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Properties of Strains of Staphylococcus Aureus Taken From People in Rural Areas in Winter Conditions

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Abstract: Staphylococci of today are detected everywhere and in any organism. They were found in the contents of echinococcal bladders, which in addition to the total number of cases studied, staphylococci in samples represented a monoculture, associations with other microbes. Colonies of microbes grown on meat-peptone agar (MPA) were convex, round, with smooth edges and a moist surface. Depending on the pigment produced, the colonies were golden, enamel-white or lemon-yellow in color, ranging in size from 1 to 4 mm in diameter.

On meat-peptone broth (MPB), staphylococci were characterized by turbid growth, precipitation, or (less often) film formation.

Keywords: winter conditions, Staphylococcus aureus, meat-peptone broth, meat-peptone agar, plasma coagulation, strains.

Introduction. Of great importance is the reactivity of the patient's body, his age, concomitant pathology. The disease develops slowly and lasts for a long time. In many of the infected, the first signs of the disease appear several months, even years after infection: for example, when a person accidentally looks at himself in the mirror, he discovers a swelling right hypochondrium, or a cyst is detected during a preventive fluorographic examination. There are 2 forms of echinococcosis. The socalled hydatid (cystic) form is more common (the causative agent is Echinococcus granulosus), in which the liver, lungs, brain, muscles, kidneys are mainly affected. Hydatid echinococcus is singlechamber, grows slowly for years; the bubble sometimes reaches a volume of 10 liters or more. A connective tissue capsule and a chitinous shell are formed around it, daughter echinococcal bladders are formed in the lumen of the cyst, in which, in turn, grandchild bladders can develop.

To identify smears in the rural population under winter conditions by microbiological examination of the detection of Staphylococcus aureus strains in the contents.

Research methods. The study will determine the plasma coagulating ability of one of the most reliable methods for determining the pathogenicity of staphylococci. Of the strains of Staphylococcus aureus, the plasmocoagulation reaction of the strains did not show the plasmocoagulating ability of the strain. It is known that the determination of the hemolytic activity of staphylococci is one of the reliable signs of pathogenic staphylococci.

Results and discussions. With the result indicated above, 67 samples containing staphylococcal flora, we isolated 378 strains, which, according to the nature of the pigment, were distributed as follows: with golden pigment — 200 strains (52,9%), with white pigment — 116 strains (30,7%), with lemon yellow - 62 strains (16,4%). According to the term of coagulation of rabbit plasma, staphylococcus strains were characterized by the following indicators: plasma coagulated after 1 hour — 18 strains (9%), after 2 hours — 66 strains (33%), after 3 hours — 42 strains (21%), after 4 hours — 21 strains (10,5%).

Of the 200 isolated strains, 188 strains of Staphylococcus aureus (94%) showed hemolytic activity and 12 strains (6%) did not show hemolytic activity. The hemolytic activity of the strains studied by us was characterized by the following indicators: a weak degree of hemolysis — 79 strains (39,5%), an average degree of hemolysis — 61 strains (30.5%), a strong degree — 48 strains (24%).

Thus, in half of the cases, the isolated strains of Staphylococcus aureus showed very pronounced hemolytic activity.

As we have already indicated, the plasmacoagulation reaction and hemolytic activity of staphylococci are one of the main pathogenicity tests. It is of interest how many of the strains of Staphylococcus aureus we isolated simultaneously showed both of these properties. Of the 200 isolated strains of Staphylococcus aureus, 142 strains (71%) coagulated plasma at the same time and showed hemolytic ability, 46 strains (23%) showed only hemolytic activity without simultaneous plasmacoagulation and 5 samples caused plasmacoagulation without hemolysis.

Thus, out of 200 samples of Staphylococcus aureus, 142 strains (71%) showed pronounced pathogenic properties. In addition, we examined all strains for the ability to ferment mannitol, since this test is also one of the indicators of the pathogenicity of staphylococci. Out of 200 strains of Staphylococcus aureus, 118 strains (59%) fermented mannitol under anaerobic conditions. Most of the isolated strains of staphylococci decomposed carbohydrates of a "motley series" with the formation of acid. Out of 200 strains, 143 strains (71,5%) of mannitol were decomposed.

The peculiarities of the growth of Staphylococcus aureus on MPB include the clouding of the latter, the formation of sediment and film. Of the total number of isolated strains of Staphylococcus aureus, 48 (24%) caused turbidity of the broth, 153 (76.5%) — turbidity and precipitation, and 9 strains caused turbidity with the formation of sediment and film.

Currently, the DNA activity of staphylococci has acquired great importance in determining pathogenicity. This test is one of the most reliable in differentiating pathogenic and non-pathogenic staphylococci. Some coagulonegative strains of staphylococci have DNA-ase activity and can be confidently attributed to pathogenic strains. Out of 200 strains of Staphylococcus aureus, 152 strains (76%) have DNA activity. 48 strains (24%) did not have this ability. And finally, the strongest and most reliable sign of determining the virulence of staphylococci is a test on rabbits and white mice. The pathogenicity of 50 strains of this type of staphylococcus was carried out by staging a dermatonecrotic test on white mice.

At the same time, 32 strains gave a positive dermonecrotic test with the formation of a necrosis focus, 11 strains gave a dubious test in the form of an abscess formation at the site of intradermal culture injection and 7 strains gave a negative dermonecrotic test.

The last stage in the study of Staphylococcus aureus was the determination of antibiotic sensitivity by the paper disk method. The last stage in the study of Staphylococcus aureus was the determination of antibiotic sensitivity by the paper disk method. In almost all cases, the sensitivity of staphylococci to antibiotics is high. Since the area of necrosis formed in experimental white mice is also to a certain extent a criterion for the pathogenicity of the tested strain, we present all our observations: the necrosis area of 1.5 x 2 cm gave 1 strain, 1.5 x 2 cm - 1, 2 x 2 cm - 1, 2 x 2.5 cm - 4, 2.5 x 2.5 cm - 5.2 x 3 cm - 5, 2.5 x 3 cm - 7, 2 x 3.5 cm - 7, 2.5 x 3.5 cm - 3.3 x 4 cm- 2 strains.

In almost all cases, the sensitivity of staphylococci to antibiotics is high. The most sensitive Staphylococcus aureus detected by us were to antibiotics such as benzyl penicillin, ampicillin, cephaloridin, erythromycin, oleandomycin, lincomycin, ristomycin and novobiocin, less sensitive to

methicillin, oxacillin, streptomycin, tetracycline, levomycetin, rifampicin, monomycin, gentamicin, kanamycin.

Conclusion. Thus, microbes from the colony with typical signs of staphylococcus at microscopy were in the form of accumulated cocci, similar to bunches of grapes. Since it was indicated above that some types of staphylococci did not have plasma-coagulating and hemolytic activity, let's see how many such strains there were in our studies of strains that had both DNA-aza, plasma-coagulating, and hemolytic activity; some strains showed only plasma-coagulating and DNA-aza activity and were characterized by DNA-aza and hemolytic activity.

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