

UDC: 616.24-002:615.331

## **ABIFLOX EFFICACY IN COMPLEX THERAPY OF PATIENTS WITH COMMUNITY ACQUIRED PNEUMONIA**

*T. I. Lyadova, O. V. Volobuyeva, T. V. Sevastyanova, O. M. Savvo*  
V. N. Karazin Kharkiv National University, Ukraine

---

The article presents the results of the study, during which the efficacy of levofloxacin in the treatment of patients with community-acquired pneumonia was evaluated. It was found that levofloxacin is a highly effective treatment for patients with community-acquired pneumonia.

**KEY WORDS:** community acquired pneumonia, antibiotic therapy, levofloxacin (Abiflox)

## **ЕФЕКТИВНІСТЬ АБІФЛОКСА В КОМПЛЕКСНІЙ ТЕРАПІЇ ХВОРИХ НА НЕГОСПІТАЛЬНУ ПНЕВМОНІЮ**

*T. I. Лядова, О. В. Волобуєва, Т. В. Севастьянова, О. М. Савво*  
Харківський національний університет імені В. Н. Каразіна, Україна

---

У статті представлені результати дослідження у якому оцінювалася ефективність левофлоксацину в терапії хворих на негоспітальну пневмонію. Встановлено, що левофлоксацин є високоефективним препаратом для лікування хворих на негоспітальні пневмонії.

**КЛЮЧОВІ СЛОВА:** негоспітальна пневмонія, антибактеріальна терапія, левофлоксацин (Абіфлокс)

## **ЭФФЕКТИВНОСТЬ АБИФЛОКСА В КОМПЛЕКСНОЙ ТЕРАПИИ БОЛЬНЫХ НЕГОСПИТАЛЬНЫМИ ПНЕВМОНИЯМИ**

*T. И. Лядова, О. В. Волобуева, Т. В. Севастьянова, А. Н. Савво*  
Харьковский национальный университет имени В. Н. Каразина, Украина

---

В статье представлены результаты исследования, в ходе которого оценивалась эффективность левофлоксацина в терапии больных с негоспитальной пневмонией. Установлено, что левофлоксацин является высокоэффективным препаратом для лечения больных негоспитальными пневмониями.

**КЛЮЧЕВЫЕ СЛОВА:** негоспитальная пневмония, антибактериальная терапия, левофлоксацин (Абифлокс)

### **INTRODUCTION**

At present the problem of antibiotic therapy of patients with community-acquired pneumonia (CAP) is one of the most important problems in pulmonology and infectology. Setting of this diagnosis is an undoubted indication to antibiotic remedies prescription. It should be mentioned that the problems of community-acquired pneumonia therapy are of current importance and the choice of antibiotic remedy practically always remains very serious and responsible decision for the physician [1, 2]. Multiresistance of microorganisms formed as a result of irrational application of antimicrobial remedies gains importance lately. [3, 4]. By now quite a great number of factors defining optimal quality of antimicrobe therapy

was revealed. Maximum efficacy with minimal toxicity of preparation must combine with their correct value. Many recommendations on antibiotic remedies application need critical estimations from the point of view of therapy efficacy. The results of morbidity control centers studied prove that increase of general morbidity and mortality is considerably connected with resistance to antibiotics which leads to considerable growth of mortality risk and hospitalization duration [3, 4].

Notoriously at the beginning of the 90<sup>th</sup> the concept of evident medicine came into clinical practice when treatment tactics and pharmacological remedy choice are based on the results of planned controlled studies instead of subjective experience of a physician. Noting this it is impossible to prescribe antibiotic

therapy without monitoring microorganisms resistance in specific infection stationary department.

At the present stage in pulmonological practice growing resistance to penicillin and its derivatives, tetracycline, microlides *S. pneumoiae*, *H. influenzae*, *M. catarrhalis* is most often overcome in the way of traditionally used antibiotics in high doses; combined therapy with simultaneous prescription of antibiotics of various groups associations; new antibiotics [1, 5, 6].

