбаева Ф. З., ³Жамолов А. К.,
³Тухтаева Н. М.,

¹Самаркандский государственный медицинский институт,

²Самаркандский государственный университет, ³Сиябский медицинский колледж

✓ Резюме

Острый стенозирующий ларинготрахеит (ОСЛТ) - одно из наиболее частых и тяжелых проявлений ОРВИ, сопровождающееся респираторными расстройствами - является острый стенозирующий ларинготрахеит (ОСЛТ). ОСЛТ относится к категории опасных для жизни состояний, требующих срочного лечебно-диагностического вмешательства. Особенности OSLT у детей - это преобладание в раннем возрасте и быстрое нарастание картины острой дыхательной недостаточности. Летальность среди детей с ОСЛТ колеблется от 0,4 до 5%, а при развитии терминальной стадии стеноза гортани достигает 70%. Важную роль в развитии ОСЛТ играет ряд факторов риска, которые могут повлиять на формирование заболевания. Для разработки научно обоснованных мер по оказанию неотложной помощи детям с острыми респираторными инфекциями (ОРИ) в сопровождении ОСЛТ необходимо установить взаимосвязь между показателями здоровья и факторами риска неблагоприятного течения данной патологии у детей.

Ключевые слова. Дети, острый первичный и рецидивирующий стенозирующий ларинготрахеит, факторы риска развития.

VILOYATIMIZDA BOLALARDA O'TKIR STENOZLI LARINGOTRAXEITLARNING RIVOJLANISHINING ASOSIY XAVF OMILLARI

²Qobilov E.E., ¹O'ralov Sh.M., ¹Mamutova E.S., ²To'xtayev M.K., ²Nekbaeva F.Z., ³Jamolov A.K.,
³To'xtayeva N.M.,

¹Samarqand davlat tibbiyot instituti, ²Samarqand davlat universiteti, ³Siyob tibbiyot kolleji

✓ **Rezyume**

O'tkir stenozli laringotraxeit (OSLT) - nafas olish buzilishi bilan kechadigan ARVI ning eng tez-tez uchraydigan va og'ir ko'rinishlaridan biri - o'tkir stenozli laringotraxeit (OSLT). OSLT shoshilinch diagnostika va davolash aralashuvini talab qiladigan hayot uchun xavfli sharoitlar toifasiga kiradi. Bolalarda OSLT ning xususiyatlari erta yoshda ustunlik va o'tkir nafas etishmovchiligining tez o'sishidir. OSL bilan og'rigan bolalar o'limi 0,4 dan 5% gacha, laringeal stenozning terminal bosqichi rivojlanishi bilan esa 70% ga etadi. ASLT rivojlanishida bir qator xavf omillari muhim rol o'ynaydi, bu kasallikning rivojlanishiga ta'sir qilishi mumkin. OSLT bilan kechadigan o'tkir respiratorli infeksiyalar (ARI) bo'lgan bolalarga shoshilinch tibbiy yordam ko'rsatish bo'yicha ilmiy asoslangan choratadbirlarni ishlab chiqish uchun sog'liqni saqlash ko'rsatkichlari va bolalarda ushbu patologiyaning noqulay rivojlanishi uchun xavf omillari o'rtasidagi munosabatni o'rnatish kerak.

Kalit so'zlar. Bolalar, o'tkir birlamchi va takroriy stenozli laringotraxeit, rivojlanish uchun xavf omillari.

Relevance

According to the Strategy of Actions on five priority areas of development of the Republic of Uzbekistan in 2017-2021, important tasks have been set for "Improving the convenience and quality of medical and social health services, creating a healthy lifestyle among the population", to raise the level of medical care to a new level. Currently, the primary tasks awaiting their solution are timely prevention and diagnosis, providing highly qualified medical care, including bronchopulmonary diseases in children by expanding the use of modern methods of diagnosis and treatment, which will improve the quality of life of children.

According to the data in O3 Diseases of the respiratory system occupy a leading place in the structure of childhood morbidity. They account for 70-90% of cases of seeking medical care, depending on the season of the year and the age of patients. In recent years, the number of diseases associated with bronchial obstruction syndrome has increased worldwide. Patients with a family history burdened by allergies get sick more often in 30-40% of cases, which is also typical for children who suffer from respiratory infections more than 6 times a year. Acute stenosing laryngotracheitis (OSLT) is one of the most frequent and severe manifestations of acute respiratory viral infections accompanied by respiratory disorders, is acute stenosing laryngotracheitis (ASL).

