



region. 306 clinical isolates of *S. aureus* from patients with inflammatory processes of different localizations were studied. The presence of methicillin-resistance in isolated strains was determined by a surrogate test with cefoxitin. In all strains, sensitivity to β -lactam antibiotics, aminoglycosides, fluoroquinolones, macrolides, clindromycin and trithromycin, clindromycin, and trithromycin, and clitromycin were also determined. Technique for antibiotic sensitivity determination was conducted according to the CLSI recommendations, 2017. Discs with antibiotics, manufactured by Oxoid, were used.

According to our data presented in the table 1, the prevalence of isolation of *S. aureus* from clinical material and the proportion of MRSA differ depending on the location of the inflammatory process. Almost half of all isolated and studied strains were isolates from the mucosa of the oropharynx, but the share of MRSA among them was not large - 3.36 %. While 15.0 % of nasal strains belonged to MRSA. The latter confirms the importance of controlling the spread of *S. aureus* nasal carriers. Our results correlate with the data of literature sources, which widely state variation in the prevalence of MRSA in European countries from < 1 % in the north to > 40 % in the west and south.

Table

The frequency of isolation *S. aureus* and the prevalence of MRSA among them

Localization of the inflammatory process	The frequency of isolation <i>S. aureus</i>		The prevalence of MRSA	
	amount	%	amount	%
Oropharynx	149	48.69	5	3.36
Feces	67	21.90	3	4.48
Vagina	31	10.13	2	6.45
Nose	20	6.54	3	15.00
Wounds, boils, pustules	20	6.54	0	0.00
External auditory canal	7	2.29	1	14.29
Urine	9	2.94	1	11.11
Other eco-niches	3	0.99	0	0.00
Total strains	306	100.00	15	4.9 ± 2.19

When studying the sensitivity to antibiotics of isolated strains of MRSA, it was found that 9 of them, which is 60.0 % were resistant to 3-7 antibiotics of different groups. Therefore, MRSA may not only be resistant to β -lactam antibiotics. This proves the feasibility of using a surrogate test with cefoxitin to identify such strains and the correct choice of treatment tactics.

Dzhuryak V.S.

APPROXIMATION OF KIDNEY INJURY IN ESSENTIAL HYPERTENSION PRESENCE DEPENDING ON THE CYP11B2 GEN POLYMORPHISM

*Department of microbiology and virology
Bukovinian State Medical University*

The combination of essential arterial hypertension (EAH) and diabetes is the leading independent cause of the kidney damage, accounting for 63% of all cases of chronic kidney disease (CKD).

The aim of the study was to evaluate correlations and develop the approximating models of the Chronic Kidney Disease (CKD) occurrence in essential arterial hypertension (EAH) patients depending on the Cytochrome 11b2 Aldosterone Synthase Gene (CYP11B2, rs1799998) allelic state. Screening of 100 patients with EAH, who underwent a complex of clinical-laboratory investigation with the following epidemiological, correlation, regression analysis, has been carried out. Mean age constituted 59.87±8.02 years. CHD was diagnosed taken into account the National Kidney Foundation recommendations (Kidney Disease: Improving Global Outcomes (KDIGO), 2012) according to glomerular filtration rate (GFR) decline, measured by CKD-EPI equations after Creatinine, or Cystatin-C blood level. All enrolled / screened patients signed the Informed Consent to participate in the research. Control group included 48 practically healthy persons of relevant age. Gene's nucleotide polymorphism CYP11B2 (-344C/T) was examined by polymerase chain reaction in 72 EAH patients and in the control group.



Glomerular filtration rate calculated for creatinine regardless of CYP11B2 (rs1799998) genotypes, correlates directly with GFR cystatin-C ($r = 0.82$; $p < 0,001$) and depends inversely on the creatinine and cystatin-C concentration in the blood, glucose blood level in C-genotype carriers ($r = -0.53$; $p = 0.042$), as well as age ($r = 0.51-0.54$; $p < 0.05$) and sex: in women with TC-genotype GFR creatinine is lower than in men ($r = -0.38$; $p = 0.02$). In EAH patients GFR for cystatin-C regardless of CYP11B2 gene (rs1799998) genotypes correlates strongly negatively with creatinine and cystatin-C in the blood ($r = 0.96-0.98$; $p < 0.001$). In patients with TT-genotype, GFR-cystatin-C is related moderately and inversely to the waist/hip circumference ratio ($r = -0.52$; $p < 0.011$). The dependence of CKD development on GFR-creatinine in the examined population of EAH patients for all polymorphic variants of the CYP11B2 gene (rs1799998), and on GFR-cystatin-C for *T*-allele carriers can be approximated by logit-regression equations.

Models for approximating the CKD manifestation in EAH patients are capable for GFR-creatinine for all CYP11B2 gene genotypes of (rs1799998), GFR-cystatin-C – only for *T*-allele carriers of this gene.

Gavryliuk O.I.

AROMATIC HETEROCYCLES AND THEIR SIGNIFICANCE IN HUMAN LIFE

*Department of Microbiology and Virology
Bukovinian State Medical University*

Nowadays, most educated people have at least a general notion about proteins, fats and carbohydrates and the role of this triad of substances in the processes of life. Less awareness is shown in relation to the so-called heterocyclic compounds, or heterocycles, the significance of which in the chemistry of living things, however, is no less, and the variety of manifestations is even much wider than that of proteins, fats and carbohydrates.

Heterocycles, and more specifically, some purine and pyrimidine derivatives, play a fundamental role in the transmission of hereditary traits. Not surprisingly, textbooks on organic chemistry mention both these compounds and the structure and function of nucleic acids. However, on the basis of extremely concise information, it is difficult for students to form a holistic view of the reasons why nature has chosen heterocycles to achieve these goals.

Heterocyclic compounds are quite common in wildlife. Thus, heterocycles of the purine and pyrimidine families are an integral part of the nucleic acids responsible for the storage and transmission of hereditary information. The interaction of purine and pyrimidine derivatives in the system of hydrogen bonds underlies the processes of replication, transcription and translation, the basis of the functioning of any living cell.

Heterocyclic compounds play an significant role in the chemistry of natural compounds and biochemistry. The functions performed by these compounds are quite diverse - from structure-forming polymers (cellulose derivatives and other cyclic polysaccharides) to coenzymes and alkaloids.

Some heterocyclic compounds are obtained from coal tar (pyridine, quinoline, acridine, etc.) and from the processing of vegetable raw materials (furfural). Many natural and synthetic heterocyclic compounds are valuable dyes (indigo), drugs (quinine, morphine, acridine, pyramidone). Heterocyclic compounds are used in the production of plastics, as accelerators of rubber vulcanization, in the film industry.

Long before the development of pharmaceutical chemistry, people treated diseases using heterocyclic compounds from a natural pharmacy: leaves, fruits and tree bark, roots, grass stalks, insect extracts, etc. Probably no other natural compound has as many stories as quinine. Quinine is one of the members of a large family of alkaloids - nitrogen-containing organic compounds of predominantly plant origin. Almost all alkaloids are derivatives of nitrogenous heterocycles. Quinine has played a historical role in the fight against malaria. An example of another alkaloid is papaverine, which is used in medicine as an antispasmodic and vasodilator.

Few of us can do without a cup of tea or coffee during the day, their invigorating effect is caused by the presence in the leaves of tea and in the fruits of coffee alkaloids of the purine group -