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MICRAFLORA OF THE SKIN OF THE FACE AND SENSITIVITY TO ANTIBIOTICS IN ACNE DISEASE

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Abstract
Resume; This article is devoted to current problems of dermatovenerology and cosmetology. In the scientific study, the results of the clinical study of the microflora of the skin in vulgar sorghum and the materials obtained as a result of the study of the sensitivity of the isolated microflora to antibacterial drugs are presented. Research results prove that microorganisms belonging to the family of Propionibacterium acnes and Staphylococcus occupy the main place in acne pathogenesis. The study of sensitivity to antibiotics makes it possible to use rational and scientifically based antibiotic therapy.

Keywords; Staphylococcus, propionibacteria, comedones, antibiotics, microflora of the skin, vulgar acne.

Introduction

Relevance: Acne vulgaris is a chronic, polyetiological disease of the pilosebaceous complex. This pathology affects from 79% to 95% of adolescents and40 % - 50% of persons over 25 persons[1,3,8,10]. Prevalence of the disease in recent years continues to grow in both adolescents and adults. The problems with this diseases are due to the fact that even mild forms, and even more severe ones, are negatively affect the psyche of patients, significantly reducing their self-esteem and quality of life. The main factors in the development of this dermatosis are: genetic predisposition, hormonal imbalance, follicular hyperkeratosis, hypersecretion of sebum and microbial colonization of pilosebaceous follicles with the subsequent development of inflammation [1,2,4]. The background condition for the development of acne vulgaris is increased sebum secretion, leading to the appearance of comedones. The latter is horny plugs, consisting of sloughing off epithelial cells of the ducts of the sebaceous glands, saturated with their secretions, and clogging the excretory ducts of the glands. Stagnant sebum decomposes, providing a good nutrient medium for various microorganisms. Numerous studies have been devoted to studying the role of microorganisms in the pathogenesis of acne vulgaris [3,5,8,15]. According to most authors, colonization of bacteria plays an important role in the development of the disease, and their production of chemotactic factors causes the development of inflammation in the lesion. In this case, infiltration of the follicles and surrounding tissues with lymphocytes, monocytes and

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neutrophils occurs, followed by excretion of proinflammatory cytokines, interleukins, leukotrienes, prostaglandins, tumor necrosis factors, adhesion molecules[1,6,8,10,12]. Leukocytes, when absorbing microorganisms in the follicle, release hydrolytic enzymes, which also destroy follicular epithelium. When the contents of the follicle enter the dermis due to impaired permeability of the epithelium, further inflammation and tissue destruction develops. On At the next stage of the inflammatory reaction, complement is activated, then in the process involves macrophages and giant cells. As a result, highly active compounds accumulate in the dermis, such as free oxygen radicals and hydroxyl groups of hydrogen peroxide, which further destroy cells and support inflammation. By According to most authors, the microflora on the skin of acne patients is represented mainly Propionibacterium acnes, Staphylococcus spp., yeast of the genus Malassezia [10,11,13,15].

Propionic bacteria - microaerophilic gram-positive microorganisms - are included in composition of normal skin microflora. P.acnes plays the main role in the transformation of comedones into acneform inflammatory rashes. Although the role of P. acnes in the development of inflammation undoubtedly, at the same time, their pathogenic effects do not manifest themselves in healthy people. The number of bacteria in the rash does not correlate with the severity of the disease[11,12,13].

Staphylococci do not survive in anaerobic conditions, so they are found in the upper parts of the hair follicles and in places where the ducts of the sebaceous glands open. According to the results research by some Russian and foreign researchers on acne vulgaris predominateS. epidermitis - over 90% [5,6,7,8,9,10]. According to some authors, some cocci stimulate the growth of propionic bacteria; according to others, competition is observed between staphylococci, propionic bacteria and yeast for lipid substrates, and the lipolytic activity of these organisms depends on the pH of the environment.

Based on the above, the purpose of our study was to identify microflora in acne vulgaris rashes and determine the sensitivity of the isolated microflora to antibiotics.

Research Materials and Methods

Many methods of studying the microflora of the skin are described in the literature: direct quantitative accounting of cells in the flush by microscopy, using fluorescence microscopy, seeding on selective media with subsequent identification of the microorganism, the polymerase chain reaction (PCR) method based on the appearance of a fragment of the DNA of the pathogen containing a sequence of nucleotides, which are only this microorganism. The most common remains the classic microbiological - sowing of clinical material on artificial selective nutrient media to obtain and identify pure cultures.

