ISSN: 2692-5206
AMERICAN ACADEMIC PUBLISHER
INTERNATIONAL JOURNAL OF MEDICAL SCIENCES

HOSPITAL INFECTIONS IN NEWBORNS

L.X.Sharipova

University Zarmed

Department of Clinical Sciences. Uzbekistan

ABSTRACT: 41 newborn children were examined. Bacteriological analysis of culture was carried out in 32 newborns with umbilical wound infection and eye infection of the contents of the conjunctival cavity in 41 newborns.

The weight of newborns were 3000-4000g-6 (14.6%), 2500-2999g-9 (19.5%), 2499-2000g-12 (29.2%), less than 2000g-14 (34.1%)).

All newborns underwent bacterial inoculation of the contents of the umbilical cord and conjunctival cavity before receiving antibacterial treatment.

The obtained data of bacteriological analysis indicate the leading role of gram-positive bacteria Staph-Epidermis - 71.3% and Staph-aureus - 13.6%, the share of other pathogens was from 3.4%. In 11.7%, the culture was sterile.

Key words: nosocomial infection, conjunctivitis, bacterial culture, gram-positive bacteria, premature babies, newborns..

Definition. According to the definition of the CDC (Centers for Disease Control and Prevention – Centers for Disease Control and Prevention), a hospital infection is considered to be a local or systemic condition that occurs as a result of a hostile reaction of the infectious agent(s) or its toxins, which were not present at the time of the patient's admission to the hospital. A clear definition of "hospital-acquired or hospital-acquired infection" is needed at both the hospital and regional or national levels. This ensures the registration of cases of hospital infection according to uniform criteria, helps to accumulate information for analyzing the epidemiological situation and taking measures to prevent cases of hospital infection, makes it possible to compare data from one medical institution with another and create an overall picture (database) of a region or country.

The definition of hospital infection should be based on the clinical signs of infection, the results of laboratory data (general blood analysis, cultures, antigenic determination of microbes or antibodies, microscopy of secretions, etc.), the results of other examination of the patient (X-ray, ultrasound, computed tomography, tissue biopsy, etc.).

Nosocomial infections in newborns are infections that develop after the birth of a child in the neonatal unit. These infections are not transmitted in utero, and the baby is not infected by it from the mother during childbirth. These infections can be caused by bacteria, viruses, or fungi.

ISSN: 2692-5206
AMERICAN ACADEMIC PUBLISHER
INTERNATIONAL JOURNAL OF MEDICAL SCIENCES

Epidemiology. In the United States, 2 to 25% of cases occur in neonatal intensive care units (Stoll B.J. et al., J Pediatr 1996, 129). Hospital infection, and in particular hospital sepsis, is significantly more common in premature infants (Isaacs D.Arch Dis Child 2003, 88; Lopez Sastre J.B. et al., J Perinat Med 2002, 30). 45% of deaths of newborns after two weeks of age are associated with the late onset of sepsis. In developing countries, 1.6 million newborns die from infection each year, accounting for 40% of all neonatal deaths. The incidence of neonatal sepsis is 6.5–38 per 1,000 live births. If we include gastroenteritis, pneumonia, omphalitis, phlebitis, and urinary tract infection in this number, then the infection rate is 18-130 per 1,000 live births. The incidence of sepsis is 3-20 times higher than in developed countries (1-5 per 1,000 live births).

Among newborns with very low birth weight, hospital sepsis occurs in 20-41%, and including other forms of infection, it reaches 68% of these children.

In Brazil and Indonesia, 51-52% of all newborns admitted to the ICU have a hospital infection. About 70% of infections occur in the first 7 days of life. The main route of transmission is through the hands of medical personnel.

Gram-negative microorganisms (Klebsiella, Pseudomonas, Acinetobacter) account for almost half of all early sepsis. Of all the positive blood cultures, Klebsiella is sown in 16-18%, St.aureus – 8-22%. Klebsiella infection alone kills about 320,000 newborns each year. About 70% of Klebsiella cases are resistant to ampicillin and gentamicin, in more than 50% of cases

The largest number of hospital infections occurs in neonatal pathology departments, where the child stays for a long time. Purulent–inflammatory diseases of the skin, navel and umbilical vessels, eyes, pneumonia in neonatal age are considered hospital infections. According to D.O.Ivanov (2019), the incidence of such infections in full-term newborns is less than 1%. According to WHO, nosocomial infections (NI) affect 8% of patients in hospitals. The annual damage in the United States from NI is $ 4.6 billion. In Russia, 50-60 thousand are registered annually. cases of nosocomial infection, however, according to estimates, this figure is 40-50 times higher. The incidence of local purulent–inflammatory diseases in newborns is approximately 8%.

