nose and ears with different frequencies. The most often - from the mucous membrane of the nasal passages and the mucous palatine tonsils, and the least from the external auditory passage.

The object of this study was to investigate the sensitivity to antibiotics of *S. aureus* strains isolated from diseases of ENT organs.

The selected strains identification was performed on the base of morphological, tinctorial, and biochemical properties, given at Bergey's Manual of Systematic Bacteriology and by the USSR Health Ministry Order "On the Microbiological (Bacteriological) Methods Unification of the Research Used in Clinical and Diagnostic Laboratories of Therapeutic and Prophylactic Institutions" dated April 22, 1985, No. 535. The sensitivity of purified strains to antibiotics was determined by the disc diffusion method in accordance with the MI 9.9.5-143-2007 "Determination of microorganism sensitivity to antibacterial preparations".

The results of the determination of sensitivity to antibiotics of *S. aureus* strains isolated from the palatine tonsils and the mucous membrane of the nasal passages are presented in the table.

Table

Sensitivity to antibiotics of *S. aureus* strains isolated from mucous membranes of the palatine tonsils and nasal passages, %

Name of antibiotic	Relative number of strains, isolated from the mucous membranes of the tonsils. *(n 211)*			Relative number of strains, isolated from the mucous membrane of the nasal passages, (*n* 18)		
	sensitive	intermediate resistant	resistant	sensitive	intermediate resistant	resistant
Benzylpenicillin	35,89	0	64,11	27.78	0	72,22
Oxacillin	62,68	3.35	33,97	44.44	5.56	50,00
Vancomycin	90,43	0	9,57	100,00	0	0
Gentamicin	97,61	1,91	0,48	100,00	0	0
Amikacin	87,56	6,70	5,74	88,89	5,56	5,56
Ofloxacin	97,13	2,39	0,48	100,00	0	0
Ciprofloxacin	95,65	3,86	0,48	100,00	0	0
Levofloxacin	99,52	0,48	0	100,00	0	0
Azithromycin	70,53	17,87	11,59	77,78	0	22,22
Clarithromycin	92,75	0,48	6,76	94,44	0	5,56
Clindamycin	97,57	1,46	0,97	94,44	0	5,56
Doxacycline	83,50	8,50	8,00	100,00	0	0

High percentages of strains resistant to beta-lactam antibiotics and macrolides were detected in both groups. Vancomycin-resistant strains were found among strains from the tonsils. It should be noted that among the strains isolated from the nasal mucosa, a number of strains, resistant to benzylpenicillin, oxacillin, azithromycin and clindamycin was higher than that of strains isolated from the palatine tonsils mucosa. At the same time, no resistant to aminoglycosides, fluoroquinolones, lincozamides, tetracyclines was found among the strains isolated from the nasal mucosa. The greatest sensitivity of examined strains was detected to ofloxacin, ciprofloxacin, levofloxacin.

Blinder O.O., Rotar D.V., Humenna A.V.

HISTORICAL ASPECT OF SPREADING PENICILLIN RESISTANT *S. AUREUS* IN THE WORLD AND THE CHERNIVTSI REGION

Department of Microbiology and Virology
Higher state educational establishment of Ukraine
"Bukovinian State Medical University"

It is known that the rapid increase in the number of bacteria resistant to antimicrobial drugs is due to the irrational use of them, the adding of such drugs in animal feeds, as growth stimulators, easy moving in a separate geographic region and beyond its borders.

The aim of this research was to study the dynamics of spreading penicillin resistant *S. aureus* strains in the Chernivtsi region.

The materials of research by Yu. L. Volyansky (1971), own investigation (1997-2004; 2015-2016), literary sources were used in this paper. Data on the prevalence of penicillin-resistant strains of *S. aureus* among bacterial carriers, were selected for comparison from the studied materials.

Antibiotic penicillin was discovered by Alexander Fleming in 1928, and in 1940, several years before its use in medical practice, colleagues of the scientist Abraham, E. P., and E. Chain, discover in bacteria the enzymes of penicillinases presence, capable of destroying this antibiotic. At the same time with the penicillin use starting in clinical practice, the first strains of staphylococci resistant to it were identified (Rammelkamp CH, Maxon T., 1942). Finding bacterial penicillinases before the wide use of the antibiotic, proves the presence of resistance gene to antibiotics in the natural populations of microorganisms. The methicillin introduction, in 1959, carried hope for reliable protection against penicillinase. However, three years later, new variants of resistant golden staphylococci - methicillin-resistant (MRSA) appeared. They are simultaneously characterized by resistance to several antibiotics, and increased virulence. Since 1961, the number of MRSA has increased rapidly, and the presence of this indication in the isolated strains of staphylococci is considered to be a sign of multi-resistance to antibiotics. The percentage of staphylococci resistant to methicillin becomes approximately the same among clinical isolates and among the *S. aureus* strains isolated with the healthy carrier.

