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INSPIRON IN BRONCHOPULMONARY PATHOLOGIES OF VIRAL-BACTERIAL ETIOLOGY IN CHILDREN

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100 children from 2 to 10 years of age including with bronchopulmonary pathology of viral-bacterial etiology were examined for the purpose of studying the clinical efficacy and safety of the use of Inspiron. The main group of 50 children received Inspiron, control (50 people) – ambroxol. The efficacy and safety of the drug was assessed by the dynamics of bronchial obstructive syndrome, cough, dyspnea, physical parameters of the respiratory system, tolerability and the presence of allergic reactions.

The carried out researches have shown high efficiency of the preparation «Inspiron». A pronounced broncho-obstructive, mucolytic, antitussive effect was revealed, and an easier withdrawal of sputum was recorded. In no case are allergic reactions or laryngospasm recorded. There was a significant reduction in the stay of children in the hospital, which led to a reduction in the costs of the medical institution for treatment and examination.

Key words: Inspiron, ambroxol, broncho-obstructive syndrome, cough, dyspnea

In the structure of acute child morbidity acute respiratory infections of viral and viral-bacterial nature are dominated. The greatest importance in the etiology of this disease is a virus and viral-bacterial associations. Statistical analysis of the causes of appealability for medical assistance showed that 30% of all visits to the pediatrician are associated with complaints of cough (according to the European respiratory society and the scientific society of pediatric pulmonology and Allergology) [1, 2].

The force of the damaging effect of microorganisms depends on many factors: the properties of the pathogen, the body's ability to resist infection, which is determined by the forces of natural protection of the body and the respiratory tract in particular [3].

The most common symptom in lesions of the Airways is cough resulting from catarrhal inflammation of the mucous membranes of the respiratory tract. Cough is a protective reaction of the body, which plays a major role in the self-purification of the respiratory tract from foreign bodies or secret; it is forced out through the mouth, caused by the contraction of the muscles of the chest and diaphragm due to irritation of the cough receptors [4, 5, 6].

The mechanism of the cough associated with irritation of receptors of the vagus nerve in the region of reflex zones of the larynx, the bifurcation of the trachea, large bronchi. The main causes of low effectiveness of cough in children of early age are weakness of the chest muscles, the relative narrowness of the lumen of the bronchi, increased viscosity and hypersecretion of mucus [7].

To respiratory viral infection proceeds smoothly you need to stop the inflammatory process at an early stage of the disease. This goal can be achieved by the timely appointment of pathogenetic and causal treatment and does not always require the appointment of antibacterial drug [8].

Relief of cough is an important step in the treatment of respiratory diseases. Pharmacotherapy of cough involves the use of drugs antitussives cough, and high action. In children in the acute period of the disease is pathogenetically justified the use of drugs, comprehensively acting on all sides of the pathological process of coughing: the restoration of bronchial drainage function, anti-inflammatory, bronchospasmolytic therapy.

Treatment of children during the first months of life hampered by certain challenges: limited list of drugs permitted for use, high risk of allergic reactions, dysbiosis, immune deficiency, etc. [9].

Modern drugs antitussive actions can be conditionally combined in 4 groups with different mechanisms of action: 1) drugs, depressing the cough center; 2) direct action mucolytics, mucolytics-kinetics; 3) expectorant drugs; 4) combined drugs. Selection of effective drug in the treatment of cough is an urgent and difficult problem when choosing the right drug in a large registry[9].

All these requirements are met by known drug Fenspiride, which has anti-inflammatory, antispasmodic action on the smooth muscle of the bronchi, inhibits adrenergic receptors, stimulating the secretion of viscous mucus. In addition, Fenspiride improves mucociliary clearance and reduces the severity of coughing. Fenspiride also successfully replaces three or four etiopathogenic

and symptomatic of the drug in the treatment of ARVI and its complications, that is, in essence, prevents from polypragmasy [10]. Feature of Fenspiride is a high therapeutic efficacy, the possibility of application in all age groups, including newborns [11].

