JOURNAL OF MULTIDISCIPLINARY SCIENCES AND INNOVATIONS
VOLUME 05, ISSUE 01
MOPNTHLY JOURNALS
ISSN NUMBER: 2751-4390
IMPACT FACTOR: 9,08

CLINICAL AND EPIDEMIOLOGICAL FEATURES OF BORDETELLA PERTUSSIS IN VACCINE PREVENTION CONDITIONS

Hoshimov A.N., Usmanova E.M.
Andijan State Medical Institute

Summary

Today, despite the ongoing vaccination, pertussis remains a medical problem, as it continues to be a common bacterial infection, involving children of different age groups in the epidemic process. The absence of persistent immunity to whooping cough in combination with a high susceptibility index contributes to an increase in the incidence of the disease among schoolchildren and adolescents, who are more often diagnosed only as a result of epidemiological and laboratory studies, and who, in most cases, serve as a source of infection for young children.

Keywords

whooping cough, vaccination, cough, diagnosis, antimicrobial therapy, prevention, immunity.

Relevance

Bordetella pertussis continues to lead the group of managed infectious diseases, despite the mass vaccination being carried out worldwide since the beginning of the 50s of the last century [1, 3]. According to World Health Organization (WHO) estimates, 24.1 million people worldwide contracted whooping cough in 2014, and approximately 160,700 children, mostly under one year old, died. In modern conditions, the number of mild and atypical forms of the disease among previously vaccinated adolescents and adults is increasing worldwide, which are the main sources of infection for young children [5]. Cases of asymptomatic carriage of *Bordetella pertussis* have been established [6, 7].

In modern conditions, the classic clinical picture of whooping cough has persisted in unvaccinated children. The main symptom of the disease is a seizure-like cough that primarily disturbs the child at night, accompanied by facial hyperemia, cyanosis of the nasolabial triangle, repetitions, sometimes vomiting, and the discharge of viscous, glassy mucus at the end of the seizure [2, 3].

The relevance of the problem of whooping cough reveals its practical significance due to the persistence of severe forms of the disease in unvaccinated infants, the high frequency of their infection in family settings, as well as, as noted by several authors, the underdiagnosis of the disease, which is due to both insufficient effectiveness of laboratory diagnostic methods used in clinical practice and atypical course in older children and adults.

Research objectives: to study the clinical features of the course of whooping cough among vaccinated children and to confirm the need to improve vaccination regimens against whooping cough.

Materials and methods of research. The study was conducted among sick children admitted to the airborne droplets department of the Andijan Regional Infectious Diseases Hospital with the diagnosis of "Bordetella pertussis" in 2024-2025.

The study included dynamic clinical observations, results of laboratory and instrumental research methods. The etiological interpretation of the diagnosis was carried out using bacteriological, immunoenzymatic research methods.

The obtained research data were statistically processed using the MS Excel 2010 spreadsheet package and summarized in a database using the IBM SPSS Statistics v.19 statistical

package. The results of the observed traits are expressed in absolute numbers with the indication of fractions (%).

Research results and discussion. When analyzing the age of patients, the study showed that among children admitted for the first year of life, 71,3% of children prevailed, children from 1 to 2 years old constituted 14.6%, from 3 to 6 years old - 7,9%, and sick children of the 7-9 age group - 2,4% and 10-14 years old - 3,8% of children.

Among sick children under one year of age, patients aged 0 to 2 months (42,7%) and 3-5 months (35%) were more common. The disease was observed in 22,2% of children in the second half of life. Sex differences were not observed among those admitted to the hospital: 48,8% were girls and 51,2% were boys. A complicated premorbid background occurred in 33% of children: maternal pregnancy and childbirth pathology in 32,9%, perinatal CNS damage in 29,9%, early artificial feeding in 28,7%, complicated allergic history in 17,1%.

When clarifying the epidemiological history, it was established that in young children, the source of infection was mainly 65,9% of long-term coughing family members. When clarifying the vaccination history, it was found that 30,5% of unvaccinated children are mostly from 0 to 3 months of age, and 30,5% are unvaccinated. Rejection of vaccinations occurred in 17,1% of children, medical refusal in 19,5% (32 children). Among those vaccinated, shifts in immunization timing occurred in 18,9% of patients, and 14,0% of patients were fully vaccinated.

When observing the clinical picture of whooping cough, it was determined that 70,1% of sick children were admitted to the hospital after 10 days from the onset of the first signs of the disease, only 23,2% of children were admitted to the hospital on days 6-10 and 6,7% of children on days 4-5 of the disease.

