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info@ortpublishing.de
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19. Skilton M., Moulin P., Terra J., Bonnet F. Associations between anxiety, depression, and the metabolic syndrome//Biol Psychiatry. –2007.- Vol. 62 (11). — P.1251–1257.
20. Starostina E. G., Moshnyaga E. N., Bobrov A. E. Efficacy and safety of drug therapy for anxiety disorders in diabetes mellitus. Proceedings of 5th All-Russia Congress of Diabetologists, Moscow, 2010.- P.198.
21. Stryapukhin V. V., Lischenko A. N. Surgical treatment of diabetic foot//Surgery. — 2011. -No.2.- P.73–78.
22. Turusov V. V. Up-to-date aspects of type 2 diabetes mellitus therapy//Remedium-Privolgie. — 2008. — No.3.- P.15–17.
23. Volchegorsky I. A., Moskvichyova M. G., Chaschina E. N. Effect of mexidol on manifestations of distal symmetric polyneuropathy in patients with diabetic foot syndrome//Pharmateca. — 2007. — No. 20.- P.25–31.
24. Williams L., Miller D., Fincke G. et al. Depression and incident lower limb amputations in veterans with diabetes//J Diabetes Complications. — 2011. — Vol. 25 (3). — P.175–182.

Moskaliuk Vasyl Deoniziyovych, Bukovina State Medical University
Professor of Infectious diseases and epidemiology
Sydorchuk Aniuta Stepanivna, Bukovina State Medical University
Assistant Professor of Infectious diseases and epidemiology

Case-control clinical and microbiological study of probiotic substantive approach to holiatry therapy of seasonal influenza type A and B in adults

Introduction. Influenza-associated bacterial and viral infections are responsible for high levels of morbidity and death during pandemic and seasonal influenza episodes. Severe influenza-associated pneumonia is often bacterial and will necessitate antibiotic treatment. In spite of great quantity of modern medicines for a treatment of patients with influenza, there are still often development of bacterial complications[1]. From one side it is determined by dysfunction of systemic immunity, especially cellular section, and from another it realized due to activation of opportunistic microorganisms which are present on the mucous membranes of nasal and tonsillar surfaces[2].

There are few experimental research dedicated to positive influence of bacillus contained bacterial preparations due to their antagonistic activity towards pathogenic strains. Recent scientific interest is increased in the field of infectology and microbiology as well as the place and role of probiotics in pharmacotherapy of infectious diseases[3].

The analysis of available literature data proved the absence of clinical and microbiological investigation in patients with seasonal influenza A and B in Ukraine and Eastern Europe.

The research purpose is to study the clinical peculiarities, microbiological efficacy of bacillus-contained probiotic "Biosporin" for prevention of bacterial complications in patients with seasonal influenza A and B.

Material and methods. This study enrolled 109 patients aged 18–25 had conducted in 2012–2013 (average 21.7 years old) infected mostly with seasonal influenza viruses. Gender allocation included 62 (56.9%) females and 47 (43.1%) — males. Investigated persons were belonging to Caucasian race. All enrolled persons having the same high risk to get influenza virus because of student activity based on the epidemiologic data being upon same exposure during communication and overcrowding[4]. One hundred and nine young patients with clinical features and laboratory findings (acute onset with hyperthermia more 38.5^{0}C, scleritis, intoxication syndrome, etc., positive epidemiologic data) were investigated during October-March 2012–2013 at the Dept. of Droplet Respiratory Infections in the Municipal Clinical Hospital, Chernivtsi (South Western region of Ukraine, Eastern Europe).

Research material (smears from nasopharynx, tonsills) had delivered to Microbiological Clinical Laboratory of Municipal Clinical Hospital (Chernivtsi, Ukraine) with purpose to evaluate a species composition and populational level of nasal and tonsillar microflora. Cultures of facultative anaerobic and aerobic bacteria had cultured in an incubator (37^{0}C) for 24–48 hours. Obligate anaerobic bacteria had grown in the stationary anaerostat «CO2-Incubator» T-125» during 5–7 days, sometimes up to 14 days. Then received single-type colonies had studied for each genus of the microbes, from the colonies there had obtained pure cultures of obligate and facultative anaerobic and aerobic microorganisms. Pure culture identified by genus (species) by morphological, tinctorial, cultural and biochemical properties. The identification of isolated microorganisms was done by Bergey's Manual of Systematic Bacteriology.

