

CLINICAL MANIFESTATIONS OF CYTOMEGALOVIRUS INFECTION

Arashova Gulnora Amirkulovna

Bukhara State Medical Institute named after Abu Ali ibn Sina, Bukhara c., Uzbekistan.

E-mail: arashova.gulnora@bsmi.uz

<https://orcid.org/0009-0009-0643-3775>

Abstract

The work is based on the features of clinical manifestations of acute primary and reactivated forms of CMVI in children aged 1 to 3 years, observed on an outpatient basis. The main group and the comparison group included patients who applied for an appointment with an infectious disease doctor with symptoms of acute respiratory infection in the period 2021 to 2024 at the Bukhara Regional Infectious Diseases Hospital. With primary CMV infection, the acute period of the disease in young children proceeds according to the type of mononucleosis, the clinical picture of the reactivated form is nonspecific, accompanied by a prolonged fever with lymphadenopathy. Indirect laboratory markers of active CMVI are: neutropenia (46.1%), hypoinmunoglobulinemia A (49.0%) and G (51.0%).

Keywords: Cytomegalovirus infection, active primary, cytomegalovirus infection, reactivated cytomegalovirus infection.

Introduction

Cytomegalovirus infection (CMVI) is one of the most common causes of congenital viral infections and can cause severe pathologies, up to the death of a child [1-6]. At the same time, the subclinical form of CMVI does not mean a guarantee of well-being in the future in 5-15% of such children in the next 1-2 years and at a later date, violations of the central nervous system, hearing organs, vision, cerebral palsy, mental retardation, poor school performance are recorded [7-10]. Diagnosis of CMVI in newborns is often a difficult task due to the absence of typical symptoms and signs of CMVI, as well as due to the peculiarities of the immune system of newborns, premature newborns represent a high risk group for the development of CMVI, since it is known that the incidence in such children is increased compared to full-term newborns [11-16]. Despite numerous studies devoted to this problem, the development of adequate therapeutic tactics for the treatment of newborns with CMVI remains an unsolved task. The importance of solving the problem of timely detection of congenital and perinatal CMVI is also explained by the fact that CMVI is often the cause of death of children in the second half of life [17-23].

MATERIALS AND METHODS

The main group and the comparison group included patients who applied for an appointment with an infectious disease doctor with symptoms of acute respiratory infection

in the period 2021 to 2022 at the Bukhara Regional Infectious Diseases Hospital. The group of conditionally healthy patients included patients who visited a pediatrician for examination before routine vaccination. The examination of the children was carried out after the signing of a voluntary informed consent by the parents (or other legal representatives). To identify a group of patients with active primary and reactivated CMV infection, 110 children were examined, referred to a pediatrician with acute respiratory infection, examined for markers of herpes viral infections (CMVI, HCV-6, EBV). Of 110 children with symptoms of acute respiratory infection, 65 had markers of CMV infection. To solve the problem, a clinical and laboratory examination of children of the main group (n=65) with active forms of CMVI was carried out. The comparison group consisted of 43 children from the initially formed study group (110 patients with ARI symptoms).