In recent years, the authors of neighboring countries and abroad unanimously noted the effect of the application of Fenspiride in diseases such as chronic laryngitis, polypoly rhinosinusitis, chronic bronchitis, sinusitis, otitis and others. The use of Fenspiride in the treatment of viral infections in early childhood can be interpreted as pathogenetic therapy of acute the main symptoms of the disease, including a cough. The tolerability of this drug in most cases, the authors assessed as good, furthermore, cost-effective, the accompanying reduction in time spent in the hospital [12, 13, 14, 15, 16, 17].

Objective – to assess the efficacy and safety of the drug in children of different ages with bronchopulmonary pathologies of viral and bacterial etiology.

MATERIALS AND METHODS

Own research on evaluation study of clinical efficacy and safety of the drug "Inspiron" was held in 2017 in children aged 2 to 10 years, hospitalized in the regional infectious diseases hospital in Karaganda.

In this study we used the personal observation of the authors. Were examined 100 children included in 2 groups (main and control) that are consistent with diagnostic criteria and severity of the disease.

The structure of nosological forms in children of both groups are clearly represented in table 1.

In groups children were allocated by random sampling and was similar sex, severity of disease and age. Table 2 illustrated the distribution of the patients according to sex.

The age of children ranged from 2 to 10 years. The main share was accounted for by preschool children and the lowest for patients older than 7 years. Table 3 presents the age structure of children.

Since the mechanism of action in pediatric practice, there are no analogues to the Inspiron, as the comparison drug used Ambroxol as a mucolytic drug used for the treatment of respiratory diseases. Ambroxol was selected as the reference drug widely used in pediatric practice and have a high therapeutic efficacy, safety and tolerability in the use of one and the same pharmaceutical form syrup. During treatment, children in both groups received no other expectorants and mucolytics.

Children of the first group (main), which included 50 children, were prescribed the drug syrup Inspiron, according to the official manual of 4 mg/kg (1 ml, 2 mg substance) of body weight per day, divided into 2-3 doses. The minimum course of treatment of acute conditions made up for 7-10 days, chronic conditions – 2-6 months (Manufacturer: JSC «Kyivmedpreparat», Ukraine, 01032, Kyiv, Saksaganskogo str., 139).

The second group of 50 children (control) received «Ambroxol» in the form of syrup. To children from 2 to 6 years appointed 1 ml 3 times

Table 1 – Structure of nosological forms

Disease	Main group	Control group
ARVI	3 children (6,0%)	2 children (4,0%)
Acute obstructive bronchitis	14 children (28,0%)	17 children (34,0%)
Community-acquired pneumonia	23 children (46,0%)	25 children (50,0%)
Laryngotracheitis	10 children (20,0%)	6 children (12,0%)

Table 2 – The distribution of the patients according to sex

Group	Main group	Control group
Gender	Male – 33 patients (66,0%) Female – 17 patients (34,0%)	Male – 31 patients (62,0%) Female – 19 patients (38,0%)

Table 3 – The age structure of children

Age	Main group	Control group
2-3 years	36 children (72,0%)	42 children (84,0%)
3-7 years	11 children (22,0%)	6 children (12,0%)
>7 years	3 children (6,0%)	2 children (4,0%)

Table 4 – Main symptoms before treatment

Symptoms	Main group	Control group
Bronchoobstructive syndrome	14 children (28,0%)	17 children (34,0%)
Cough	50 children (100%)	50 children (100%)
Dyspnoea	32 children (64,0%)	25 children (50,0 %)
Harsh breathing	37 children (74,0%)	24 children (48,0 %)
Moist rale	14 children (28,0 %)	12 children (24,0%)
Dry rale	17 children (37,0 %)	28 children (56,0%)

a day, and older children – 2 ml 2 times a day. Inspiron and Ambroxol that were used in the dosage form syrup, was administered to achieve clinical effect in the form of a positive dynamic cough, dyspnoea, broncho-obstructive syndrome and physical picture of the respiratory tract.

RESULTS AND DISCUSSION

The efficacy and safety of Inspiron was evaluated by the following criteria: dynamics of broncho-obstructive syndrome, cough, dyspnoea, physical parameters of the respiratory system, portability and availability of allergic reactions.

