TUBERCULOUS MENINGITIS WITH MULTIPLE ORGAN INVOLVEMENT

Pardaeva U.D.
Samarkand State Medical University

Annotation

The article reflects the relevance of generalized tuberculous meningitis or tuberculous meningitis with multiple organ involvement (TMPI) at the present stage. TMPP is a serious and severe course of tuberculous meningitis with lesions of the brain substance itself or with localization of specific lesions not only of the brain membranes but also of other organs and systems. This disease proceeds with great neurological complications and is characterized by high mortality. Retrospective study was conducted in Samarkand regional center of Phthisiology and Pulmonology. The paper reflects diagnostic methods, peculiarities of the course of the disease and treatment.

Keywords: Generalized tuberculous meningitis, tuberculosis, meningitis, diagnosis, treatment, central nervous system.

Relevance

Tuberculous meningitis with multi-organ involvement (TMPI) is a severe form of tuberculosis, with simultaneous involvement of the central nervous system and localization of the specific process in other organs and systems, often with fatal and disabling disease. TMPP is when the disease is inflammation of the cerebral membranes and lesions of the brain substance, or tuberculous meningitis combined with lesions of other organs and systems. Such a course of the specific process often leads to serious neurological consequences and even death in the absence of timely diagnosis and treatment. These consequences are reflected in the social sphere and economy of all countries with the heavy burden of tuberculosis and in the quality of life of many age groups of people.

TMPT is one of the most difficult forms of tuberculosis to diagnose and treat, especially in regions with a high incidence of tuberculosis. The risk group is unvaccinated children, young children and children with HIV infection. Contact with a TB patient is also important, with family contact predominating.

Purpose of the study

The aim of this study was to investigate the variants and peculiarities of the course of tuberculous meningitis with polyorgan involvement (TMPP), timely diagnosis, and to determine the most effective methods of treatment to improve the quality of life of the patient.

Materials and Methods. A retrospective analysis of case histories of patients for

the last 5 years from 2019 to 2014 in Samarkand Regional Center of Phthisiology and Pulmonology was carried out. Patients with GTM total 11, of them urban 3 (27,3%), rural residents 8 (72,2) people. Age category of patients children under 7 years 2(18,2%), 1 (9%) patient was adolescent, the rest were young and mature age people. The diagnosis of TMPP was confirmed on the basis of clinical data, lumbar puncture findings and microbiologic studies. Research methods included:

- Clinical examination and history taking.
- Lumbar puncture followed by cerebrospinal fluid (CSF) analysis.
- Microbiological studies of pathologic material (cultures, PCR).
- Neuroimaging (MRI, CT).
- Laboratory tests (general blood analysis, biochemical blood analysis).
- Assessment of the neurologic status of patients.

RESULTS

Of the 11 patients included in the study, 4 (36.4%) were male and 5 (45.5%) were female. The mean age of the patients was 35 years. The main symptoms included headache (90%), fever (80%), vomiting (60%) and meningeal symptoms (70%), signs of cerebral substance damage in the form of: blindness, deafness, pelvic organ dysfunction, paresis and paralysis and signs of idiocy (972%). All patients had one or another manifestation of TMPP.

A 4-year-old girl was admitted to the meningitis ward with TMPP. From the anamnesis: there are three children in the family, our patient is the eldest. The girl's father is treated in the TB dispensary for cystic fibrosis cavernous tuberculosis. The child has a severe course of meningitis and meningoencephalitis with signs of: idiocy, pelvic dysfunction - urinary and fecal incontinence, disorientation in the environment, bed position "the symptom of a leghorn dog", navicular abdomen. In the course of treatment, the condition improved: vomiting stopped, temperature normalized. Blindness, deafness, disorientation in the environment, pelvic organ dysfunction of central genesis were detected.

The second patient is a 13-year-old adolescent. Diagnosis: Tuberculous meningitis, meningoencephalitis. Infiltrative tuberculosis of the upper lobe of the right lung in the stage of decay, BK+. From anamnesis: the family is financially well off, there is no contact. The child studies in the 7th grade, attends soccer, goes to the swimming pool. The patient has all signs of meningoencephalitis. After 2 months of ABP therapy the condition improved: intoxication syndrome significantly decreased, from the neurological symptomatology was bothered by moderate headaches and sharp deterioration of vision. Eye tuberculosis was diagnosed during examination.

The most vulnerable contingent of patients for tuberculosis were women up to 9 months in the postpartum period. The patient is 32 years old, a resident of rural areas. From anamnesis has 3 children, the youngest infant is 3 months old. On outpatient

examination, lumbar vertebral tuberculosis with paravertebral abscess was diagnosed. No contact. She refused hospitalization referring to the age of the infant. Three months later she was admitted in a serious condition with TMPT clinic. Because of her serious condition, she was cared for by her sister. Diagnosis: Tuberculous meningitis, meningoencephalitis. Tuberculosis of the lumbar spine L3-5 spondylitic phase with abscessed paravertebral abscess. In the cerebrospinal fluid.

