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EPIDEMIOLOGICAL FEATURES OF THE COURSE OF WHOOPING COUGH IN CHILDREN UNDER 5 YEARS OLD

Abstract: An analysis of the medical records of inpatient children aged 0–12 months was conducted: 43 patients treated during 2016 and 29 patients treated in 2010–2024 with a diagnosis of “pertussis” in the Samarkand Regional Infectious Diseases Clinical Hospital. It was established that the incidence of pertussis is increasing, a clear seasonality of the disease was revealed, and a number of differences in modern pertussis were identified according to a number of clinical and laboratory indicators.

Keywords: whooping cough, children, course.

INTRODUCTION

Whooping cough is an acute respiratory disease that affects all age groups, but the most severe course and high incidence of complications are characteristic of young children. Although official WHO statistics characterize the annual incidence in the world within 150 thousand cases, the real incidence is much higher: 30–50 million people fall ill with whooping cough annually, 90% of whom live in developing countries. A similar situation has developed in Uzbekistan, despite the fact that 85–90% of children are vaccinated against whooping cough annually, the incidence remains at a fairly high level.

MATERIALS AND METHODS

A retrospective analysis of medical records of inpatient children aged 0–12 months who were treated at the Lviv Regional Infectious Diseases Clinical Hospital was conducted. Data from 43 patients treated during 2024 and 29 children treated in 2010–2024 were processed. Since positive results of bacteriological examination were obtained only in isolated cases, the sample included children who described a cough lasting at least 14 days, combined with paroxysms, relapses, vomiting after coughing, cyanosis, apnea without other established causes, as well as according to the diagnostic algorithm proposed in 2024 [2] (Appendix 1). Another criterion for forming the sample was an increase in the absolute number of lymphocytes (> 9,500 109/l), since lymphocytosis in a child with suspected whooping cough, according to modern data, is a sufficiently sensitive and specific diagnostic criterion (specificity — 75%, sensitivity — 89%) of the disease [3]. The severity of whooping cough was assessed using the 20-point scale of M.-P. Preziosi, E. Halloran [4]. The analysis was carried out using 104 indicators, which covered the main epidemiological, clinical data, and laboratory test results. Statistical analysis was carried out using MS Excel, Statistica 8.

RESULTS AND DISCUSSION

When dividing children by months of hospitalization, it was found that, although children with a diagnosis of "whooping cough" were hospitalized throughout the year, statistically significant increases in morbidity were observed twice: during January - March and July - September. Two waves of increased morbidity were detected both in 2024 and ten years ago.

Children in the two groups did not differ significantly in age at the time of hospitalization, body weight at birth, body weight at the beginning of inpatient treatment, and gender distribution. No statistically significant differences were found between the time from the onset of the first symptoms of whooping cough (rhinitis, coughing, fever) and the moment of hospitalization. However, in children hospitalized in 2024, cough lasted significantly longer before admission — 15.17 ± 2.30 days (compared to 13.25 ± 3.70 days in 2010–2024, $p < 0.05$), while there was also a longer period of spasmodic cough, which was 6.80 ± 3.33 days (compared to 4.69 ± 1.18 days, $p > 0.05$).

During 2024, the duration of inpatient treatment of children was 13.57 ± 2.72 days, and the duration of the disease from the beginning of the catarrhal stage to the end of the spasmodic cough period was on average 27.21 ± 5.51 days; the duration of these periods of illness has practically not changed over 10 years. The duration of the disease and the time of stay of patients in the hospital did not statistically significantly depend on the age of the child, the severity of the disease, the presence of complications or the results of laboratory and instrumental examinations. Early infants were ill somewhat longer than children aged 6–12 months, but these differences were not statistically significant. Thus, in infants aged 0–6 months in 2024, whooping cough from the beginning of the catarrhal stage to the end of the spasmodic cough period lasted on average 28.18 ± 2.31 days, in children aged 7–12 months — 25.27 ± 2.88 days, similar patterns were found in children hospitalized during 2010–2024, the average duration of the above periods of illness was 30.12 ± 4.20 and 26.81 ± 3.05 days, respectively. Among the people hospitalized in 2024, some infants were vaccinated, 2 children (6.0%) were vaccinated 1 or 2 times, and among the children treated in 2010–2024, — 6 (23.7%). The occurrence of whooping cough among vaccinated patients was observed in cases where the vaccine was administered to children only once or twice, as well as in the case of the disease occurring in a short period of time after the last vaccination (on average 10.23 ± 3.10 days).

Basically, whooping cough in young children in both groups was typical. At the time of hospitalization of patients in the hospital, an increase in body temperature was detected in 42.3% of patients, however, in all children with hyperthermia, the body temperature was subfebrile (the average body temperature was 37.20 ± 0.16 °C in children hospitalized in 2024, and 37.60 ± 0.34 °C in children treated in 2010–2024), the duration of hyperthermia did not exceed 3.5 days and was 1.56 ± 0.14 days on average. The highest temperature was observed in children aged 7–12 months. compared to children aged 0–6 months, which was confirmed by the results of correlation analysis — $r = 0.25$, $p < 0.05$ (correlation coefficient between the age of children in months and body temperature).

CONCLUSION

So, according to the data of a retrospective examination of children aged 0–12 months who were hospitalized with a diagnosis of "pertussis" with an interval of 10 years, it was found that the incidence of pertussis in young children is increasing, a clear seasonality of the disease was revealed. The differences in the course of pertussis in infants in 2024 compared to 2010–2024 include a longer duration of the disease at the prehospital stage, less pronounced shortness of breath, a lower frequency and shorter duration of physical changes in the lungs, and lower levels of leukocytes in peripheral blood. We identified three reasons that probably caused these differences in the course of pertussis in young children. First, this is a change in the dominant serotype of the pathogen B. pertussis to another, so, according to T.A. Romanenko, I.P. Kolesnikov [1], several facts of serotype change have been established over the past decades: in 2018, the predominant serotype changed from 1.0.3 to 1.2.3, in 2006–2010 — from 1.0.3 to 1.0.0, in 2010–2024 — from 1.2.3 to 1.0.3, in 2013–2024 — from 1.0.3 to 1.2.3, in 2015–2023 — from 1.2.3 to 1.0.3.

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