Remedies of quinolones class which are used in clinical practice from the beginning of the 60<sup>th</sup> differ principally in activity mechanism from other antibiotics. It provides their activity towards stable strains including polyresistant ones [7, 8].

It should be mentioned that fluoroquinolones are characterized by wide antimicrobial spectrum of activity and vigorously influence a big group of gram-positive microorganisms, gram-negative aerobic bacteria, atypical pathogens. Fluoroquinolones provide bactericidal effect, inhibiting significantly important enzyme of microbe cell – DNA-gyrase and breaking the DNA biosynthesis [9, 10].

Levofloxacin, according to clinical physicians research, is indicated to the patients for respiratory tract infections treatment (acute bronchitis, pneumonia, lungs abscess, exacerbation of chronic lungs diseases etc.), kidneys infections and urinary system non-complicated infections of skin and soft tissues, infections of bone tissues and joints, infection diseases of gastrointestinal tract etc. [9, 11].

Preference of levofloxacin and other new fluoroquinolones is their improved activity towards *S. pneumoniae* and high effectiveness against most of pathogens of infection diseases of lower respiratory tract. Activity of the given remedy is connected with fast absorption from digestive tract, wide breakdown in tissues and creation of high concentrations in biological medium surpassing plasma concentrations.

Levofloxacin is characterized by minimal metabolism, good penetration and creation of high concentrations in lung tissue, phlegm, bronchial secretion, alveolar macrophages, which is very important in treatment of patients with respiratory infections [12]. All this served as a basis for levofloxacin application as an etiotropic remedy for patients with CAP treatment.

**The aim** of the research became the estimation of clinical efficacy and therapeutic tolerance of levofloxacin (Abiflox) in patients with CAP.

**MATERIALS AND METHODS**

Patients of both sexes elder than 18 years old having roentgenologically proved CAP signs demanding hospitalization were under observation taking into account the criteria recommended for inclusion in the study.

26 patients with CAP were included in the study: 8 (69,2 %) men, 8 (30,8 %) women. Average age of the patients was between 18 and 72 years and comprised  $42,1 \pm 17,6$ . In accordance with the order of the Ukrainian MHC №128 from 19.03.2007 it is recommended to divide CAP into 4 groups depending on the severity degree of the process [2]. CAP of the 3 group in which patient with CAP of non-severe course were included and needed hospitalization according to medical and social readings was diagnosed in 80,8 % (21 patient), CAP of the 4 group in which patients with severe course of CAP were included and needed hospitalization into DRIT or ITW - in 12,2 % (5 patients).

Taking into account the fact, that isolation and identification of CAP pathogen usually needs not less than 3 days, start antibiotic therapy before Abiflox prescription was done by the remedies of various groups without desired effect (tab. 1). Average duration of antibiotic therapy before Abiflox prescription canceled because of inefficacy comprised  $3,8 \pm 1,2$  days.

Table 1

**Antibiotic remedies, the treatment by which preceded Abiflox prescription**

<b>Groups of antibiotics</b>	<b>Abs.</b>	<b>%</b>
Ampicillin	4	15,4
Gentamicin	3	11,5
Augmentin	3	11,5
Ceftriaxone	1	3,8

Clinical symptomatologies of severe infection lesion of lower respiratory ways were found in all patients under study: cough,

dyspnea, pain in thorax, high temperature and distinct signs of intoxication (tab. 2).