In the occurrence of stenosing Influenza, parainfluenza, adeno and MS viruses play a leading role in the development of stenosing laryngitis and laryngotracheitis. The prevailing etiological factor causing the inflammatory process in the larynx and trachea, accompanied by croup syndrome, is the parainfluenza virus. It accounts for about half of all viral quotas. Along with viruses, bacterial flora plays an important role in the development of an unfavorable (severe, complicated) course of OSLT, which is activated in acute respiratory viral infections or joins as a result of nosocomial infection.

OSLT belongs to the category of life-threatening conditions, that require urgent medical and diagnostic intervention. Features of OSLT in children are the polyethology of this condition, the predominant occurrence at an early age, and the rapid increase in the picture of respiratory failure. Mortality among children with OSL varies from 0.4 to 5%, and with the development of end-stage laryngeal stenosis reaches 70%. An important role in the development of OSLT is played by a number of risk factors that can affect the formation of the disease.

Research objective: analysis, study and identification of the main, predisposing and possible risk factors for the development and recurrence of OSLD in children.

Material and methods

During the retrospective study, we processed 912 case histories of children aged 3 months to 5 years who were hospitalized in the departments of the pediatric unit of the SFRNCMP and clinics Sammiy #2 in the last 5 years. OSLT with a single episode of stenosis (primary PSLT) was diagnosed in 418 children. In the comparison group, the diagnosis of acute stenosing laryngotracheitis with repeated episodes of stenosis (recurrent, RSLT) was established in 494 patients. Distribution of the examined children into 2 groups according to the forms of acute stenosing laryngotracheitis was carried out according to the classification of Yu. V. Mitin (2001). In the hospital, all the examined patients were subjected to clinical, laboratory-instrumental and statistical research methods.

In the course of studying and comparing the signs of the control and experimental groups, out of 49 risk factors identified by us, 26 were the most potential for the occurrence, development and recurrence of OSLD. Therefore, the information content assessment was carried out in the ratio of

these features. We evaluated the risk factors for the development and relapse of OSL using statistical methods in epidemiological analysis.

Our cohort study was aimed at finding causes and risk factors, i.e., at proving etiological hypotheses. In statistics, to compare the sample variances of two series of observations, Pearson's χ^2 Criterion is used, which is used to compare sample variances and form estimates in regression and variance analysis.

Result and discussion

Carrying out the necessary statistical studies allowed us to determine the probable risk factors for the disease in children, establish the group and degree of risk of developing the disease, and predict the possibility of relapse, which we conditionally divided into the main, predisposing and possible risk factors. Among all the examined infants were 499 (54.7%), children from 1 to 3 years were 277 (30.4%) and children from 3 to 5 years - 136 (14.9%). There were 540 boys (59.2%) and 372 girls (40.8%) among all surveyed subjects. In the group with RSLT, the number of male patients was 325 children, where it was clearly predominant over female (65.8% and 34.2%, respectively). In the second group, 215 (51.4%) boys and 203 (48.6%) girls were among the children with PSLT, so we did not notice a significant difference in the gender of patients.

Among all surveyed children under 1 year of life had OSL -54.7%, than older children (1-3 years - 30.4%; 3-5 years-14.9%). Among the total number of sick rural residents were 529 (58%) children, urban residents were 383 (42%). All the observed patients were residents of the city of Samarkand and the Samarkand region.

The characteristics of the examined patients were based on the study of risk factors for the development of the disease, including the characteristics of the premorbid background, family history, the influence of seasons, and the severity of the disease. In children with stenosis II grade II stenosis, as well as in children of the first year of life, this indicator was higher (63.9%) than in children with I grade I stenosis - 34%.

The majority of children in group 1 with MSLT (78%) developed laryngeal stenosis in the first two days after the onset of acute respiratory infection. It should be noted that among all children who were treated in hospital for the last 5 years, the following seasonality of this disease was noted. Thus, children with MSLT were most often admitted in winter (196 patients) and in spring (170 patients). 87 patients were admitted in autumn and 41 in summer. And if in relatively cold and wet periods of the year, the increase in the incidence of RSL can be compared with an increase in the activity of the corresponding viral infections, then in the summer period, pollen and food allergies may play a role as a risk factor for the development of OSL.