Mathematic, statistical analysis of the results was performed by the method of variation statistics with the definition of average value, average error, and probability of possible error by statistical Student's t-test by means of Biostat® PC program (USA).

Results. All enrolled patients were admitted to Infectious Department of Municipal Clinical Hospital (Chernivtsi, Bukovina) with purpose of stationary treatment. Influenza caused by A/H3N2 and A/H2N2/in investigated young patients characterized mostly by a moderate severity course. Influenza caused by B type virus had mild severity course.

The detailed characteristics of clinical course of influenza are described in the table 1.

Examined patients complained on moderate headache, dry persistent cough, general weakness, louse of appetite, pain in chest (98,17±1,28), pain an eyeballs (96,33±1,80), myalgia (88,99±3,00) and arthralgia — in 76,15±4,08 cases.

The diagnosis of influenza had proved by clinical data, epidemiologic anamnesis and serological tests (reaction of inhibition of hemmaglutination). The result of serological authentication proved: influenza A/N2N2 — in 46,78±4,78% cases, influenza A/N3N2 — in 40,36±4,70% and B — at 6,42±2,34% patients at Bukovina (Western Ukraine) during the epidemic season 2012–2013 years.

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[1] Joseph C., Togawa Y., Shindo N. Bacterial and viral infections associated with influenza/C. Joseph , Y. Togawa , N. Shindo//Influenza and Other Respir Viruses. – 2013. – Suppl 2. – P. 105–13.

[2] Increased nasopharyngeal bacterial titers and local inflammation facilitate transmission of Streptococcus pneumoniae/K. R. Short, P. C. Reading, N. Wang, D. A. Diavatopoulos, O. L. Wijburg//MBio. – 2012. – Vol. 25, № 3 (5). – P. 221–228.

[3] Alvarez-Olmos M. I. Probiotic agents and infectious diseases: a modern perspective on a traditional therapy/M. I. Alvarez-Olmos, R. A. Oberhelman// Clin. Infect. Diseases. – 2001. – Vol. 32. – P. 1567–1576.

[4] Cohort clinical and microbiological study of young patients infected with seasonal influenza subtypes A(H3N2) (Victoria, Pert strains) and B viruses in Ukraine: pathophysiology reaction of large intestine microbiota/V. Moskaliuk, A. Sydorchuk [et al.]//Intern. J. of Collab. Research in Internal Medicine and Public health. – 2013. – Vol. 5, № 8. – P. 561–566.

Table 1. – The clinical characteristics of influenza course in young people (n=109)

Clinical signs	Absolute quantity (N)	Relative quantity (%)
Intoxicative syndrome		
– moderate headache	109	100,0±0
– general weakness	109	100,0±0
– louse of appetite	109	100,0±0
– pain in eyeballs	105	96,33±1,80
– myalgia	97	88,99±3,00
– arthralgia	83	76,15±4,08
Catarrhal syndrome		
– dry persistent cough	109	100,0±0
– pain in chest	107	98,17±1,28
– serous and mucosa nasal excretions	102	93,58±2,35
– stuffiness in nose	88	80,73±3,78
Hypertermic syndrome		
– chills	103	94,50±2,18
–febrile temperature (>38^0 C)	82	75,23±4,13
– high-grade fever (>39^0 C)	21	19,27±3,78
– subfebrile temperature (>37,5^0 C)	6	5,50±2,18

Seasonal influenza usually characterized by typical clinical symptoms, with prevalence in certain cases of different syndromes (intoxication, catarrhal or hypertermia).

Species composition and populational level of nasal and tonsillar microbiota had evaluated following the microbiological research in this case-control study. The results of this case-control study of species composition and populational level of nasal and tonsillar microbiota in patients with seasonal influenza type A and B had described in the table 2.