Table 2

**Clinical manifestation of community-acquired pneumonia  
before the beginning of treatment by Abiflox**

Disease symptoms	Abs.	%
Cough	26	100
Symptoms of intoxication	26	100
Temperature increase	26	100
Dyspnea	18	69,2
Pleura pain	12	46,1
Hemoptysis	4	15,4
Bronchial breathing	4	15,4
Weakened breathing	24	92,3
Presence of phlegm	22	84,6
Rhonchi, crepitation, noise of pleura friction	21	80,8
Unilateral deprivation	19	73,0
Bilateral deprivation	7	27,0

Hemoptysis was detected in 4 (15,4 %) patients. Percussion and auscultative signs dominated in most of the patients with CAP in clinics testified presence of lung tissue pathology. Bilateral deprivation of lungs was marked in 27,0 % (7 patients). It should be mentioned that unilateral deprivation of lung tissue was found in 19 (73,0 %) patients. Leukocytosis was found in 22 (84,6 %) patients, shift of leukocyte formula to the left was also found in 22 (84,6 %) patients. Anemia was detected in 4 (15,4 %) patients with CAP. Increase of ESR was found in 84,6 % (22 patients).

Abiflox was included into the complex therapy of the patients with CAP (mucolytic remedies, polyvitamins, metabolic). Preparation was inserted by drip intravenous infusion once a day in the doze 500 mg during 7-10 days. Such therapy was done after canceling of inefficient initial start therapy (11 patients) the rest 15 patients with CAP received Abiflox immediately after coming onto the hospital.

Clinical effectiveness of the antibiotic therapy was estimated according to the dynamics of inflammatory process in lungs activity. With this purpose the following clinical and laboratory parameters characterizing the inflammatory process activity were estimated (temperature reaction,

tachycardia, respiratory rate, leukocytosis, number of immature forms of granulocytes, change of ESR), intensity of pain syndrome, roentgenological changes in lungs. Dynamics of clinical and laboratory signs were taken into account before the beginning of the treatment, in the process of treatment (3-5 days of therapy) and after treatment (efficacy) – on the 10-th day after finishing the remedy receiving. Roengenological efficacy was also estimated at the end of the therapy.

Clinical efficacy of antibacterial therapy by Abiflox was estimated as «positive» if the improvement of subjective and objective health condition of the patients was detected on the 3-rd day of the therapy, decrease and normalization of temperature, vanishing of pain syndrome, stable tendency to laboratory data normalization. Efficacy of antibacterial therapy was estimated as «satisfactory» if unstable improvement of laboratory data was detected on the background of subjective improvement of the patients health condition, subfebrile condition remained. «Unsatisfactory» results of the treatment when health condition of the patients is not improved, tendency to laboratory data normalization is absent, were not detected in our study.

Thorax organs roentgenological data results were interpreted in the following way: «improvement» – under positive dynamics or

complete disappearance of roentgenological signs of CAP, «without changes» – absence of improvement in comparison with the initial roentgenological picture.

Statistical treatment of the received results of the study was carried out with the help of the STATISTIKA program for Windows (Stat Soft Inc, USA) on the computer with Pentium II Celeron 850 PPGA processor.

## RESEARCH RESULTS

Analyses of the received results of Abiflox therapy showed that clinical success was achieved in 25 (96,2 %) patients. One patient (3,8 %) with perforative ulcer of duodenum and chronic pyelonephritis against the background of Abiflox therapy was moved to surgical department for surgical treatment (Fig. 1).