Table 1 Distribution of patients with vulgar acne by age and gender

Age	Gender					
	Male 50%		Female 50%		total 100%	
	abs	%	abs	%	abs	%
13-17	9	11.25	7	8.75	16	20
18-25	21	26.25	19	23.75	40	50
26-37	10	12.5	14	17.5	24	30
Total	40	50	40	50	80	100

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The methods of collecting material are reduced to three methods: the fingerprint method, the method of flushing or scraping, and the biopsy method. The most reliable method is biopsy, because it allows you to isolate all microorganisms in the studied area of the skin, however, injuries and morbidity limit its use. Therefore, the most acceptable methods are printing and flushing or scraping.

A comprehensive (clinical and laboratory) examination of 80 patients with various forms of vulgar acne, including 40 men and 40 women aged 14 to 37, was conducted based on the Department of Dermatology of the State Clinical Hospital No. 1 in inpatient and outpatient settings. The average age of the patients was 22 years (Table 1).

Among both men and women, the overwhelming number of patients were aged 18 to 25 years (26.25% and 23.75%, respectively)

Residents of the village made up 48.8% (39 people), of the city - 51.2% (41 people). An earlier onset of the disease was observed in girls from the age of 13, and in boys from the age of 14, which is obviously due to the peculiarities of the puberty period. The duration of the disease in men ranged from 2 months to 14 years (3.1 ±11.2), in women from 3 months to 16 years (on average 3.8±12.3).

The overwhelming number of patients were housewives and students, respectively 32.5% and 19% (Fig.1).

Table 2 Distribution of acne vulgaris patients by clinical forms and severity

Clinical forms	Males		Females		Totally	
	abs	%	Abs	%	abs	%
Papular form						
Easy	**2**	**2,5%**	**2**	**2,5%**	**4**	**5%**
Medium-heavy	**8**	**10%**	**2**	**2,5%**	**10**	**12,5%**
Papulopustular						
Easy	**4**	**5%**	**6**	**7,5%**	**10**	**12,5%**
Medium-heavy	**7**	**8,75%**	**22**	**27,5**	**29**	**36,25%**
Heavy	**4**	**5%**	**4**	**5%**	**8**	**10%**
Conglobate	**11**	**13,75**	**4**	**5%**	**15**	**18,75%**
Nodular cystic	**4**	**5%**	**-**	**-**	**4**	**5%**
Totally	**40**	**50%**	**40**	**50%**	**80**	**100%**

The seasonality of the occurrence of dermatosis was noted in 11 patients (13.75%), and 69 (86.25%) were not noted. Heredity was burdened in 18 patients (22.5%), not in 62 (77.5%).

Before going to the clinic, 54 patients (67.5%) received outpatient or stationary treatment using various methods, the effect of therapy was insignificant or not noted.

The distribution of acne by severity is reflected in Table 2, from which it can be seen that out of 80 (100%) patients, only 14 (17.5%) had a mild form of the disease, and the overwhelming number had 66 (82.5%) moderate and severe.

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Table 3. The topographic localization of acne elements

Localization of elements	Males		females		Totally	
	Abs	%	abs	%	abs	%
Face	8	10%	9	11,25%	17	21,25%
Face, neck	2	2,5%	7	8,75%	9	11,25%
Face, waist back	7	8,75%	1	1,25%	8	10%
Face, chest	-	-	7	8,75%	7	8,75%
Face neck, waist	1	1,25%	1	1,25%	2	2,5%
Face, waist	8	10%	-	-	8	10%
Face, neck, chest	-	-	6	7,5%	6	7,5%
Face, chest, waist	-	-	4	5%	4	5%
Face, neck, chest, waist	14	17.5%	5	6.25%	19	23,75%
Total	40	5%	40	50%	80	100%

From this table, it can be seen that the localized nature of the rashes was observed in total only in 17 (21.25%) patients (8 men, 9 women), in the vast majority of patients - 63 (78.75%), the process was widespread, possibly due to hot climatic conditions. In mild form, open and closed comedones, single pustules were observed in the foci. With a moderate papulopustular form, multiple superficial inflammatory and non-inflammatory acne elements were observed 2-4 mm. in diameter. In severe papulopustular form, multiple, widespread superficial and deep acne elements were noted, prone to the formation of atrophic and keloid scars. The conglobate form was 2.75 times more common in men than in women (13.75% vs. 5.0%). In the lesions there were deep large inflammatory elements more than 5 mm in diameter (spherical) with a tendency to form disfiguring scars. The nodular cystic form was found only in men (5.0%) and was characterized by the presence of deep nodular and cystic formations with a diameter from 5 to 10 mm, along with this, single draining sinuses the size of a pigeon's egg were observed. Healing occurred with the formation of hypertrophic and keloid scars.