According to research data from the Centers for Disease Control and Prevention in the USA, Europe and the Interdepartmental Scientific Council for NI (Russia), the incidence of hospital infection in newborns in pediatric clinics ranges from 4 to 7% [4].

So, in the USA, the NI level in neonatal intensive care and intensive care units ranges from 5.9 to 31.8%. The development of NI in newborns leads to an increase in the length of hospitalization and financial costs. For example, the cost of treating newborns with NI in intensive care units is about 2500-3000 euros per day in Europe and 4000-5000 dollars in the USA [4].

The main risk factors for NI in newborns are [2,3,5, 8]:

1) low gestational age (especially less than 32 weeks);

ISSN: 2692-5206
AMERICAN ACADEMIC PUBLISHER
INTERNATIONAL JOURNAL OF MEDICAL SCIENCES

2) morphofunctional immaturity and perinatal pathology;

3) long period of hospitalization;

4) the use of medical instruments (vascular catheters, intubation tubes, nasal cannulas, urinary catheters, etc.);

5) the use of medical equipment (ventilators, monitors, electrodes, cuffs, inhalers, suction cups, etc.);

6) drug therapy (antibacterial, immunosuppressive, transfusion of blood substitutes, plasma, parenteral nutrition drugs);

7) birth defects;

8) enteral nutrition disorders;

9) surgical interventions.

An important factor contributing to the development of NI is the low weight of the newborn. So, for every 500 g of body weight loss, there is an increase in NI levels by 3%. The incidence of hospital infection in premature infants is inversely proportional to gestational age [9, 10]. A feature of infection in such children is the development of complications against the background of reduced immunological resistance of the body [3].

The purpose of the study. The aim of the study was to study the state of microflora in newborns with purulent-septic diseases of the navel and eyes located in the neonatal department of the Bukhara regional Multidisciplinary Medical Center from January 2023 to December inclusive.

Materials and methods of research. The number of treated children in the neonatal unit was 471. 41 children were examined. Bacteriological analysis of culture was performed in 32 newborns with umbilical wound infection and ocular infection of the contents of the conjunctival cavity in 41 newborns.

The neonatology department admitted newborns with signs of omphalitis from catarrhal to purulent and blepharoconjunctivitis between the ages of 1 and 15 days after birth. The weight of newborns was 3000- 4000 g-6 (14.6%), 2500-2999g-9 (19,5%), 2499- 2000 g- 12 (29.2%), less than 2000 - 14 (34.1%). All newborns underwent bacterial culture of the contents of the umbilical cord and conjunctival cavity before receiving antibacterial treatment.

The results of the study. From the medical history of these mothers, diseases were noted during pregnancy, such as: urinary tract infection in the form of pyelonephritis - 22 (53.6%), suffered an acute respiratory viral infection during pregnancy - 25 (60.9%), inflammatory processes in the birth canal - 28 (68.2%), genital candidiasis in 8 (19.5%), etc.

ISSN: 2692-5206
AMERICAN ACADEMIC PUBLISHER
INTERNATIONAL JOURNAL OF MEDICAL SCIENCES

The obtained bacteriological analysis data indicates the leading role of Gram-positive bacteria Staph.Epidermis-71.3% and Staph. aureus- 13.6%, other pathogens accounted for 3.4%. In 11.7%, the crop was sterile. The cause of nosocomial infection is considered to be the pathogen that circulates in the department and acquires the characteristics of a hospital strain. The study of the resistance of NI pathogens in newborns shows that klebsiella is most sensitive to amikacin and cefotaxime, Pseudomonas aeruginosa to amikacin, colistin, thienam and cefzulodine. In most cases, E. coli is sensitive to amikacin and cephalosporins of the third generation (cefotaxime, ceftriaxone, etc.).