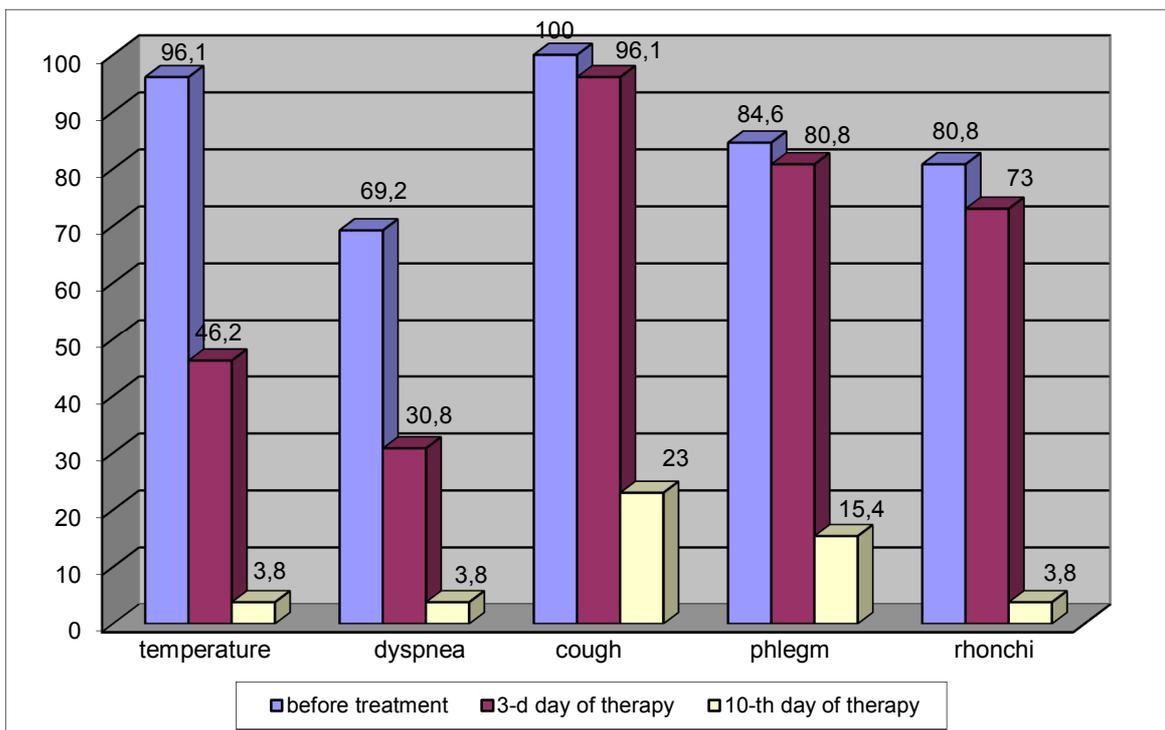


Fig. 1. Dynamics of main clinical symptoms in patients with CAP under Abiflox therapy

Positive dynamics of clinical rates were marked on the 3-rd day from the beginning of Abiflox antibiotic therapy in the way of temperature decrease, the temperature normalized practically in all patients by the 7-th day of treatment only in 1 (3,8 %) patient it remained subfebrile. The patients also mentioned about decrease of pain syndrome in this period, the signs of intoxication decreased (fig.1). Analyzing laboratory rates we authentically stated that the degree of ESR acceleration decreased in average from  $26,4 \pm 2,9$  to  $7,3 \pm 0,8$  mm per hour ( $p < 0,05$ ) by the 10-12-th day of treatment; the number of leukocytes decreased from  $12,5 \pm 1,5 \times 10^9/l$  to  $6,2 \pm 0,5 \times 10^9/l$  ( $p < 0,05$ ).

According to roentgenological study before the treatment and on the 10-th day of therapy

absolute disappearance of infiltrative changes in lungs were marked in 7 (27 %) patients, considerable decrease of their intensity - in 18 (69,2 %) patients. Symptoms of inflammatory infiltration in lungs were absent on 15-24-th (average  $15,3 \pm 1,2$ ) day after the beginning of Abiflox therapy in all patients.

It is important to mention that side effects from Abiflox provided therapy were found in 3 patients in the way of nausea and momentary diarrhea - in 1 patient. These phenomena were momentary and did not need correction and canceling of the remedy.

## CONCLUSIONS

Levofloxacin (Abiflox) is a highly effective antibacterial remedy for treatment of CAP with various degree of severity. Positive dynamics

of the disease clinical manifestation was marked just on the 3-rd day from the beginning of the therapy.

