Western European Journal of Medicine and Medical Science
Volume 2, Issue 3, March, 2024
https://westerneuropeanstudies.com/index.php/3
ISSN (E): 2942-1918 Open Access| Peer Reviewed

RISK FACTORS AND FEATURES OF THE COURSE OF CANDIDA PNEUMONIA IN CHILDREN

Nabieva Zumrat Tukhtaevna
Bukhara State Medical Institute

Abstract, In the last decade mycoses have become a serious clinical problem for neonatal intensive care units. To date, fungal infections confidently occupy the 3rd place among hospital infections. This is due to the constant improvement of modern technologies for providing intensive care to premature infants and with a significant increase in survival among this category, there is a need to use various invasive methods of treatment, such as artificial lung ventilation (ventilator), long-term parenteral nutrition, prolonged catheterization of central veins, which contribute to fungal colonization and the formation of biofilms as a reservoir for systemic spread of fungi.

The article presents the results of observation of children who were in the ICU ward, examined for fungal damage to organs and systems. Laboratory and instrumental examination data and features of the clinical course of candida pneumonia in children. It was found that in routine practice, risk factors and suspicion of the possibility of fungal invasion were leading in the diagnosis of fungal infection.
Key words: Candidiasis Pneumonia, ICU, Prevention And Treatment Of Candidiasis

ФАКТОРЫ РИСКА И ОСОБЕННОСТИ ТЕЧЕНИЯ КАНДИДОЗНОЙ ПНЕВМОНИИ У ДЕТЕЙ

Набиева Зумрат Тухтаевна
Бухарский государственный медицинский институт

Резюме, В последнее десятилетие микозы стали серьезной клинической проблемой для отделений реанимации и интенсивной терапии новорожденных (ОРИТН). На сегодняшний день грибковые инфекции уверенно занимают 3-е место среди госпитальных инфекций. Это связано с постоянным совершенствованием современных технологий оказания реанимационной помощи недоношенным детям и со значительным повышением выживаемости среди данной категории, возникает необходимость применения различных инвазивных методов лечения, таких, как искусственная вентиляция легких (ИВЛ), длительное по времени парентеральное питание, пролонгированная катетеризация центральных вен, которые способствуют грибковой колонизации и образованию биопленок как резервуара для системного распространения грибов.

В статье изложены результаты наблюдения за детьми находившиеся в палате ОРИТ, обследованные на грибковое поражение органов и систем. Лабораторно-

Western European Journal of Medicine and Medical Science
Volume 2, Issue 3, March, 2024
https://westerneuropeanstudies.com/index.php/3
ISSN (E): 2942-1918 Open Access| Peer Reviewed

инструментальные данные обследования и особенности клинического течения кандидозной пневмонии у детей. Установлено, в рутинной практике ведущим в диагностике грибковой инфекции явились факторы риска и подозрение на возможность грибковой инвазии.
Ключевые слова: *кандидозная пневмония, ОРИТ, профилактика и лечение кандидоза.*

Relevance. Candidal pneumonia is one of the manifestations of generalized mycoses. Dissemination of yeast-like fungi Candida in the body causes damage to various organs and systems. Involvement of the upper respiratory tract and lungs in the process is observed in all age groups. Candidal pneumonia in children is most often detected in immunodeficient children who were in the ICU ward and received large and long courses of antibacterial therapy. Mortality rate for candidiasis pneumonia ranges from 30 to 70% [2,3].

One of the routes of entry is aspiration of fungi into the trachea and bronchi, and through lymphatic and blood vessels from other organs in a generalized process, detected in 15-40% of patients [4,6,7]. The adhesive properties of fungi increase when the macroorganism is exposed to antibiotics, corticosteroids, and diabetes. [1,8]. Pneumomycosis is a fungal infection of the lungs that is part of the group of deep mycoses. In clinical practice, these forms occur both in isolated form and in the form of associative lung pathology, combined with bronchiectasis, chronic abscesses and other nonspecific lung diseases. The increase in the frequency of fungal infections in recent decades is associated with the widespread use of antibacterial and hormonal drugs, cytostatics, and immunosuppressants. Deep mycoses can occur as complications during intensive care, mechanical ventilation with tracheal intubation, and various surgical interventions, including those associated with catheterization of large vessels. Pneumomycosis is much more widespread than is diagnosed. The difficulties of their diagnosis are due to three factors. Firstly, their various types are very similar in pathomorphological, clinical, radiological and clinical manifestations both to each other and to pneumopathy of other origins. Secondly, in practical medicine there is still no requirement for mandatory testing of sputum of pulmonary patients for fungi and registration of patients with deep mycoses. Thirdly, laboratory diagnosis of these diseases is very difficult. The last point is due to the fact that many pathogenic fungi have dimorphic properties, that is, different morphologies under the conditions of the body and the external environment. Their structure can vary significantly depending on the cultivation conditions (nutrient medium, aeration, temperature, etc. Depending on the location of the affected mucous membranes and the corresponding clinical symptoms, oral candidiasis is distinguished - oropharyngeal candidiasis (cheilitis, glossitis, stomatitis, tonsillitis, pharyngitis), esophageal candidiasis, vulvovaginal candidiasis, balanoposthitis and urinary tract candidiasis - urogenital candidiasis.

