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ASSESSMENT OF PARENTS' COMMITMENT TO SPECIFIC TREATMENT OF CHILDREN WITH TUBERCULOSIS

© Viktoria A. Khodorenko, Yuliya A. Yarovaya, Marina E. Lozovskaya,
Ekaterina V. Maksemenyuk, Ekaterina V. Zubkova

Saint Petersburg State Pediatric Medical University. Lithuania 2, Saint Petersburg, Russian Federation, 194100

Contact information:

Viktoria A. Khodorenko — ordinator of phthisiology department. E-mail: viktoria.gliznutsa@gmail.com
ORCID 0009-0000-4879-2607

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Abstract. One of the leading factors influencing the outcome of tuberculosis is the attitude of patients to long-term combination therapy. Children's adherence to TB treatment is a problem that is not presented in domestic and foreign sources. Children with tuberculosis cannot fully appreciate the importance of adherence to therapy. The aim of the study was to assess the level of commitment of parents to anti-tuberculosis treatment of their children. On the basis of the tuberculosis department of St. Petersburg GBUZ DIB No. 3, an analysis of 30 case histories of children aged 2–13 years with an established tuberculosis infection requiring anti-tuberculosis treatment for at least 6 months was carried out. An anonymous questionnaire was conducted for the parents of patients, which included four blocks of information: data on awareness of tuberculosis infection, knowledge about the prevention of tuberculosis, determination of awareness of parents' attitude to anti-tuberculosis treatment, as well as their personal attitude to people with tuberculosis and to their children. Parents of children with tuberculosis infections revealed an insufficient level of basic knowledge about tuberculosis (30.0%), about tuberculosis prevention measures (30.0%), the need to follow long-term comprehensive anti-tuberculosis treatment (37.5%), in some cases parents' personal fear for their health (13.3%). A timely study of the factors leading to low adherence of parents to the treatment of their children will allow them to be corrected in a timely manner by conducting social and educational work and individual consultations, if necessary, providing psychological assistance.

Key words: tuberculosis; children; parents; tuberculosis therapy; adherence to treatment.

ОЦЕНКА ПРИВЕРЖЕННОСТИ РОДИТЕЛЕЙ К СПЕЦИФИЧЕСКОМУ ЛЕЧЕНИЮ ДЕТЕЙ, БОЛЬНЫХ ТУБЕРКУЛЕЗОМ

© Виктория Алексеевна Ходоренко, Юлия Анатольевна Яровая,
Марина Эдуардовна Лозовская, Екатерина Владимировна Максеменюк,
Екатерина Вячеславовна Зубкова

Санкт-Петербургский государственный педиатрический медицинский университет. 194100, г. Санкт-Петербург, ул. Литовская, 2

Контактная информация:

Виктория Алексеевна Ходоренко — ординатор кафедры фтизиатрии. E-mail: viktoria.gliznutsa@gmail.com
ORCID ID: 0009-0000-4879-2607

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Резюме. Одним из ведущих факторов, влияющих на исход туберкулеза, является отношение пациентов к длительной комбинированной терапии. Детская приверженность к противотуберкулезному лечению — проблема, которая не представлена в отечественных и иностранных источниках. Дети, болеющие

туберкулезом, не могут в полной мере оценить важность приверженности к терапии. Целью исследования было оценить уровень приверженности родителей к противотуберкулезному лечению их детей. На базе туберкулезного отделения СПб ГБУЗ ДИБ № 3 проведен анализ 30 историй болезни детей в возрасте 2–13 лет с установленной туберкулезной инфекцией, требующей осуществления противотуберкулезного лечения не менее 6 месяцев. Родителям пациентов проведено анонимное анкетирование, включающее четыре блока сведений: данные об осведомленности о туберкулезной инфекции, знания о предупреждении заболевания туберкулезом, определение осознанности отношения родителей к проведению противотуберкулезного лечения, а также их личное отношение к болеющим туберкулезом лицам и к своим детям. У родителей детей с туберкулезной инфекцией был выявлен недостаточный уровень основных знаний о туберкулезе (30,0%), о мерах предупреждения туберкулеза (30,0%), необходимости следования длительному комплексному противотуберкулезному лечению (37,5%), в ряде случаев присутствовало личное опасение родителей за свое здоровье (13,3%). Своевременное изучение факторов, ведущих к низкой приверженности родителей к лечению их детей, позволит данные факторы корректировать путем проведения социально-просветительской работы и индивидуальных консультаций, при необходимости — оказания психологической помощи.