The prevalence of penicillin-resistant *S. aureus* strains was 7.6 % in 1946-49, 76.4- 91.9 % in 1958, 68.0-94.0 % in 1968 (Volyansky Yu.L., 1971). Nowadays more than 90 % of staphylococcal isolates are resistant to this antibiotic.

In the Chernivtsi region, according to Voljansky Yu.L., in 1970, 60 % of *S. aureus* strains isolated from nasal noses were resistant to penicillin. In 1997-2004 - 83.2 % of *S. aureus* strains were resistant to penicillin, and the proportion of MRSA was 52.2 % (Blinder O. O, 2005). According to the research results in 2015-2016 years, resistance to penicillin is established in 72.2 % strains of *Staphylococcus aureus*.

Determining the sensitivity of antibiotics to clinical isolates and monitoring the prevalence of antibiotic-resistant bacteria in healthcare facilities and regions is important and essential for epidemiological analysis.

Gavryliuk O.I.

FUNGAL DISEASES OF HUMANS AND DETERMINATION OF THE ANTIFUNGAL ACTIVITY OF NEW DERIVATIVES OF THE QUINOLONE-CONTAINING COMPOUNDS

Department of Microbiology and Virology
Higher state education establishment of Ukraine
"Bukovinian State Medical University"

Mycosis is one of the widespread groups of infections caused by various types of pathogenic and opportunistic fungi belonging to eukaryotic microorganisms of plant origin. The problem of mycoses today is quite acute: the fungal lesions distort the skin of the patient, the inflammation of the body occurs alongside the disease (with the exception of keratomycosis), many organs and tissues are affected (systemic mycoses develop), also, the granulomas appear to disrupt the function of many organs.

The microorganisms of this group are characterized of a high level of cellular organization, morphological diversity, complex life cycles, sexual and asexual reproductive cycles. Fungi can exist in the form of unicellular microorganisms (yeast, yeast-like mushrooms), or as a micelle. The features of metabolism, chemical composition and morphofunctional organization of fungi determine the peculiarity of infections having been caused by these microorganisms. In addition to the discomfort experienced by the patient (itching, non-aesthetic condition of the skin or nails), mycoses can cause allergic reactions, even bronchial asthma. An urgent problem of the present is the treatment itself and the search of new antimycotic remedies.

For the recent years, there has been a sharp increase in the frequency and severity of fungal infections, including chronic and deep mycosis. Deep mycoses include several groups of different diseases: opportunistic systemic mycosis; subcutaneous deep mycosis (chromoblastomycosis, sporotrichosis). Severe systemic mycoses is observed to have a significant increase nowadays. All mycoses are contagious, but this does not mean that patients should be isolated from each other. They simply need to adhere to some precautionary rules: to avoid handshake, wash your bathroom thoroughly, adhere to the rules of hygiene, but the main thing is not to cause a delay with the treatment. When planning anti-fungal therapy, special attention should be paid to the action of the therapeutic agent on the pathogen (fungistatic or fungicidal) and on the macroorganism (considering both the state of the immune system and the individual sensitivity to this drug). All this suggests to search for new anti-fungal drugs for fighting against candidiasis. A goal of identifying the minimal fungistatic (MFsK) and minimal fungicidal (MFcK) activity of quinolone-containing salts was set. The common method of double serial dilutions in the Saburro broth was applied. As a test object the *C. albicans* ATCC 885-653 was used in the case. 10 derivatives of quinolone-containing salts were selected for the study.

All the compounds are found to show an anti-candidiasis activity in the course of the study. The smallest anti-candidal activity have C1, C5, and C11, with minimal fungistatic concentrations of 125.0 μg/ml. The rest of the compounds having been studied show a higher anti-candidal activity. The most active activity among this group was shown by the compounds C9 and C10, with minimal fungistatic concentrations of 31.25 μg/ml and minimal fungicides of 62.5 μg/ml.

The indicated results allow us to continue the search for anti-candidiasis agents among derivatives of quinolone-containing salts, including the purposeful synthesis of new compounds with the predicted antifungal properties.

Gavryliuk O.I.

THE PROBLEM OF ANTIBIOTIC RESISTANCE IN MEDICINE

Department of Microbiology and Virology
Higher state education establishment of Ukraine
"Bukovinian State Medical University"

Today, such a concept as antibiotic resistance is not only a medical problem, it has a huge socioeconomic significance and is seen as a threat to national security. Infections caused by resistant strains of pathogenic microorganisms are characterized by a more severe course, prolong the stay of the patient in a hospital, requiring the use of combined antibiotic therapy with the use of rescue drugs. All this leads to a big expenses of treatment, worsens the health and life prognosis of patients, and increases the risk of the resistant strains spread, which, in turn, leads to the emergence of epidemics.

The development of microorganism resistance is inevitable, even when prescribing antibiotics in an appropriate therapeutic dose. Many factors contribute to this, including free access to drugs, inappropriate diagnosis, lack of objective information, etc. In most cases, the use of antibacterial drugs is adequate, rational and well-grounded,