THE RESULTS OF THE STUDY AND THEIR DISCUSSION

Among children with ARI (n=110), various CMV markers were detected in 59% (65), and active CMV infection was detected in 14% (16). Among clinically healthy CMVI markers were detected in 71% (46) children, without signs of activation [21-26]. During serological examination, anti-CMV IgG in the main group was determined in 51% (33) cases, in the comparison group in 81% (35) cases, among healthy children - in 83% (38) cases with arithmetic mean values of the level of anti-IgG without significant differences. Anti-CMV IgM was detected in 55% (36) of children only in the main group. Laboratory, primary CMVI (PCR+ blood, Ig M=, IgG-) was tolerated by 49% (32) children of the main group, 51% (33) patients were diagnosed with reactivation [28-34]. Primary CMVI was accompanied by a classic set of symptoms of mononucleosis - fever for more than 7 days and intoxication in all patients, severe lymphadenopathy, tonsillopharyngitis, moderate liver enlargement [36-39]. Acute febrile disease with lymphadenopathy was noted in 51% (33) of the children of the main group, in whom the stage of CMVI reactivation was determined (PCR+ blood, IgM±, IgG+). The clinical picture was nonspecific, localized lymphadenopathy was noted in 75% (25) of children, fever for more than 5 days in 65.0% (21), tonsillopharyngitis in 30% of cases, hepatomegaly was not noted. When studying the anamnestic data between the children of the main group and the comparison group, the differences concerned only the structure of acute morbidity, namely recurrent otitis, occurred in 23% (15) children of the main group and 5% (2) of the comparison group, $p=0.001$. Significant differences in clinical manifestations in the compared groups were found in lymphadenopathy (91% vs. 16%), rhinorrhea (23% vs. 74%), catarrhal pharyngitis (91% vs. 72%), grade 2-3 palatine tonsillitis (66% vs. 35%), tonsillar plaque (23% vs. 0%) and hepatomegaly (14% vs. 0%). Statistically significant differences in deviations of laboratory parameters were established: neutropenia was significantly 1.8 times more common in the main group - 46% (30) versus 16% (7) in the comparison group ($p=0.002$). Statistically significant differences were also obtained for an isolated decrease in total IgA in the blood in the main group: 49% (32) vs. 28% (12)

in the comparison group ($p=0.02$) and for a decrease in total IgG in the blood: 51% (33) vs. 18.6% (8) ($p=0.001$). ALT increase was registered only in acute CMVI in the form of infectious mononucleosis (in the OG): 44% (14) ($p=0.001$), always in combination with AST, and in the comparison group, ALT and AST increases were not registered in any case (Table №1).

CONCLUSIONS

With primary CMV infection, the acute period of the disease in young children proceeds according to the type of mononucleosis, the clinical picture of the reactivated form is nonspecific, accompanied by a prolonged fever with lymphadenopathy. Indirect laboratory markers of active CMVI are: neutropenia (46.1%), hypogammaglobulinemia A (49.0%) and G (51.0%).

REFERENCES

1. Volodin N.N., Korniyushin M.A., Medvedev M.I., Znamenskaya A.A., Fomina V.L., Neijko L.Yu., Gorbunov A.V. Etapnoe primeneniye metodov luchevoy diagnostiki dlya vyyavleniya strukturnykh izmeneniy golovnoy mozga u novorozhdennykh i detey rannego vozrasta pri vrojdennoy tsitomegalovirusnoy infektsii //Vopr. prakt. pediatrii.-2006.-№3(1). -S. 57-60.
2. Fomin V.V., Sabitov A.U., Tsarkova S.A., Beykin Ya.B. Gerpeticheskaya infektsiya u detey (infektsionniy mononukleoz, tsitomegalovirusnaya infektsiya, vetryanaya ospa) -2008. -S. 184.
3. Gulnora A. Arashova. A Clinical Analysis of Measles Outbreak and Immunization Gaps Journal of Angiotherapy 8(6) 1-6 <https://doi.org/10.25163/angiotherapy.869754>
4. Арашова Гулнора Амиркуловна Паразитарные Заболевания - Актуальная Проблема Современной Медицины. Журнал науки в медицине и жизни. Выпуск 2 № 3 (2024), стр 4-8 <https://journals.proindex.uz/index.php/JSML/article/view/693>
5. Jalilova A.S. (2022). FEATURES OF CLINICAL MANIFESTATIONS OF CYTOMEGALOVIRUS INFECTION IN CHILDREN. *International Journal of Medical Sciences And Clinical Research*, 2(09), 12–16. <https://doi.org/10.37547/ijmscr/Volume02Issue09-04>
6. Г.А.Арашова. Клинические особенности течения ветряной оспы на современном этапе. Вестник ТМА № 3/2, 2023
7. Aslonova M. R. (2023). IFN- α STATUS IN PATIENTS WITH SARS-CoV-2 AND TYPE 2 DIABETES. Proceedings of International Conference on Modern Science and Scientific Studies, 2(10), 23–24. Retrieved from <https://econferenceseries.com/index.php/icmsss/article/view/2795>
8. Арашова Г.А. Клинико-эпидемиологические особенности кори у взрослых. 2022. //Журнал «Инфекция, иммунитет и фармакология», специальный выпуск. 2022;1(2):12-17.