Ключевые слова: туберкулез; дети; родители; противотуберкулезная терапия; приверженность к лечению.

Tuberculosis is a socially significant disease that remains dangerous in our time. Every year, more than 10 million people worldwide fall ill with tuberculosis, and more than 1 million people die [1]. Children account for 5–11% of the number of tuberculosis patients; the need for their long-term treatment represents a special psychological, medical and social problem [2–5].

The term “adherence to treatment” was first defined by a special report of the World Health Organization (WHO) in 2003 [6]. According to the WHO definition, adherence to treatment is the extent to which a person's behavior in taking medications, following a diet and/or other lifestyle changes corresponds to the recommendations from a doctor.

Commitment to the treatment of tuberculosis patients and their attitude to long-term combination therapy is the most important factor determining the outcome of the process [7]. Currently, low adherence to treatment is recognized as a proven factor that reduces the effectiveness of therapy and increases the risk of complications and secondary drug resistance. All this makes it difficult to achieve a clinical cure, leads to a worsening of the disease prognosis and quality of life, and also increases treatment costs [8, 9]. The determining direction in increasing adherence to treatment in adult patients is the correction of the adverse social factors during complex treatment and rehabilitation of patients [10, 11]. Commitment to anti-tuberculosis treatment in children is a problem that is poorly represented in the scientific literature. Obviously, due to psychosocial immaturity, children cannot fully appreciate the importance of adherence to therapy [12]. That

is why the main task of parents is to help children understand the importance of treatment and follow it. However, parents themselves, especially from socially disadvantaged families, do not always have an adequate attitude towards diagnosis, preventive measures and necessary therapy. Children from such families are the most vulnerable, since parents often do not consider it advisable to adhere to the treatment regimen and a set of doctor's appointments.

AIM

The aim of this study is to assess the level of adherence of parents to anti-tuberculosis treatment of their children in order to develop recommendations for increasing it.

MATERIALS AND METHODS

The analysis of 30 case histories of children from 2 to 13 years, with an identified tuberculosis infection and undergoing treatment on the basis of the tuberculosis department of infectious diseases hospital No. 3 of Saint Petersburg was carried out. All children underwent an in-depth phthisiological examination, including analysis of epidemiological anamnesis data; results of specific immunodiagnosis (Mantoux test with 2TE, a skin test with tuberculosis recombinant allergen (TRA), if indicated — *in vitro* tests: QuantiFERON test (QuantiFERON®-TB Gold) or TB-FERON test); radiological methods, including multislice computed tomography and laboratory tests. Patients were prescribed anti-tuberculosis treatment lasting from 6 to 12 months or more. The parents of the observed children were given an anonymous survey, including four blocks of information.

The first block of the survey characterized the level of awareness about tuberculosis infection in general and was aimed at analyzing knowledge about the danger of tuberculosis, ways of infection, diagnostic methods and factors influencing the course of the disease. The first block included 4 questions, 4 answer options.

The second block of the survey (5 questions) revealed the existence of knowledge about the prevention of tuberculosis. It included questions about the need for vaccination, immunodiagnosis and the regular fluorographic examination.

The third block of the survey (7 questions) determined the parents' attitude directly to the conduct of anti-tuberculosis treatment. It contained questions about the need for long-term, combined treatment of tuberculosis, the possibility of undergoing treatment at a sanatorium, as well as questions about observance of the sanitary and hygienic regime.

The fourth block (4 questions) determined personal attitude towards people suffering from tuberculosis and towards their children. Thus, in total, the survey contained 20 questions.

All parents gave voluntary informed consent to the survey.

Statistical data processing was performed using computer program STATISTICA 6.1. Data are presented as arithmetic mean \pm standard error of the arithmetic mean. To determine the reliability of differences, Student's t-test was used. Differences were considered statistically significant at $p < 0.05$.

RESULTS

The majority of the examined patients were vaccinated against tuberculosis (90.0% of children); only two children were not vaccinated; one of them had parents who refused a BCG vaccination, and the second had contraindications. Tuberculosis contact was established in 50.0% of children, and 40.0% of identified contacts were long-term: family or related. Based on the results of diagnosis of tuberculosis, the following types of tuberculosis infection were established: active forms of tuberculosis of the respiratory organs (tuberculosis of the intrathoracic lymph nodes and primary tuberculosis complex) were diagnosed in 56.6% (17 children), they were prescribed the main course of chemotherapy lasting 6–12 months; in the remaining children — residual post-tuberculosis changes and latent tuberculosis infection were newly identified — in 43.4% (13 children), they were prescribed a preventive course of chemotherapy lasting 6 months.

