15-16 ЛИСТОПАДА 2018

Україна, Київ • Chamber Plaza • вул. Велика Житомирська, 33

NOVEMBER 15-16, 2018

Ukraine, Kyiv • Chamber Plaza • 33, Velyka Zhytomyrska St.

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1st International Congress

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UDC 616.24-002-053.2-022.369-07-085.33.015.8

Etiological Structure and Antibiotic Resistance of Nosocomial Pneumonia Pathogens in Children in ICUs

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Background. Antibiotic therapy policy can influence not only the frequency of infectious complications, but also the main results of treatment in the most difficult-to-treat contingent of patients in intensive care units (ICU). Bacterial infections are the most common complication in patients of intensive care units.

In recent years, practical possibilities of antimicrobial therapy have expanded significantly with the advent of new, highly effective antibacterial agents. On the other hand, infection is a complex, dynamic process caused by interaction of microorganisms and a macroorganism, which explains the lack of universal guidelines for the treatment of postoperative complications in patients in intensive care units (ICU). The incidence of infectious complications increases significantly along with an increase in length of stay of patients in intensive care units.

Currently, clinicians have a large number of different antibacterial agents at hand, so the most important task is to choose the right medication correctly.

Purpose is to analyze etiological structure and level of antibiotic resistance of nosocomial pneumonia (NP) pathogens in children of early age in ICU of Regional Children's Clinical Hospital №1in Kharkiv.

Materials and methods. Strains of microorganisms (MO) isolated from endotracheal aspirate in 89 children (with infants under 3 years of age) were studied. Identification of pathogens was carried out by generally accepted microbiological methods.The sensitivity was determined by diffusion test method on Mueller-Hinton medium. MRSA was determined in a screening test with «Cefoxitin». In all studies, the inclusion criterion was the onset of pneumonia in patients who developed it 48 to 72 hours after hospital admission (and which did not exist and was not in the incubation phase until admission).

Results and discussion. Gr- microorganisms were isolated in 84%, Gr + in 12%, fungi of various species in 4%. Of the Gr- bacteria, *P. aeruginosa* — 55%,

Acinetobacter baumannii 28% and *K. pneumonia* 9% prevailed. Among Gr +: *S. aureus* 79%, the proportion of MRSA — 41%, *Streptococcus pneumonia* — 21%. A third of all Gyro-MIs demonstrated multiple antibiotic resistance or were pan-resistant. The resistance of *P. Aeruginosa* to carbapenems was 76%, to cephalosporins of III–VI generations — 62%, ciprofloxacin — 58%, cefoperazone / sulbactam — 47%, amikacin — 46 %, piperacillin / tazobactam — 32%. 79 (32%) strains had multiple resistance (MR). 69 (28%) were pan-resistant (PR).

Acinetobacter baumannii was resistant to carbapenems in 60%, cephalosporins III–VI generations — 98%, carbapenems — 87%, cefoperazone / sulbactam — 72%, amikacin — 78%, piperacillin / tazobactam — 52%. 57 strains had multiple resistance (45%). Pan-resistant — 69 strains (55%).

K. pneumonia resistant to carbapenems — 10%, cephalosporins III–VI — 91%, carbapenems — 70%, cefoperazone / sulbactam — 47%, amikacin — 76%, piperacillin / tazobactam — 48%, tigacil — 20%. 39 strains had multiple resistance (95%). No pan-resistant strains were detected.

P. Mirabillis was resistant to carbapenems — 2%, cephalosporins III–VI — 29%, carbapenems — 10%, cefoperazone / sulbactam — 6%, amikacin — 23%, piperacillin / tazobactam — 1%, tigacil —13%. Six strains showed multiple resistance (47%). No pan-resistant strains were detected. *Enterobacter spp.* was resistant to cephalosporins III–VI — 61%, DF and doxycycline — 37%, amikacin — 50%, piperacillin / tazobactam and tigacil — 10% and carbapenems — 0%. Multiple resistance in 3 strains (60%). All Gr + microorganisms had high sensitivity to vancomycin and linezolid.

Conclusions: Gram-negative microorganisms predominated in the structure of NP causative agents. High level of resistance of in-hospital strains indicates the need for optimization of protocols for empirical and etiotropic antibiotic therapy, as well as for regular monitoring of antibiotic sensitivity. The results obtained on the etiology of NP in the given ICU are quite general. To determine suspected causative agents, the data of microbiological monitoring, as well as the knowledge of the prevailing microflora and its sensitivity in each intensive care unit, were of decisive importance. Correct and timely selected antibiotic therapy can significantly increase the effectiveness of treatment, reduce expenditures and mortality in the given contingent of patients.

Key words: ICU, nosocomial pneumonia, antibiotic resistance.

UDC 616.2 022.7 085.281.9 53.2

Acute Bronchitis with Bronchial Obstructive Syndrome and Respiratory Viral Infections: Rational Antibiotic Therapy in Pediatric Practice

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Background. Acute respiratory pathology is a group of upper and lower respiratory tract infectious diseases, which tends to grow annually. However, the pharmacotherapy of acute respiratory infections (ARI) is not always successful.