The rest of the patients had infiltrative lung lesions with decay, contamination and bacterial discharge in addition to tuberculous meningitis. In all patients, the liquor leaked under high pressure or more than 65-70 drops per minute, clear, colorless. In laboratory examination, pronounced lymphocytic, pleocytosis, positive protein-sedimentation reaction. PCR for MBT positive in microbiologic examination.

Summary

The use of molecular genetic methods of the disease for the diagnosis of TMPP accelerated the diagnosis and the correct choice of drug therapy for the patient. The results of lumbar puncture showed increased protein level in CSF in 97% of patients, decreased glucose level in 86% and lymphocytic pleocytosis in 100%. Positive PCR results for Mycobacterium tuberculosis were obtained in 75% of patients. Neuroimaging studies revealed signs of cerebral membrane inflammation in 89% of patients with increased intracranial and spinal pressure.

All varieties of meningitis, also tuberculous in nature, pose a major public health threat. While many cases and deaths can be prevented by vaccines, meeting meningitis targets lags far behind other vaccine-controlled diseases. In 2017, representatives from governments, global health organizations, public health authorities, academia, the private sector and civil society called for global targets for meningitis as a public health threat. WHO supported the call to action and, together with global partners and experts involved in meningitis prevention and control, developed a roadmap to achieve the 2030 meningitis targets (11). Although countries in the meningitis belt in sub-Saharan Africa have the greatest burden of meningitis, the disease threatens all countries in the world (1,2,3). Since 2014, epidemics of bacterial meningitis have occurred in many countries, including Kyrgyzstan, Chile, Fiji, Nigeria, and Niger (4-6), and the spread of a range of virulent strains around the world highlights the need for a global approach to surveillance and prevention. Many countries have yet to implement recommended vaccination programs against a number of meningitis-causing bacteria, putting citizens of these countries at risk (7,8). Meningitis cases, regardless of where they occur, pose a major challenge to health systems, the economy of society.

In May 2017, more than 50 representatives from governments, global health organizations, public health authorities, the private sector and civil society called for a global strategy to address meningitis by 2030 (9). In September of the same year, 200

representatives from 26 countries in the African meningitis belt reiterated this call even more forcefully and emphasized the need for equitable and sustainable access to meningitis vaccines (10).

In 2017, representatives from governments, global health organizations, public health authorities, academia, the private sector and civil society called for global targets to address meningitis as a public health threat. WHO supported the call to action and, together with global partners and experts involved in meningitis prevention and control, developed a roadmap to achieve the 2030 meningitis targets (11)

2030 targets.All United Nations Member States have committed to achieving universal health coverage by 2030 (12).

The treatment of patients included maximum sparing bed rest in the acute stage of the disease with TMPP, included a combination of at least four antitubercular drugs (isoniazid, rifampicin, pyrazinamide, ethambutol) and corticosteroids in order to eliminate inflammation in the serous membranes of the brain as quickly as possible. Fluoroquinolones were also used in particularly severe cases of the disease course. The average duration of treatment amounted to 10 months. Full recovery was observed in 40% of patients, partial improvement in 40%, and unfavorable outcome in 20%.

Conclusions

Generalized tuberculous meningitis remains a serious medical challenge requiring a comprehensive approach to diagnosis and treatment. The main difficulties are associated with late diagnosis and resistance of the pathogen to standard antituberculosis drugs. Our results emphasize the need for early diagnosis and aggressive therapy to improve the prognosis of patients with GTM. Further research is needed to develop more effective methods of treatment and prevention of this disease.

The main preventive measures of TSTM should include all ways of TB prevention: regular preventive fluorographic examinations of the population, BCG vaccine for children and measures to strengthen and increase immunity, adequate daily routine with reduction of stressful situations, examinations of contact group persons from the focus of TB infection. The risk group for TMPT is children and adolescents, early after childbirth, complicated and severe course of both pulmonary tuberculosis or extrapulmonary localization of the specific process, patients with HIV infection.

The main guiding principle is to eliminate and stop the tuberculosis epidemic, drastically reduce mortality and morbidity, provide priority care to patients with disabilities, and improve the quality of life.

Literature

1. McIntyre PB, O'Brien KL, Greenwood B, van de Beek D. Effect of vaccines on bacterial meningitis worldwide. Lancet. 2012;380(9854):1703–11.

2. Global, regional and national age-sex specific mortality for 264 causes of death

1980-2016: a systematic analysis for the Global Burden of Disease Study 2016. Lancet. 2017;390(10100):1151–210.