9. Mukhammadiyeva M.I. (2023). Вирус этиологияли жигар циррози беморларида спонтан бактериал перитонит билан асоратланишнинг профилактикаси ва давосини такомиллаштириш//Oriental Renaissance: Innovative, educational, natural and social sciences. -2023.-P.947-953.
10. Mukhammadiyeva Musharraf Ibokhimovna. (2023). IMPROVING THE PREVENTION AND TREATMENT OF COMPLICATIONS OF SPONTANEOUS BACTERIAL PERITONITIS IN PATIENTS WITH LIVER CIRRHOSIS OF VIRAL ETIOLOGY. *Galaxy International Interdisciplinary Research Journal*, 11(4), 388–394. Retrieved from <https://giirj.com/index.php/giirj/article/view/5168>
11. Mukhammadiyeva M. I. Improvement of primary prevention and treatment of complications with spontaneous bacterial peritonitis in patients with liver cirrhosis of viral etiology //Тиббиётда янги кун.-2023-9 (59). – 2023. – С. 247-252.
12. Mukhammadiyeva M.I. (2022). Modern clinical and biochemical characteristics of liver cirrhosis patients of viral etiology with spontaneous bacterial peritonitis //Texas Journal of Medical Science. – 2022.- P. 86-90
13. Mukhammadiyeva M.I. (2023). Вирус этиологияли жигар циррози беморларида спонтан бактериал перитонит билан асоратланишнинг профилактикаси ва давосини такомиллаштириш//Oriental Renaissance: Innovative, educational, natural and social sciences. -2023.-P.947-953.
14. Oblokulov A.R., M.I. Mukhammadiyeva. (2022). Clinical and biochemical characteristics of liver cirrhosis patients of viral etiology with spontaneous bacterial peritonitis//Academicia Globe: Inderscience Research.-2022.- P. 210-216.
15. Arashova G.A Observation of the Immuno-Pathogenetic State of Measles in Adults.//International journal of health systems and medical sciences. 2022;1(5).
16. Mukhammadiyeva Musharraf Ibokhimovna. (2023). IMPROVING THE PREVENTION AND TREATMENT OF COMPLICATIONS OF SPONTANEOUS BACTERIAL PERITONITIS IN PATIENTS WITH LIVER CIRRHOSIS OF VIRAL ETIOLOGY. *Galaxy International Interdisciplinary Research Journal*, 11(4), 388–394. Retrieved from <https://giirj.com/index.php/giirj/article/view/5168>
17. Sanokulova Sitara Avazovna. (2023). Acute Kidney Injury in Critically Ill Cirrhotic Patients with Spontaneous Bacterial Peritonitis. *Texas Journal of Medical Science*, 25, 65–70. Retrieved from <https://zienjournals.com/index.php/tjms/article/view/4502>
18. Arashova G.A. Helminthes - An Current Problem of Modern Medicine *AMERICAN Journal of Pediatric Medicine and Health Sciences*. Volume 02, Issue 02, 2024 PAGES: 402-406
19. Санокуллова, Ситора Авазовна ОСОБЕННОСТИ ТЕЧЕНИЯ КОНТОГИОЗНЫХ ГЕЛЬМИНТОВ АССОЦИИРОВАННОГО С ЛЯМБЛИОЗОМ // ORIENSS. 2023. №2. URL: <https://cyberleninka.ru/article/n/ocobennosti-techeniya-kontogioznyh-gelmintov-assotsirovannogo-s-lyambliozom> (дата обращения: 12.12.2023).