Studying the seasonality of PSLT, we found the following: in the winter months of the year, 161 patients were admitted, in the spring – 132, in the autumn – 86, and in the summer - 39 patients. Similarly, as in the case of RSLT, an increase in the incidence of RSLT in winter and wetter periods of time is also associated with an increase in the viral activity of pathogens. We found that 164 (33.2%) children with MSLT had at least one smoking family member. Since tobacco smoke contributes to the destruction of the upper respiratory tract epithelium, reduces the phagocytic activity of alveolar macrophages, and disrupts mucociliary clearance, passive smoking was identified by us as one of the important risk factors for croup.

Repeated cases of ARI (6 times or more) during the year were observed in 212 (42.9%) patients with MSLT. Most children with RSLT (358 patients is 72.5%) were deficient States and burdened premorbid background: 313 (63.4%) children were early translated on artificial feeding, at 278 (56.3%) in the anamnesis revealed perinatal CNS, at 222 (45%) – rickets and 481 (with 97.37%) anemia. A combination of iron-and vitamin D-deficient conditions was observed in 23.2% of the examined patients. At the same time, as a result of iron deficiency and violations of phosphorus-calcium metabolism in children, muscle hypotension, chest and spine deformities were noted, which, as is known, adversely affects the function of external respiration and contributes to a more severe course of the disease.

More frequent morbidity and severe course of RSL were observed in children with previous ante - and perinatal pathology, who were on artificial feeding, since early artificial feeding significantly more often occurred in this group of patients than natural feeding (63.4% vs. 36.6%). Among the studied family history factors, it is significant that 55% (272 children) of patients with MSLT had burdened heredity due to allergic diseases and atopy, and more often on the maternal side.

This indicator was significantly higher (63.9%) in children with RSLT with grade II laryngeal stenosis, as well as in children of the first year of life, than in children with grade I laryngeal stenosis - 34%. We noted that the most common type of asthma was that of close relatives in 15.8% of cases. This fact allows us to assume that the presence of AD in direct relatives can contribute not only to the early occurrence, but also to the aggravation of OSLT in children.

The majority of children were born full-term 851 (90.6%) children and had a body weight of more than 2500 gy. There were only 61 (9.4%) preterm infants, 26 with PSLT and 35 with RSLT. Half of the examined RSL children had a physical development disorder. At the same time, high and disharmonious physical development was more common (in 223 children, 36.4%) due to an increase in body mass index above the 90th percentile. Low and disharmonious physical development was registered in 98 (13.9%) children due to a decrease in body weight below the 10th percentile.

To carry out a systematization of risk factors for stenosis in children with different OSLT course variants, patients were divided into 2 groups. The first group consisted of 494 patients with the first and only episode of OSLT (PSLT), the second group – 418 patients with recurrent OSLT (RSLT).

The informative significance of risk factors for the development and recurrence of OSLT was calculated according to Pearson's χ^2 criteria. The reliability of the results of the epidemiological indicators of morbidity risk presented above is confirmed by a comparative analysis of qualitative signs conducted according to the χ^2 criterion, taking into account the significance level of the χ^2 criterion according to an arbitrary conjugacy table.

As the main risk factors, we selected the factors identified by us, when the Criterion χ^2 Pearson's score was more than 6,635, with $p < 0.05$. The main criteria included the older age of children, male gender, atopic dermatitis, use of folk remedies as self-treatment, winter and spring season of the year, burdened allergeoanamnesis, thymomegaly, paratrophy, LGD, food allergy, passive smoking, early transfer to artificial feeding.

The predisposing risk factors we identified were those that we identified when χ^2 criterion was used Pearson's score was more than 3,841, with $p < 0.01$. The group of predisposing risk factors included such signs as frequent respiratory viral diseases, rickets, prematurity, unfavorable social and living conditions of residence and unfavorable environmental conditions at the place of residence, complicated pregnancy, manifested by gestosis of pregnant women, bad habits in parents, primarily in the mother.

It should be noted that in further work, the criteria of the main and predisposing risk factors identified by us were generalized into a group of high-risk factors for the development of laryngeal stenosis.

In the group of possible risk factors, we selected the criteria we identified. According to which the Criterion χ^2 Pearson's score was less than 3,841, with a significance level of less than $p > 0.1$. Possible criteria included > living in rural areas, the summer and autumn season of the year, hypoxic-ischemic encephalopathy, foreign bodies of the respiratory tract, muscular hypotension, chest and spine deformities associated with rickets, and others.

Statistical processing of the study results showed that boys most often suffer from croup syndrome (Criterion χ^2 - 19,316), with a high level of significance of χ^2 ($p < 0.05$) compared to girls (respectively - 1,165 and $p > 0.1$).