Most of the children had been admitted to the hospital on the 2nd day of illness with complaints of intoxication (fever, loss of appetite, sleep disturbance, nausea, pallor), catarrhal phenomena, dyspnoea and cough. Cough dry, rough, painful, quite often were recorded mainly in the daytime. In the beginning of the disease the cough was dry and was of little efficiency nature. The disease in individual children was accompanied by hoarseness and 2 children aged 2 to 3 years – by afonia. In 10% of children in both groups, although the cough was moist, but not effective, and sputum was coughed up with difficulty.

The most pronounced and painful cough, sleep-disturbing night-time, was in the older children. In children during the first two years of life the cough was unproductive due to the anatomical and physiological peculiarities of children of early age (the narrow lumen of the bronchi viscous secretion of the tracheobronchial tree). Table 4 presents the main symptoms of the disease before treatment.

In patients in basic and control groups at 28 % and 34%, respectively, was pronounced bronchoobstructive syndrome, which was manifested by dyspnoea of mixed character, remote wheezing, cough, decreased breath sounds or hard breathing during auscultation of the chest, dry or moist rales.

On the second day after treatment the children in the main group positive visible changes were observed obstructive syndrome. So, in the main group of syndrome of bronchial obstruction in 10 patients at 2 days had a minimal severity in comparison with the control group ($p< 0.05$) and on day 3 in all children it was virtually eliminated. In the control group in 8 patients an improvement was observed only on day 5, and complete reversal of the process reached its peak in 7-10 days, significantly later in comparison with the main group.

Cough in children in both groups at the beginning of the disease was dry and painful, the expectoration was difficult or entirely absent. In the main group already at day 3 in 50% of patients cough is moist with good abjointed sputum, and on day 5, 96% of children completely disappeared. The dynamics of positive changes of cough in the control group was slower ($p< 0.05$) and positive picture began to emerge only after 5 days of hospitalization. In 20% of patients of control group cough persisted even up to 7 days of treatment in the absence of cough in children of the main group. Cough dynamics during the course of treatment with Inspiron demonstrated in figure 1 where the vertical axis reflects the percentage of coughing patients, the abscissa shows the days of treatment with Inspiron.

Clinical efficacy of the drug was also evaluated according to the severity and duration of dyspnea. In the main group by the time of admission, shortness of breath of mixed character have been identified in 32 (64,0%) children and 25 (50,0%) children in the control group.

After the appointment of the drug the 2 day shortness of breath in the first group disappeared in 20 (62,5%) children, and to the 4th day of hospitalization in all patients was equal breath sounds within the anatomical and physiological norms.

In children in the control group 25 (50%) dyspnoea only in 10 (40%) patients disappeared on day 3 and complete extinction of it was achieved by 6 days of illness, suggesting a more prolonged preservation of dyspnea in the control

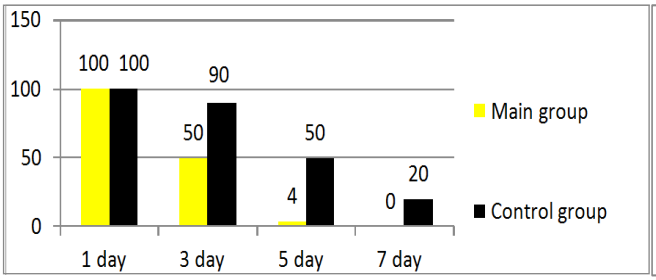

Figure 1 – Dynamics of cough in children

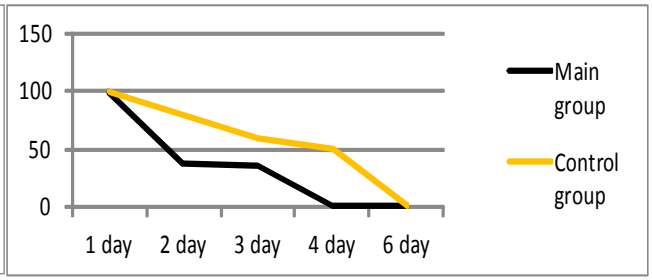

Figure 2 – Dynamics of shortness of breath during treatment

group($p < 0.05$). The above parameters is displayed in figure 2.

The purpose of the drug in the complex treatment showed good tolerability. It must be emphasized that during the entire period of treatment in the main group there was not a single case of allergic reactions, laringo - and bronchospasm. In contrast, in the control group, two children of the first years of life on the second day of treatment by Amboroxol was noted allergic rash, and in one child the age of two manifestations – of laryngospasm.