Candidiasis can develop both acutely and subacutely, torpidly. An acute process usually occurs against the background of massive and unbalanced antibacterial therapy. The patients' condition sharply worsens, headaches, chills, sweating, fever appear, severe general weakness, leukocytosis with a shift of the leukocyte formula to the left, and ESR begin to increase. Patients are bothered by a cough with mucous or mucopurulent sputum that is difficult to expectorate, and hoarseness. Scanty dry and moist rales are heard above the lungs. X-ray reveals an increase in the pulmonary pattern in the hilar zones and migrating infiltrates. In mild cases, these phenomena disappear 3-4 weeks after the administration of antifungal therapy. In severe cases, the process begins to spread quickly. The infiltration merges and covers a lobe,

Western European Journal of Medicine and Medical Science
Volume 2, Issue 3, March, 2024
https://westerneuropeanstudies.com/index.php/3
ISSN (E): 2942-1918 Open Access| Peer Reviewed

several lobes or the entire lung, and moves to the opposite side. Signs of acute respiratory failure and endotoxicosis are increasing.

When examining a patient, candidiasis can be detected in the corners of the mouth (jams), oral mucosa, and large folds of skin. Fungi appear in the urine, on the mucous membrane of the pharynx, larynx and esophagus. Chronic candidal bronchitis is accompanied by a cough with a large amount of sputum and may acquire an asthmatic component. Patients cough up viscous, sometimes jelly-like sputum with grayish-white or brownish lumps consisting of fibrin, leukocytes, candida cultures, and red blood cells. With long-term chronic moderate candidiasis, X-rays reveal compaction in the area of the roots of the lungs, a finely reticulated, uneven, blurred pulmonary pattern, zones of pneumofibrosis, bronchiectasis, calcified foci, cavities, and pleural deposits. The intensity of changes increases from the periphery to the roots and from the apexes to the bases of the lungs. Massive plaques and films on the walls of the respiratory tract hang into the lumen of the bronchi and cause their obstruction, atelectasis, miliary dissemination, lobar or total pneumonia. In some cases, in such patients, during the generalization of candidiasis infection, it is possible to inoculate colonies of the fungus from the blood. The discrepancy between the severity of clinical and ephemeral radiological symptoms in this pathology should be taken into account. As indirect evidence, oral thrush, chronic esophagitis, gastritis, enterocolitis, detection of candida in urine, feces, gastric and duodenal secretions, bile, lesions of the skin of large folds, onychomycosis, as well as deterioration of the well-being and condition of patients during antibacterial and hormonal therapy. Diagnostic criteria for candidal pneumonia:

• detection of Candida spp during histological examination and/or culture of lung biopsy;

• candidemia (isolation of a culture of Candida spp. from the blood) and/or signs of acute disseminated candidiasis - identification of the fungus from deep tissues/organs of two or more localizations;

• radiological and clinical signs of pneumonia or disseminated lung disease resistant to antibacterialtherapy.

The main types of pathogens include Candida non-albicans, C. parapsilosis, C. glabrata, C. krusei, C. lusitaniae [1, 6, 8]. Also, according to various data, almost 40% of healthy ICU staff isolate various strains of Candida spp. from their hands. Long-term parenteral nutrition is associated with a high risk of infection with C. parapsilosis. The gold standard for diagnosing invasive candidiasis is currently a blood culture study followed by species identification of the pathogen, but this method is not considered an early diagnosis method and requires large volumes of blood to conduct the study. Sensitivity of blood culture for detection of Candida spp. does not exceed 50–75%.

The purpose of the study is to study modern approaches to the diagnosis, treatment and prevention of candidal pneumonia in children.

Material and methods. To determine the significance of fungal infection, a clinical and laboratory study was conducted on the diagnosis and treatment of fungal infection in newborn children of different gestational ages and infants in the ICU; in children of this group at the 2nd stage of treatment. All children received complex antibacterial, replacement and antifungal therapy for a long time. Every 5-7 days, microflora from different loci with sensitivity to antibacterial and antifungal drugs were determined, studies were carried out for the presence of systemic inflammatory response syndrome (SIRS), and the severity of the children's condition was determined. Species identification and sensitivity determination of bacterial and

Western European Journal of Medicine and Medical Science
Volume 2, Issue 3, March, 2024
https://westerneuropeanstudies.com/index.php/3
ISSN (E): 2942-1918 Open Access| Peer Reviewed

fungal flora were carried out using standard bacteriological methods. Laboratory diagnosis of fungal infection included: smear microscopy, cultural diagnosis; To detect superficial colonization, cultures of tracheobronchial aspirate from the oropharynx were performed.