63,4% of patients were brought to the hospital by the ambulance team, 26,2% of children were referred to the hospital by the district pediatrician, and 10.4% of children were brought to the hospital by their parents. 65,8% - 10^8 children were hospitalized with a preliminary diagnosis of "Bordetella pertussis".

At the time of the children's admission to the hospital, the following clinical manifestations of whooping cough were observed: in 97,7% of children, a seizure-like cough with facial redness, in 90,2% of children, cyanosis of the nasolabial triangle, in absolutely all sick children, thick, viscous sputum discharge at the end of the seizure, in 59,7% of children, vomiting, in 77,4% of cases, recurrence, and in 12,2% of children, spasmodic apnea.

A moderate form of whooping cough was diagnosed in 82,3% of patients, and a severe form in 15,2% of children. In 20,1% of patients with whooping cough, the course of the disease was uneven. Of these, 48,5% were diagnosed with bronchitis, 39,4% with pneumonia, 9,1% with encephalopathy, and 3,0% with hemorrhage into the sclera. In the study of the general blood count, in patients with moderate severity of the disease, leukocytosis was up to $20,0x10^9/l$, in severe forms - up to $25,0x10^9/l$, lymphocytosis reached 70-80%.

All children diagnosed with whooping cough received comprehensive etiopathogenetic therapy. Of the antimicrobial drugs, drugs from the third-generation cephalosporin group (cephotoxime or ceftriaxone) were frequently used. In addition, the complex therapy included cough medications, and in the presence of abundant, viscous, difficult-to-separate sputum, mucolytic drugs were prescribed. 15,2% of patients with the severe form of the disease received systemic glucocorticosteroids, benzodiazepine group drugs, and short-term diuretics. Only 6,1% of sick children with a severe form of the disease required treatment in intensive care units. In spasmodic cough attacks, 70,1% of children were cured on days 7-10 from the time of admission to the hospital, 17,7% on days 14-15 and 9,8% on days 4-5. All the sick children we observed were discharged home with clinical recovery and normalization of laboratory indicators.

Conclusions. The results of clinical and laboratory studies of children diagnosed with whooping cough in various age groups under conditions of mass vaccine prevention showed that among patients, especially young ones, moderate and severe forms of the disease are often noted, with the development of both specific and nonspecific complications. Children who haven't received vaccination often get sick, but as we know, protective immunity also prevents the development of whooping cough disease only in the first years after immunization.

References:

1. Babachenko, I.V. Pertussis in children / I.V. Babachenko, S.M. Kharit, N.N. Kurova, G.Ya. Tseneva // M.: Commentary. - 2014. - 176 p.
2. Borisov, A.S. Pertussis and parapertussis in the modern practice of a district pediatrician / A.S. Borisov, E.S. Tsukanova, O.V. Gurovich [et al.] // Bulletin of Scientific Conferences. - 2017. - No. 1-1 (17). - P. 34-36.
3. Bouchez, V. Genomic sequencing of Bordetella pertussis for epidemiology and global surveillance of whooping cough / V. Bouchez, J. Guglielmini, M. Dazas [et al.] // Emerg. Infect. Dis. - 2018. - Vol. 24 (6). - P. 988-994.
4. Ebell, M.H. Clinical diagnosis of Bordetella pertussis infection: a systematic review / M.H. Ebell, C. Marchello, M. Callahan // J. Am. Board Fam. Med. - 2017. - Vol. 30 (3). - P. 308-319.
5. Medkova, A.Yu. The prevalence of distorted forms of whooping cough and the analysis of the phase states of Bordetella pertussis bacteria / A.Yu. Medkova, Yu.S. Alyapkina, A.N. Sinyashina [et al.] // Children's Infections. - 2010. - No. - P. 19-22.
6. Trainor, E.A. Bordetella pertussis transmission / E.A. Trainor, T.L. Nicholson,
7. Zhang, Q. Prevalence of asymptomatic Bordetella pertussis and Bordetella parapertussis infections among school children in China as determined by pooled real-time PCR: A cross-sectional study / Q. Zhang, Z. Yin, Y. Li [et al.] // Scand. J. Infect. Dis. - 2014. - Vol. 46 (4). - P. 280-287.
T.J. Merkel // Pathog. Dis. - 2015. - Vol. 73 (8). - ftv068.