20. Jalilova, A.S. (2022). THE SPREAD OF CIRRHOSIS OF THE LIVER BY ETIOLOGICAL FACTORS. *Oriental renaissance: Innovative, educational, natural and social sciences*, 2 (6), 253-257.\
21. Aslonova Marjona Ramazonovna. (2023). IFN- γ STATUS IN PATIENTS WITH SARS-CoV-2 AND TYPE 2 DIABETES. *Proceedings of Scientific Conference on Multidisciplinary Studies*, 2(11), 5–6. Retrieved from <https://econferenceseries.com/index.php/scms/article/view/2799>
22. Облокулов, А., & Мухаммадиева, М. (2022). КЛИНИКО-ЛАБОРАТОРНАЯ ХАРАКТЕРИСТИКА СПОНТАННОГО БАКТЕРИАЛЬНОГО ПЕРИТОНИТА ПРИ ЦИРРОЗЕ ПЕЧЕНИ ВИРУСНОЙ ЭТИОЛОГИИ. *Журнал вестник врача*, 1(3), 66–69. извлечено от https://inlibrary.uz/index.php/doctors_herald/article/view/2016
23. Arashova G.A Observation of the Immuno-Pathogenetic State of Measles in Adults.//*International journal of health systems and medical sciences*. 2022;1(5).
24. Aslonova.M.R. (2022). Determination of suicidality against the background of Parasitic Diseases in children // *INTERNATIONAL JOURNAL OF PHILOSOPHICAL STUDIES AND SOCIAL SCIENCES*. – 2022.- P. 9-12.
25. Abdulloyevna, M. S. . (2023). Tez-Tez Kasal Bo'lgan Bolalarda O'tkir Respirator Kasalliklarning Klinik-Laboratoriya Xususiyatlari. *AMALIY VA TIBBIYOT FANLARI ILMIY JURNALI*, 2(12), 29–34. Retrieved from <https://sciencebox.uz/index.php/amaltibbiyot/article/view/8680>
26. Aslonova Marjona Ramazonova. (2023). Correlation Relationship of Interferons, Cytokines with Biochemical Mediators of Inflammation in The Blood in The Association of Covid-19 and Type 2 Diabetes. *Texas Journal of Medical Science*, 26, 70–77. <https://doi.org/10.62480/tjms.2023.vol26.pp70-77>
27. Mukhtarova, S. H. (2022). A.(2022) AGE-RELATED FEATURES OF CLINICAL MANIFESTATIONS OF GIARDIASIS. *INTERNATIONAL JOURNAL OF MEDICAL SCIENCES AND CLINICAL RESEARCH*, 17-21.
28. Aslonova.M.R. (2023). VITAMIN DEFICIENCY CASES RESULTING FROM PARASITIC DISEASES // *Galaxy International Interdisciplinary Research Journal*.-2023.-P. 404-409
29. Mukhtarova Shokhida Abdulloevna. (2023). CHARACTERISTIC FEATURES OF THE COURSE OF CITOMEGALOVIRUS INFECTION IN CHILDREN. *Galaxy International Interdisciplinary Research Journal*, 11(4), 484–487. Retrieved from <https://giirj.com/index.php/giirj/article/view/5150>..
30. Ш. А, М. (2023). Профилактика Сезонного Распространения Орви Среди Детей Раннего Возраста. *AMALIY VA TIBBIYOT FANLARI ILMIY JURNALI*, 2(12), 22–28. Retrieved from <https://www.sciencebox.uz/index.php/amaltibbiyot/article/view/8678>
31. Mukhammadieva M. I. Improving the prevention and treatment of complications of spontaneous bacterial peritonitis in patients with liver cirrhosis of viral etiology // *Galaxy international interdisciplinary research journal*. – 2023. – Т. 11. – №. 04.

32. Arashova G.A. Modern Methods of Combating Infectious Diseases AMERICAN Journal of Pediatric Medicine and Health Sciences Volume 01, Issue 10, 2023 ISSN E): 2993-2149 pages 70-75.