The results of answers to the first block of questions (awareness of tuberculosis infection) revealed that 86.6% of parents have an idea about the epidemic danger of tuberculosis, 40.0% about the ways of spreading infection, 76.6% about the clinical signs of the disease, and 30.0% about the possibility of a cure (Fig. 1).

It was noted that only 19.0% of respondents recognized the fact of having family or related contact, while this type of contact with a tuberculosis patient was established in 40.0% of patients.



Fig. 1. Assessment of the basic knowledge of parents with tuberculosis infection about the danger, spread, signs and possibilities in the treatment of tuberculosis

Рис. 1. Оценка основных знаний родителей детей с туберкулезной инфекцией об опасности, распространении, признаках и возможности лечения туберкулеза

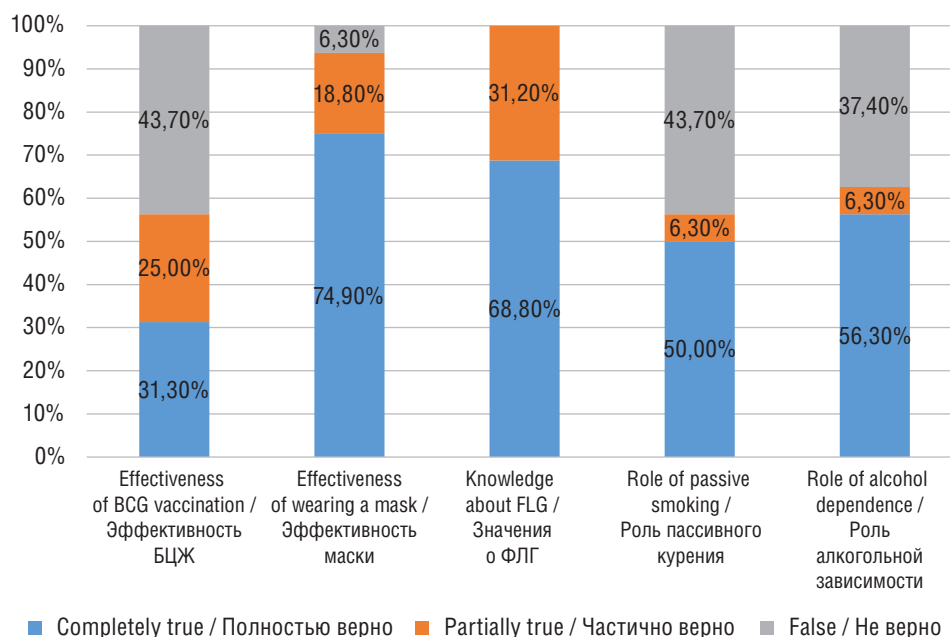


Fig. 2. Knowledge of patients' parents about measures to prevent tuberculosis. BCG – bacillus Calmette-Guerin. FLG – fluorographic examination

Рис. 2. Знания родителей пациентов о мерах предупреждения туберкулеза. БЦЖ – бацилла Кальметта–Герена; ФЛГ – флюорография