We found that one of the most important risk factors for the development of recurrent OSL is the age of children. In particular, we note that although all surveyed among the most common early childhood, however, statistical analysis of the epidemiological method was revealed that the Pearson χ^2 criterion in children of older age was equal 13,486 with a high level of significance ($p < 0.05$), against those indicators in children of early age (2,273; $p > 0.1$).

A retrospective analysis of our material showed that patients with OSLT are admitted to the hospital unevenly. Among all children admitted to pediatric departments of SFRNCMP and clinics SamMI No. 2, the largest number of patients with OSLT were admitted to the hospital in the winter and autumn periods of the year, slightly less patients were admitted in the spring period of the year. The minimum number of patients admitted to the hospital was noted in the summer, which, in our opinion, is more associated with the possible allergic etiology of the disease than with viral-bacterial. Analyzing the severity of the course of the disease in patients with OSLT, it was found that children are in a more serious condition in unfavorable seasons of the year (69%), compared to summer (31%). We identified that patients with relapsing OSLT the χ^2 Pearson was in the winter season of the year - 22,710 ($p < 0.05$), spring – 19,681 ($p < 0.05$) and autumn – 1,947 ($p > 0.1$) and in the summer 2,463 ($p > 0.1$). All this highlights the relationship between the development of diseases and

the season of the year and dictates the need for rational weather prevention of the disease in unfavorable seasons of the year.

Most of the patients (529 children) lived in rural areas. Among the residents living in rural areas, the number of patients with recurrent OSLT was 328, and the number of patients with the first and only OSLT episode was 201. Their χ^2 criterion was 3,214 with a low significance level of $p>0.1$. In our opinion, unfavorable social and living conditions, as well as an unfavorable environmental situation at the place of residence, contribute to the development of recurrent laryngeal stenosis in children.

During the 1st year of life, 156 children with the first episode of OSLT and 181 children with repeated episodes of laryngeal stenosis in OSLT were breastfed. Early transfer to artificial feeding was detected in 313 patients with recurrent OSLT and in 226 patients with a single episode of OSLT (criterion χ^2 -23.952 with a high level of significance of p

Statistical analysis showed that a burdened family history of allergy was observed to a greater extent in patients with a recurrent course of OSLT (272 children), compared with patients with a single episode of OSLT (154 children). Pearson's χ^2 criterion was 18.638 (p It should be noted that such allergic diseases as bronchial asthma, pollinosis, allergic rhinitis, etc., were often detected in the closest relatives nomaternal relatives.

The exudative form of atopic dermatitis was observed in 267 children with MSLT and 96 children with PSLT (criterion χ^2 -15,380; p Episodic manifestations of food allergy were found in 63 patients of group 1 and 33 patients of group 2 (χ^2 -13,241; p Among the background conditions, the percentage of iron deficiency anemia is high, which was detected in 481 children with MSLT and in 398 children with PSLT. Although we found a large number of children with iron-deficient anemia, however, the statistical analysis according to Pearson's χ^2 criterion for anemia in patients was 0.126 ($p>0.1$), and therefore it can be concluded that iron-deficient anemia is not a risk factor for the development of recurrent laryngeal stenosis in OSLT in children.

Signs of rickets were found in 222 patients with RLT and in 163 patients with OLT. Pearson's χ^2 criterion for rickets in patients was 6,449 (p Such manifestations of rickets as chest deformity (χ^2 - 3,566; $p>0,1$), spinal deformity (χ^2 -2,976; $p> > 0,1$), as well as muscle hypotension (χ^2 - 3,253; $p>> > 0,1$) also affect the development of recurrent croup syndrome in children. Thymomegaly was detected on chest radiography in 107 patientsстимомегалия. Pearson's χ^2 criterion for thymomegaly was quite high and amounted to 14.559 ($p<0.05$), and therefore this condition was attributed to the main risk factors for recurrent laryngeal stenosis in children with OSLT, which is consistent with the literature data.