Abiflox has a good therapeutic tolerance in patients with CAP. The revealed side effects were momentary and did not demand additional pharmacological correction and canceling of the remedy.

A comfortable dosing regime (500 mg intravenously once) allows keeping to the procedure of taking medication and support necessary concentration in the centre of inflammation which influences clinical and bacteriological efficacy of therapy.

## REFERENCES

1. Protokol Nadannya medychnoï dopomohy khvorim na nehospital'nu ta nozokomial'nu (hospital'nu) pnevmoniyu u doroslykh osib: etiolojiya, patohenez, klasyfikatsiya, diahnozyka, antibakterial'na terapiya // Nakaz MOZ Ukraïny №128 vid 19.03.2007.
2. Feshchenko Yu.I. Nehospital'na pnevmoniya u doroslykh osib: etiolojiya, patohenez, klasyfikatsiya, diahnozyka, antibakterial'na terapiya (proekt klinichnykh nastanov) Chastyna II/ Feshchenko Yu.I., Holubovs'ka O.A., Honcharov K.A., Dzyublyk O.Ya. ta insh.// Ukrainskiy pul'monologicheskyy zhurnal. – 2013. – № 1. – P. 5–21.
3. Antimicrobial Resistance. – Electronic source: <http://www.who.int/drugresistance/en/>.
4. Sahm D.F. Antimicrobial resistance trends among sinus isolates of *Streptococcus pneumoniae* in the United States (2001-2005). / Sahm D.F., Benninger M.S., Evangelista A.T., et al. // *Otolaryngol. Head Neck Surg.* – 2007. – 136 (3). – P. 385–389.
5. Zil'ber E.K. Neotlozhnaya pul'monologiya. /Zil'ber E.K. // M.: GEOTAR-Media, 2009. – 264 P.
6. Kozlov S.N. Sovremennaya antimikrobnaya khimioterapiya: Rukovodstvo dlya vrachey. /Kozlov S. N.// M.: MIA, 2009. – 448 P.
7. Anderson V.R., Levofloxacin: a review of its use as a high-dose, short-course treatment for bacterial infection. /Anderson V. R., Perry C. M. // *Drugs.* – 2008. – V. 68, (4) – P.535–565.
8. Sinopal'nikov A.I., Zaytsev A.A. Mesto «respiratornykh» ftorkhinolonov v lechenii vnebol'nichnoy pnevmonii u vzroslykh. /Sinopal'nikov A.I., Zaytsev A.A.// *Consilium medicum.* – 2012. – T. 12. – № 3. – P. 68–75.
9. Leshchenko S.I. Primeneniye levofloksatsina v praktike pul'monologa / Leshchenko S.I. // *Ukrainskiy pul'monologicheskyy zhurnal* – 2009. – №4. – P. 54–57.
10. Padeyskaya G.N. Antibakterial'nyye preparaty. Gruppy khinolonov/ftorkhinolonov: prakticheskoye rukovodstvo po antiinfektsionnoy khimioterapy /G.N. Padeyskaya; pod red. L.S. Strachunskogo, Yu.B. Belousova, S.N. Kozlova // Smolensk.: MAKMAKH – 2007. P. 94–100.
11. Feshchenko Yu.I. Ratsional'naya antibiotikoterapiya bol'nykh s infektsiyami nizhnikh dykhatel'nykh putey. / Feshchenko Yu.I., Dzyublik A.Ya. // *Ukrainskiy pul'monologicheskyy zhurnal* – 2009. – № 4. – P. 5–8.
12. Konstantinos Z. Respiratory fluoroquinolones for the treatment of community-acquired pneumonia: a meta-analysis of randomized controlled trials. / Konstantinos Z. Vardakas, MD, Ilias I. Siempos, MD, Alexandros Grammatikos, MD, Zoe Athanassa, MD, Ioanna P. Korbila, et al. // *CMAJ.* December 2 – 2008 – 179 (12) doi:10.1503/cmaj.080358.