Table 2. – Species composition and populational level of nasal and tonsillar microbiota in patients with seasonal influenza A and B subtypes (M±m)

Microorganisms	Basic group (n=109)			Control group (n=67)		
	N	C%	Pi	N	C%	Pi
Staphylococcus aureus	64	58,72±3,15	0,42	21	31,34±1,01 **	0,11
S. epidermidis	9	8,26±0,92	0,06	9	13,43±1,14 *	0,05
Streptococcus pyogenes	35	32,11±1,78	0,23	3	4,48±0,11 **	0,02
S. viridans	2	1,83±0,14	0,01	1	1,49±0,09	0,01
S. salivarius	-	-		37	55,22±4,82	0,20
S. pneumoniae	2	1,83±0,14	0,01	-	-	
Haemophilus influenzae	2	1,83±0,14	0,01	-	-	
Pseudomonas aeruginosa	3	2,75±0,17	0,02	-	-	
Escherichia coli	19	17,43±0,87	0,12	-	-	
Klebsiella pneumoniae	3	2,75±0,17	0,02	-	-	
Lactobacillus spp.	-	-		67	100,0	0,35
Bifidobacterium spp.	-	-		51	76,12	0,27
Fungi of Candida genus	14	12,84±0,89	0,09	-	-	

Notes. N — number of obtained strains;
C% — constancy index;
Pi — frequency of occurence;
* — evident changes of parameters at p<0,05;
** — evident changes of parameters at p<0,001.

As we can see from the table 2, several microorganisms persisted on nasal and tonsillar mucous membranes of infected patients with seasonal influenza subtype A with elevated constancy index: *Staphylococcus aureus* 58,72±3,15 vs 31,34±1,01 (p<0,001), *Streptococcus pyogenes* 32,11±1,78 vs 4,48±0,11 (p<0,001) and *S. epidermidis* 8,26±0,92 vs 13,43±1,14 (p<0,05).

The comparative mathematic analysis of microbial representatives proved the prevalence of *Enterobacteria* species — *Klebsiella pneumoniae* in 23% of patients and *Pseudomonas aeruginosa* — in 21% of examined cases (fig. 1).

In basic group against a background of deep deficiency of indigenous microorganisms it has been observed the contamination of stomatopharynx with *Streptococcus pyogenes, Streptococcus pneumoniae, Enterobacter (Escherichia, Klebsiella pneumoniae), Staphylococcus aureus, Haemophilus influenzae, Candida*. The foregoing bacteria were detected (in 60,55±4,68% patients) more often as monoculture, and also as associations which include two (in 35,78±4,59% cases) and three (in 2,75±1,46% patients) species of opportunistic microorganisms. Their population level as quantitative figure mounted to high critical level that further to the influenza's secondary complications in young people (bacterial lobar pneumonia, acute sinusitis, lacunar tonsillitis).

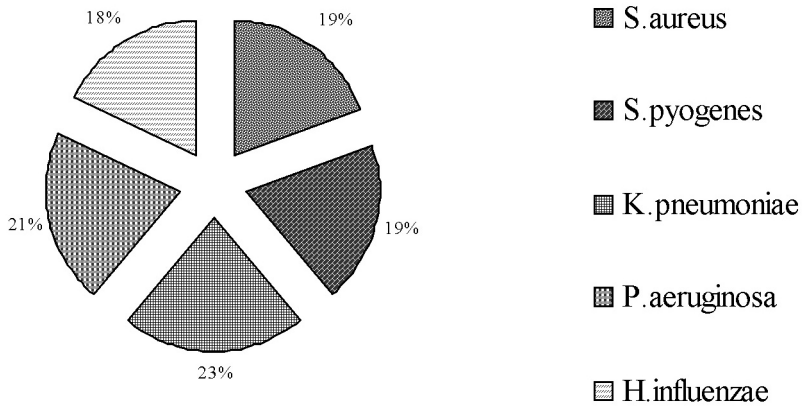

Fig. 1. Pathogenic and opportunistic pathogenic microorganisms obtained from nasal and tonsillar smears in patients with seasonal influenza A and B subtypes