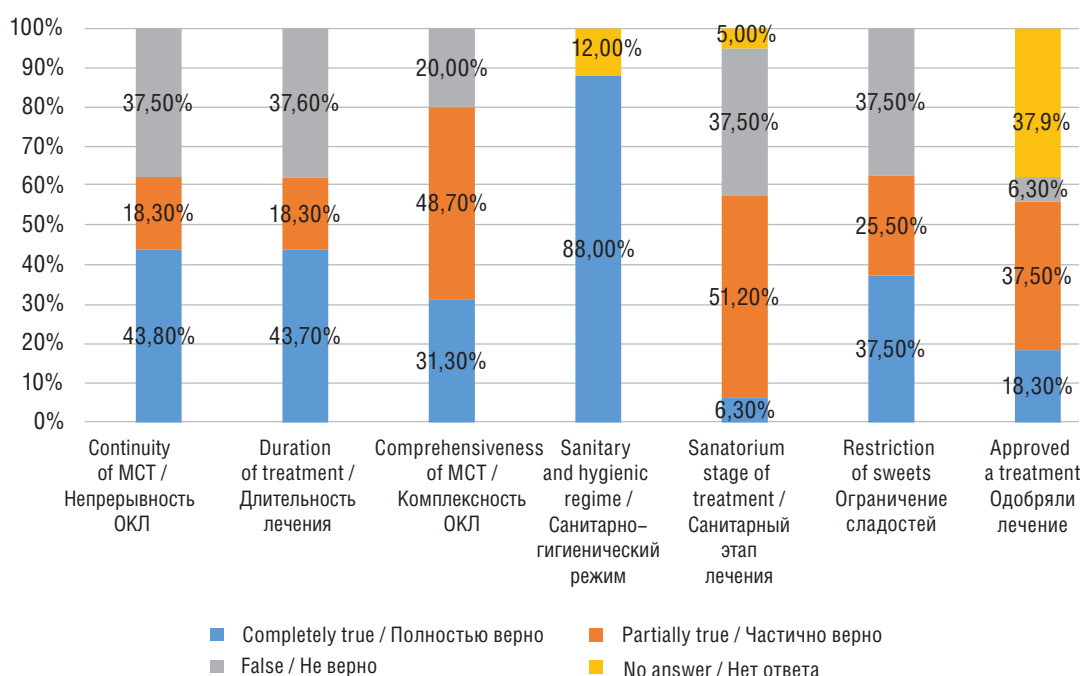


Fig. 3. Assessment of the need for comprehensive anti-tuberculosis treatment. MCT – main course of treatment

Рис. 3. Оценка необходимости проведения комплексного противотуберкулезного лечения. ОКЛ – основной курс лечения

Analysis of the data from the second block of the questionnaire (the existence of knowledge about the prevention of tuberculosis disease) determined that 31.3% of respondents recognized the effectiveness of vaccination against tuberculosis, while the efficiency of wearing a mask was noted more frequently — in 74.9% of cases ($p < 0.05$) (Fig. 2).

The importance of regular fluorographic examination for the tuberculosis prevention were aware 68.8% of parents. The harm of passive smoking for their child recognized 50% of respondents and the harm of alcohol dependence of parents — 56.3% of respondents.

Data from the third block of questions (recognition of the need for complex anti-tubercu-

losis therapy) revealed the following: 43.8% of parents agreed with the continuity of treatment, and 37.5% of parents agreed with the treatment duration (Fig. 3). Only 31.3% of respondents understood the need for comprehensive treatment. 25.0% of respondents agreed to maintain the sanitary and hygienic regime.

Analysis of parents' personal attitudes showed that the majority of parents (86.7%) understand that the forms of the disease in children are not dangerous for them, since children rarely excrete *Mycobacteria* into the external environment, and do not worry about their health; only 13.3% expressed concern about their infection from a child.

After summing up the data from all four blocks of the survey, the following results were obtained: 30% of respondents had completely correct ideas about tuberculosis, 30.0% also about measures to prevent the disease, only 23.3% of parents were perfectly prepared to comply with the necessary conditions and anti-tuberculosis therapy regimen.

CONCLUSION

1. Parents of children with tuberculosis infection requiring long-term anti-tuberculosis therapy revealed an insufficient level of basic knowledge about tuberculosis (30.0%), about measures to prevent the incidence of tuberculosis (30.0%), the need to follow long-term comprehensive anti-tuberculosis treatment (23, 3%), parents expressed concern for their health (13.3%).

2. Problems of commitment to anti-tuberculosis therapy in children with tuberculosis infection are caused by insufficient awareness of parents about tuberculosis, the possibility of its timely prevention, the need for long-term complex treatment to achieve clinical cure, and therefore, reluctance to follow recommendations on the regimen and comprehensive treatment.

3. Timely study of the reasons leading to low adherence of parents to the treatment of their children will make it possible to reduce the influence of these factors through socio-educational action and individual consultations, and, if necessary, providing psychological assistance.

4. Volunteers, especially from among students and clinical residents, can be involved in the work to improve the health literacy of parents, which can increase the commitment of parents and children to anti-tuberculosis activities without additional material investments.

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.

Competing interests. The authors declare that they have no competing interests.

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Consent for publication. Written consent was obtained from the patient for publication of relevant medical information within the manuscript.

ДОПОЛНИТЕЛЬНАЯ ИНФОРМАЦИЯ

Вклад авторов. Все авторы внесли существенный вклад в разработку концепции, проведение исследования и подготовку статьи, прочли и одобрили финальную версию перед публикацией.

Конфликт интересов. Авторы декларируют отсутствие явных и потенциальных конфликтов интересов, связанных с публикацией настоящей статьи.

Источник финансирования. Авторы заявляют об отсутствии внешнего финансирования при проведении исследования.

Информированное согласие на публикацию. Авторы получили письменное согласие пациентов на публикацию медицинских данных.

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