The duration of hospitalisation in the main group amounted to an average of 6.8 bed-days, which is significantly less ($p < 0.05$) hospital stay of patients in the control group (10,2 bed-days).

CONCLUSIONS

1. The use of the drug showed its high effectiveness in children of various ages with diseases of respiratory tract viral-bacterial etiology, which has led to a substantial reduction in hospital days and lower costs, the medical institutions for treatment and maintenance of sick children.

2. Marked high broncholytic and antitussive effect of the drug that was characterized by a decrease in the frequency and severity of cough, and easy expectoration of sputum.

3. Inspiron reduces the effect of the major pathogenetic factors that contribute to the development of inflammation, hypersecretion of bronchial mucus and bronchial hyperresponsiveness.

4. Multilateral influence of the Inspiron to the inflammatory process is manifested not only these factors, but also significantly relieves bronchial obstructive syndrome or even prevents its development.

5. Ambroxol, as an effective mucolytic agent, has secretomotor, secretolytic and expectorant, but has no statistically significant effect on the regression of bronchial obstructive syndrome.

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ИНСПИРОН ПРИ БРОНХОЛЕГОЧНОЙ ПАТОЛОГИИ ВИРУСНО-БАКТЕРИАЛЬНОЙ ЭТИОЛОГИИ У ДЕТЕЙ

Кафедра детских инфекционных болезней Карагандинского государственного медицинского университета (Караганда, Казахстан)

Обследовано 100 детей от 2 до 10 лет включительно с бронхолегочной патологией вирусно-бактериальной этиологии на предмет изучения клинической эффективности и безопасности применения препарата «Инспирон». Основная группа 50 детей получала инспирон, контрольная (50 человек) – амброксол. Эффективность и безопасность препарата оценивалась по динамике бронхообструктивного синдрома, кашля, одышки, физикальных параметров органов дыхания, переносимости и наличия аллергических реакций.

Проведенные исследования показали высокую эффективность препарата «Инспирон». Выявлены выраженный бронхообструктивный, муколитический, противокашлевой эффект,регистрировалось более легкое отхождение мокроты. Ни в одном случаи не зарегистрировано аллергических реакций или ларингоспазма. Отмечено значительное сокращение пребывания детей в стационаре, что привело к снижению расходов медицинского учреждения на лечение и обследование.

Ключевые слова: Инспирон, амброксол, бронхообструктивный синдром, кашель, одышка

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БАЛАЛАРДАҒЫ ВИРУСТЫ-БАКТЕРИАЛДЫ ЭТИОЛОГИЯЛЫ БРОНХӨКПЕ АУРУЛАРЫ КЕЗІНДЕ ИНСПИРОНДЫ ҚОЛДАНУ

Қарағанды мемлекеттік медицина университетінің балалардың жұқпалы аурулары кафедрасы (Қарағанды, Қазақстан)

Инспирон дәрісінің клиникалық тиімділігі мен қауіпсіздігін зерттеу үшін бронхөкпенің вирусты-бактериалды патологияларымен сырқат 2 жастан бастап 10 жасты қоса алғанда 100 бала тексерілген.

Негізгі топ 50 бала Инспиронды, бақылау тобы (50 бала) – амброксолдықолданған. Дәрінің тиімділігі мен қауіпсіздігі бронхтыобструктивті синдромның, жөтелдің, ентігудің динамикасы, тыныс алу мүшелерінің физикалды көрсеткіштері, төзімділігі мен аллергиялық реакциялар бойынша бағаланды.

Жүргізілген зерттеулер Инспирон дәрісінің тиімділігінің жоғары екенінкөрсетті.Бронхтыобструктивтің айқын басылуын, муколитикалық, жөтелге қарсы, қақырықтың шығуын жеңілдету тиімділігінің айқындығы анықталды. Бірде бір жағдайда аллергиялық реакциялар мен ларингоспазм тіркелмеген. Балалардың стационарда емделу күндерінің едәуір қысқаруы байқалған, бұл медициналық мекемелерде ем және тексеру жүргізуге кететін шығынның азаюына әсерін тигізді.

Кілт сөздер: Инспирон, амброксол, бронхообструктивті синдром, жөтел, ентігу