The clinical investigation of the application of Biosporin should be based on the experimental positive data[1]. Initially, the simultaneous 72 hrs cultivation of Staphylococcus and Streptococcus clinical strains with the Bacillus –contained probiotic was performed on selective medium (in vitro). Resulted this, "Biosporin" (includes *Bacillus subtilis & Bacillus licheniformis*) depressed the growth and reproduction of *S. aureus* and *S. pneumoniae* clinical strains: after 24 hrs for 24,15±0,17%, after 48 hrs — to 44,65±0,22% and percentage of strain's inhibition depressed to 58,94±0,23 on the third day. In clinical condition we had suggested the new way of probiotic's administration for great efficacy to elimination of pathogen organisms by the Biosporin's application on palatine tonsils and drops into nose. As a consequence of the foregoing local using in the holiatry therapy of young patients with seasonal influenza we had testified the useful influence of bacterial antagonism. It was observed the decreasing of population level of pathogen and opportunistic organisms in nose cavity and stomatopharynx against a background of full elimination of the *S. pyogenes, H. influenzae, S. pneumoniae, S. aureus, K. pneumoniae, E. coli, fungi of Candida genus (p<0.05).* The medical observation during the one month after acute influenza proved the positive preventive application of probiotic-contained holiatry scheme in treatment of patients with seasonal influenza A and B subtypes in adults of Bukovina region (Western Ukraine).

Conclusions:

1. Seasonal influenza type A in young people is accompanied by elimination of indigenous oropharyngeal mucosa obligate anaerobic lactobacilli, bifidobacteria and salivary Streptococcus, and contamination of allochtonous pathogenic (pyogenic streptococci, pneumococci and haemophilic bacteria) and opportunistic (staphylococcus, streptococcus, enterobacteria, yeast-like fungi of *Candida* genus) microorganisms.

2. Persistence of these organisms are in the form of monoculture (in 60,6% of patients) and in association consisting of two (in 35,8%) and three species (2,8%) of opportunistic pathogens.

3. "Biosporin" initiates the reduce population levels of clinical strains of *S. aureus* and *S. pyogenes*, isolated from naso-, oropharynx of patients with influenza. The more effective inhibition of test strains of *Staphylococcus aureus* and pyogenic streptococci in the case of simultaneuosly cultivation of biosporin in liquid culture medium, resulting in the inhibition of growth had reached after 72 h of incubation, accounting for 58,94% *S. aureus* and 73,33% — *S. pyogenes*, respectively, from the initial population level of clinical strains.

Practical recommendations. In patients with influenza subtype A and B the significant violations of nasal and tonsillar mucosal microflora had suggested. For correction of this and prevention of bacterial complications we appointed to combined treatment with the inclusion of probiotic "Biosporin" (the content of the ampule with 2 doses should be diluted in 5 ml of 0,9% saline, followed by application of 2 drops into each nostril and simultaneous application of 3 drops on the surface of the tonsils).

Sinitsyn Boris Fedorovich, Crimea State Medical University named after S. I. Georgievsky, associate professor of the chair of contagious diseases, Simferopol, Ukraine.

Синицын Борис Федорович, ГУ «Крымский государственный медицинский университет им. С. И. Георгиевского», доцент кафедры инфекционных болезней, Симферополь, Украина.

The theory of autoantigens genesis in detection of causal antigens for autoimmune responses while psoriasis

Теория происхождения аутоантигенов в обнаружении причинных для аутоиммунных реакций при псориазе антигенов

В основе современной терапии псориаза лежит иммуносупрессия, что обусловлено принадлежностью этого заболевания к аутоиммунной патологии, а реакции иммунитета против собственного эпидермиса в литературе гипотетически рассматриваются как генетически детерминированная ошибка иммунного ответа. Эта точка зрения во многом связана с тем, что псориатические аутоантигены и/или антигены остаются неустановленными до настоящего времени[2].

Однако на их существование косвенно указывают сообщения о случаях отрицательных последствий современной иммуносупрессивной тарапии. Так, например, увеличивается количество больных псориазом, у которые наблюдается активация возбудителя туберкулеза при их лечении анти-TNF-моноклональными антителами (моноклональные антитела ингибирующие фактор некроза

[1] Salminen S. Demonstration of safety of probiotics—a review/Salminen S., von Wright A., Morelli L. [et al.]//Int. J. Food Microbiol. – 1998. – V. 44. – P. 93–106.

[2] Mortel M. R. Prospective new biologic therapies for psoriasis and psoriatic arthritis/M. R. Mortel, J. Emer//Drugs Dermatol. – 2010. – V. 9, № 8. – P. 947–958.; Loffredo S. Immunopathogenesis of psoriasis and pharmacological perspectives/S. Loffredo, F. Ayala, G. Marone [et al.]//Rheumatol Suppl. – 2009. – V. 83. – P. 9–11.

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