We also noted high values of Pearson's χ^2 Criterion with a high level of significance for the risk of laryngeal stenosis in children in paratrophy and lymphatic-hypoplastic diathesis (LGD) (-12,228, $p<0.05$ and 11,831, p , respectively It should be noted that children with overweight and LGD are prone to pastyness, so with any viral and bacterial disease, they may experience edema of the upper and lower respiratory tracts. Hypoxic-ischemic encephalopathy (HIE) was diagnosed in 278 children of group 1 and 167 patients of group 2. Pearson's χ^2 criterion for HIE was 3,671 with a low level of significance ($p>0.1$). >

The premorbid background of the studied patients in both groups was characterized by a high incidence of respiratory infections. Thus, frequent acute respiratory infections were detected in 212 patients in group 1 and 145 patients - in group 2. Pearson's χ^2 criterion for frequent ARI was 5.881 (p According to literature sources, OSLT in the first year of life is significantly more likely to recur in premature infants. In this regard, it should be noted that in the course of detailed processing of the data of the materials studied by us, it was revealed that the risk factors for the development of recurrent OSL in children with a sufficient level of significance also include prematurity (4,710, $p<0.01$), an unfavorable course of pregnancy associated with gestosis (5,418, p

Special attention should be paid to the high level of Pearson's criterion for passive smoking, which was 16,612 with a high level of significance (p The inclusion of passive smoking in the main group of risk factors for the development of relapses of laryngeal stenosis in children was consistent with literature data, due to the fact that as a result of passive smoking, tobacco smoke contributes to the destruction of the upper respiratory tract epithelium in children, reduces the phagocytic activity of alveolar macrophages, disrupts mucociliary clearance and leads to the development of the disease.

During statistical processing of archival material, we obtained higher indicators of Pearson's criterion χ^2 when stating social and household factors and the environmental situation on the ground. Thus, unsatisfactory social and living conditions in patients with repeated episodes of OSLT were

found in 48 cases, in patients with a single episode of laryngeal stenosis – in 30. Pearson's χ^2 criterion in this case was 5,493 (p Pearson's χ^2 criterion for the unfavorable state of the external environment associated with living in ecologically unfavorable areas, dustiness, gas contamination, use of chemicals - was 5,631 (p

It should be emphasized that despite the achievements of scientific and technological progress and the development of healthcare in Uzbekistan, in some families, the local mentality is characterized by the use of folk remedies, rubbing various oils, distrust of doctors, and turning to healers. As you know, even the use of the most "harmless" herbs can cause the development of severe reactions, up to the development of anaphylactic shock. Such "therapeutic" measures aggravate the condition of children, contribute to a later request for specialized medical care, lead to the loss of precious time, since early and targeted etiopathogenetic and symptomatic therapy of respiratory diseases in children leads to a speedy recovery and a significant reduction in the number of complications. In our study, we proved that late admission to the hospital (χ^2 - 5,422, $p < 0.01$), as well as unjustified use of traditional methods of treatment (χ^2 - 4,861, p

For the first time, we have attempted to systematize indicators that form risk factors that affect the child's body and contribute to the occurrence of laryngeal stenosis in children with recurrent OSL. At the same time, the main reliable risk factors identified in the statistical study method used by us are the older age of children, male gender, winter and spring season of the year, burdened allergeanamnesis, thymomegaly, paratrophy, LGD, food allergy, atopic dermatitis, passive smoking, early transfer to artificial feeding.

The development of relapses of laryngeal stenosis is also influenced by the identified factors identified by us as probable risk factors, such as frequent acute respiratory infections, frequent episodes of bronchial obstruction, rickets, prematurity, unfavorable social and living conditions and unfavorable environmental conditions at the place of residence, complicated pregnancy, manifested by gestosis of pregnant women, the use of folk remedies as self-treatment and later seeking specialized medical care, bad habits among parents.

At the same time, the group of possible risk factors selected by us includes living in rural areas, the summer and autumn seasons of the year, HIE, foreign bodies of the respiratory tract, muscle hypotension, chest and spine deformities associated with rickets, and others. Among the identified risk factors for the development of laryngeal stenosis in OSLT, there are signs that can be eliminated by district pediatricians, pulmonologists, allergists and independently - by parents and family members. We have designated such risk factors as manageable risk factors. There is no doubt that the risk of developing laryngeal stenosis in patients with OSLT depends on most of these factors, primarily on the number of high modifying risk factors: the more of them, the higher the risk.

Accumulation and systematization of reliable risk factors makes it possible to predict with a high degree of probability the occurrence and in the future to develop or optimize the prevention of croup syndrome in children, first of all eliminating managed risk factors.

Conclusions

A stenosing number of risk factors play a role in the development of acute stenosing laryngotracheitis, which can significantly affect the formation of the disease. We have attempted to systematize the main, predisposing and possible risk factors for the development and recurrence of OSLT in children. The course of OSLT largely depends on the presence of risk factors that have a negative impact on the course of the disease, and may further predispose to a recurrent course of the disease.

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