In infections caused by coagulase-negative staphylococcus, clindamycin and vancomycin are the most effective. These microflora were predominantly sensitive to protected penicillins, cephalosporins of the 1st generation, and 10% to macrolides, which made it possible to prescribe these drugs.

An analysis of the results revealed that children weighing less than 2,000 grams were more susceptible to various infections. Low-weight newborns have a high risk of nosocomial infections compared to normal-weight children.

The results of bacteriological analyses indicate the prevalence of bacteria such as Staph.Epidermis, which indicates a violation of the rules of hand washing for the mother or the attending medical staff of the department in which the child was located.

Conclusions

1. In newborns in hospital, it was found that the majority of patients with nosocomial infections were among children with a body weight of less than 2000 grams, the number of patients with Staph.Epidermis and Staph. Aureus prevailed in relation to other infections.

2. Children born to women who have chronic foci of infection are more susceptible to nosocomial infections.

3. Clinics with a neonatology department should monitor the colonization of conditionally pathogenic microflora of newborns with various infections.

Recommendations:

Doctors' knowledge of the state of hospital microflora is important not only when choosing effective antibacterial treatment, but also for monitoring the epidemiological situation in neonatal units.

For the prevention of nosocomial infection in neonatal units in maternity hospitals and clinics, it is recommended to identify and sanitize bacterial vaginosis, foci of chronic inflammation (especially in the genitourinary area) in a pregnant woman, prevent her from acute infections, from dynamic observations of her in the antenatal clinic, create conditions for a favorable course of pregnancy and early correction of disorders, and prevent premature pregnancy.

ISSN: 2692-5206
AMERICAN ACADEMIC PUBLISHER
INTERNATIONAL JOURNAL OF MEDICAL SCIENCES

Compliance by staff in maternity hospitals and neonatal pathology departments of children's hospitals with the developed standards of antiepidemic measures is the most important condition for the prevention of purulent-septic diseases in newborns.

The most important of these is washing the hands of mothers, nurses and doctors with liquid antiseptic soap every time before and after contact with a newborn.

REFERENCES

1. Адарченко, А. А. Внутрибольничные инфекции: понятие, классификация, критерии диагностики /А. А. Адарченко /Здравоохранение. 2000. № 8. С. 41–43.

2. Бадиков, В. Д. Клинико-микробиологические и эпидемиологические аспекты госпитальных инфекций в хирургической клинике / В. Д. Бадиков [и др.] // Воен.-мед. журн. 2000. Т. CCCXXI, № 9. С. 51–56.

3. Бусуек, Г. П. Заболеваемость госпитальными инфекциями новорожденных и родильниц на загрязненных радионуклидами и контрольных территориях / Г. П. Бусуек [и др.] // ЖМЭИ. 2002. № 1. С. 32–37.

5. Гельфанд, Б. Р. Нозокомиальная инфекция в интенсивной терапии / Б. Р. Гельфанд [и др.] // Анестезиол. и реаниматол. 1997. № 3. С. 4–7.

6. Касихина, С. А. Госпитальные инфекции в неонатологии и принципы организации профилактических мероприятий в «проблемных» отделениях / С. А. Касихина [и др.] // Педиатрия. 2004. № 3. С. 66–69.

7. Ковалева, Е. П. Внутрибольничные инфекции в педиатрии / Е. П. Ковалева, Н. А. Семина //Эпидемиол. и инфекцион. бол. 2002. № 5. С. 4–6.

8. Красильников, А. П. Этиология госпитальных инфекций / А. П. Красильников // Здравоохранение Белоруссии. 1987. № 2. С. 59–66.

9. Меньшиков, Д. Д. Профилактика и лечение внутрибольничных гнойно-септических инфекций / Д. Д. Меньшиков [и др.] // Эпидемиол. и инфекцион. бол. 2000. № 5. С. 44–46.

10. Мусина, Л. Т. Этиология и нозология внутрибольничных гнойно-воспалительных заболеваний у новорожденных детей / Л. Т. Мусина, Н. А. Семина, К. К. Гладкова // Рос. вестн. перинатол. и педиатрии. 1995. Т. 40, № 1. С. 39–42.

11. Ричард А. Полин, Марк Ф. Дитмар. Секреты Педиатрии. 2001. Второе издание.

12. Koch R.K. Issues in Newborn Screening for Phenylketonuria. Am Fam Physician 1999; 60:1462–6