Bacteriological studies were conducted on the basis of the Department of Microbiology of the Abu ali Ibn Sino Bukhara State Medical University. The removal of material from the rash elements was carried out in compliance with the rules of asepsis with a sterile disposable scarifier and a sterile cotton swab. The material was taken from acne eruptions - inflammatory (papules, pustules, nodes) and non-inflammatory (comedones). The material was carefully suspended in 1 ml of sugar broth, then sown in a calibration loop into Petri dishes with yolk-salt agar. Liquid and dense media with the material were placed in a thermostat, which was filled with a special as mixture for the cultivation of anaerobic bacteria, which consisted of CO2, and N2 in various concentrations for 96 hours. Then the color and number of grown colonies were determined. Material for bacterioscopy was taken from each type of colony; colonies were also transplanted to special media for identification. Media for aerobic and anaerobic bacteria were used to determine the sensitivity. AGV medium was used for aerobic bacteria. For anaerobic bacteria, a special dense Shalder medium.

The study of antibiotic sensitivity was carried out by the disco-diffuse method. For this purpose, paper discs impregnated with antibiotics were placed on the lawn of the studied bacterial culture

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in Petri dishes. The crops were incubated for 16-24 hours. The growth retardation zone up to 15 mm indicated a weak one, up to 25 mm - an average one, and more than 25 mm - high sensitivity of the strains.

The sensitivity of the isolated microflora to the following antibacterial drugs was determined: roxithromycin, erythromycin, clindamycin, streptomycin, rifampicin, negram, kanamycin, ofloxacin, ceftriaxone, lincomycin, doxycycline, leflox, tetracycline, carbenicillin, gentamicin, amoxicillin, ciprofloxacin, biseptol, oxacillin, azithromycin, carbenicillin, neomycin, CAFFRA oxacillin, cefaclor, REO, bacitracin.

The Results and their Discussion

As a result of bacteriological examination Propionibacterium acnes was found in the rash elements in all 80 observed patients, which was 100%. Staphylococcus epidermidis was detected in 47 patients (58.75%), Staphylococcus aureus in 38 (47.5%), group A streptococcus in 26 (32.5%), E.colli in 27 (33.8%), Candida in 24 (30%), Proteusin 15 (18.8%), Klebsiella in 6 (7.5%) (fig. 2). Consequently, along with Propionibacterium acnes, Staphylococcus epidermidis and aureus are most often detected in acne vulgaris eruptions (58.75% and 47.5%, respectively).

Results of determining the sensitivity of Propionibacterium acnes, Staphylococcus epidermidis, and Staphylococcus aureus to 25 antibacterial drugs are presented in Table 4. The antibiotic sensitivity of bacteria was differentiated as high (S), moderate (I) and resistant (R).

Table 4 Sensitivity of microbial flora to antibacterial drugs

Antibacterial drugs	Sensitivity	
	Number of patients	%
Leflox	20	25%
Streptomycin	7	8,75%
Ofloxacin	27	33,75%
Gentamicin	15	18,75%
Tetracycline	19	23,75%
Ceftriaxone	19	23,75%
Azithromycin	17	21,25%
Ciprofloxacin	53	66,25%
Carbenicillin	17	21,25%
Rifampicin	11	13,75%
Kanamycin	23	28,75%
Neomycin	1	1,25%%
Lincomycin	5	6,25%
Doksatsiklin	9	11,25%
Roxithromycin	29	36,25%
Erythromycin	22	27,5%
Amoxicillin	4	5%
Negram	2	2,5%
Clindamycin	17	21,25%
Bisector	4	5%
Kafra	10	12,5%
Oxacillin	3	3,75%
Cefaclor	2	2,5%
REO	6	7,5%
Bacitracin	1	1,25%

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As can be seen from the table, the studied strains were highly sensitive to ciprofloxacin (66.25%), roxithromycin (36.25%), and gentamicin (33.75%).

Moderate antibiotic sensitivity was noted to kanamycin (28.75%), erythromycin (27.5%), leflox (25%), ceftriaxone (23.75%), tetracycline (23.75%), clindamycin (21.25%), azithromycin (21.25%).

The highest percentage of resistance was observed to neomycin (1.25%), bacitracin (1.25%), cefaclor (2.5%), oxacillin (3.75%), bisector (5%), amoxicillin (5.0%), lincomycin (6.25%), streptomycin (8.75%), REO (7.5%).

Thus, the results of our research confirm the important role of Propionibacterium acnes and microorganisms of the genus Staphylococcus in the pathogenesis of vulgar uglies. The study of antibiotic sensitivity contributes to the rational and reasonable prescription of antibiotic therapy.

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