3. Kohli-Lynch M, Russell NJ, Seale AC, Dangor Z, Tann CJ, Baker CJ et al. Neurodevelopmental impairment in children after Group B Streptococcal disease worldwide: systematic review and meta-analyses. Clin Infect Dis. 2017;65(Suppl. 2):S190--S9.

4. Borrow R, Alarcon P, Carlos J, Caugant DA, Christensen H, Debbag R et al. The Global Meningococcal Initiative: global epidemiology, the impact of vaccines on meningococcal disease and the importance of herd protection. Expert Rev Vaccines. 2017;16(4):313-28.

5. Egorova EA OD, Ronveaux O, Wasley A. Nationwide Serogroup A Meningococcal outbreak in Kyrgyzstan, 2014-2015. In: Proceedings. 13th Congress EMGM, Amsterdam, the Netherlands, September 14-17, 2015. Amsterdam: European Meningococcal Disease Society; 2015.

6. International Coordinating Group on Vaccine Provision for Epidemic Meningitis: annual meeting September 18, 2018. Geneva: World Health Organization; 2018 (https://apps.who.int/iris/bitstream/handle/10665/279828/WHO-WHE-IHM-2019.1-eng.pdf?ua=1).

7. Defeating meningitis by 2030: baseline situation analysis. Geneva: World Health Organization; 2019 (https://www.who.int/immunization/research/BSA_20feb2019.pdf?ua=1).

8. Global and regional immunization profile 2019. Geneva: World Health Organization; 2019 (https://www.who.int/immunization/monitoring_surveillance/data/gs_gloprofile.pdf?ua=1).

9. A global vision for meningitis by 2030 and an action plan to get there. Report of meeting held on May 8-10, 2017. Wilton Park: United Kingdom; 2017 (https://www.wiltonpark.org.uk/wp-content/uploads/WP1521-Report.pdf).

10. 14th Annual meeting on surveillance, preparedness and response to meningitis outbreaks in Africa & 4th Annual MenAfriNet partners' meeting: Ouagadougou, Burkina Faso, September 12-15, 2017. Geneva: World Health Organization; 2017.

11. Achieving the 2030 meningitis targets: a global roadmap. DRAFT, revised October 26, 2020.

12. Sustainable development goals. New York (NY): United Nations; (https://www.un.org/sustainabledevelopment/sustainable-development-goals/).

13. Pardayeva U.D. Modern views on the course of tuberculous meningitis Vol. Science and Education Vol. 3 № 11 P. 205-212.

14. Pardaeva U.D. Intensive transformations in the sphere of medicine in Uzbekistan Journal of Scientist of XXI century 2021/1 Vol. 72 №1-1 P. 18-22

15. Khodjaeva S., Ajablaeva D., Anisimova T., Pardaeva U., Mamatova N., et al. - Data of electrocardiographic studies in respiratory tuberculosis. Journal vestnik doktor, 1(4), 127-128.

16. Pardaeva U. Д.. Uzbekistan on the way of integration in the sphere of higher education in the world society in the conditions of globalization 2020 №16 (100) P.-53-64

17. Ajablaeva D, Gorbach L, Khodjaeva S, Pardaeva U Features of tuberculosis in children in pandemic conditions COVID-19 Journal of Hepato-Gastroenterological Research 2 (3), 32-36

18. Pardaeva U.D. ASPECTS OF MODERN PEDAGOGICAL TECHNOLOGIES AT THE STAGE OF TRAINING QUALIFIED MEDICAL SPECIALIST Journal of Pedagogy Va Psychology

19. Pardaeva U.D. MEDICAMENTOUS CORRECTION OF HEPATOTOXIC ACTION OF ANTIBACTERIAL PREPARATIVES IN PATIENTS WITH INTROPulmonary TUBERCULOSIS Modern education and development P. 149-164 Vol. 149-164 Vol. 4 No. 4 (2024): Modern education and development:https://ilmiyxabarlar.uz/index.php/journal/issue/view/29

20. Pardaeva U.D. SUN'IY YORUG'LIK VA EKOLOGIYA IFLOSLANISHI Vol. 4 No. 4 (2024): Modern education and development https://ilmiyxabarlar.uz/index.php/journal/issue/view/29

21. Pardayeva U. D. TUBERCULOSIS IN PREGNANT WOMEN AND THE POSTNATAL PERIOD-PECULIARITIES OF EARLY DIAGNOSIS, ITS COURSE, AND TREATMENT Vol. 4 No. 4 (2024): Modern education and development:https://ilmiyxabarlar.uz/index.php/journal/issue/view/29

22. Pardayeva U. D.ANALYSIS OF RISK FACTORS FOR HYPOXIC DAMAGES OF NEWBORN`S CENTRAL NERVOUS SYSTEM Vol. 4 No. 4 (2024): Modern education and development: https://ilmiyxabarlar.uz/index.php/journal/issue/view/29