Research results and discussion. 40 infants were under observation. All children had a mixed infection (bacterial, fungal, viral). No statistically significant clinical indicators of intrauterine viral infection were identified; bacterial infection is represented by a variety of (Pseudomonas aeruginosae, Klebsiellae pn., Staphylococcus aureus, Str.epidermidis Acinetobacter baunamii, Enterococcus spp.), including nosocomial flora. Group 1 included 16 children (10 newborns and 6 infants) who received antibacterial and respiratory therapy on a ventilator for 5 days. Group 2 included 24 infants who did not require respiratory support, but received antibacterial therapy. Four newborns from group 1 developed symptoms of pneumonia on the 4th day, for which it was necessary to replace broader-spectrum antibiotics. In newborns and infants, fungi of the genus Candida albicans (57%), Candida parapsilosis (19%), C. Krusei (3%), C. glabrata (7%), C. sake (4%) were mainly determined. . Superficial colonization was detected only in 67% of cases. In 78% of children, fungi were detected in the urinary tract at different periods, in second place - in the intestines, followed by the importance of determining the fungal flora - sputum from the respiratory tract or scrapings from the oropharynx. Local damage to the mucous membrane and skin was noted only in very sick children of group 2, who were treated for a long time in the ICU. The mucous membrane became red, swollen and covered with a film. In the case of a protracted local fungal infection, a second focus was sought and/or systemic antimycotics were prescribed. The difficulty of clinical diagnosis of fungal invasion was that with generalized infection by any microbiological agent (bacterial, viral, fungal), a systemic inflammatory reaction syndrome and multiple organ failure developed. In ICU children, a mixed infection was present, therefore a positive procalcitonin test, high C-reactive protein, leukocytosis, neutrophilia or neutropenia were determined. According to risk factors, patients in both groups required antifungal therapy.

Conclusion. In routine practice, the leading factors in the diagnosis of fungal infection are risk factors and suspicion of the possibility of fungal invasion. The clinical picture is unreliable, laboratory diagnostics are highly specific, but insensitive. Therefore, in newborn surgical children with risk factors for fungal infection, a prophylactic empirical dose of antifungal drugs was the initial therapeutic dose. Frequency of surface colonization by Candida spp. in children at high risk of developing invasive mycoses in the ICU is statistically insignificant.

Literature

1. Actinomycosis: a great pretender. Case reports of unusual presentations and a review of the literature /Acevedo F., Baudrand R., Letelier L. M., Gaete P. // Int J. Infect Dis. 2007. Dec 27.
2. Adequate empirical therapy for nosocomial fungal infections in cancer patients in the intensive care unit./ Mitrokhin S.D., Fedankov I.N., Khoteev A.Zh., Sokolov A.A. // Antibiotics and chemotherapy. 2012
3. Treatment of fungal infection in premature infants. / Antonov A.G., Prikhodko N.A., Ankirskaya A.S., Rudakova A., Prutnevich T.V.// Russian Bulletin of Perinatology and Pediatrics. 2012.
4. Treatment of fungal infection in extremely premature infants. / Antonov A.G., Prikhodko N.A., Ancyra A.S., Rudakova A., Prutnevich T.W. // Russian Gazette and

Western European Journal of Medicine and Medical Science
Volume 2, Issue 3, March, 2024
https://westerneuropeanstudies.com/index.php/3
ISSN (E): 2942-1918 Open Access| Peer Reviewed

Perinatology pedtatrii, 2012. https://cyberleninka.ru/article/n/proklyatie-faraonov-ili-gribkovye-infektsii-legkih-pnevmomikozy/viewer

5. Clinical observation of a patient with pulmonary candidiasis / R.I. Semyonova, A.I. Panchenko, A.B. Kulembaeva, R.U. Mukhambetova // KazNMU No. 4-2015 pp. 381-382.
6. Causes of mortality and severity of the condition of newborn children with developmental defects. /Melnikova N.I., Ostreykov I.F., Strogonov I.A. etc. // Anesthesiology and resuscitation. 2014; 59 (5): 70—3.
7. The clinical use of blood and/or its components in pediatrics. /Ostreikov I.F., Melnikova N.I., Pavlova D.E., Strogonov I.A. // Tutorial. (Clinicheskoe primenenie donorskoy krovi v pediatrii). Tutorial M. Uchebnoe posobie. 2013; 63 p.
8. ESCMID guideline for the diagnosis and management of Candida diseases 2012. Journal of Clinical Microbiology & Infectious Diseases. 2012; 18 (Suppl. 7): 1—67.