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Microbiological Characteristic of Tooth-Gum Fluid in HCV and HBV-Infections

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Introduction

Kinds of viral hepatitis of the man are traditionally difficult and global problem which is far from its solution. At present, as in earlier period, we have high epidemic potential of this polyetiological group of diseases [4]. The new information on etiological agents, sources, reservoirs and mechanisms of transmission of pathogens, changes in the nature of spread and trends in the incidence of enteric and parenteral hepatitis determine the need and importance of their systematic study [8]. Viral hepatitis with parenteral transmission of the causative agent, particularly HCV and HBV is one of the most serious and actual problems of health. All lethal issues of patients with acute viral hepatitis are connected with these infections, and also all the cases of development of chronic diseases of the liver including cirrhosis and primary cancer [1,3]. On the data of WHO, in about a third of the world's population, contact with HBV is possible during life, 257 million people are chronically infected with HBV, 71 million – HCV [5]. Despite the development of effective methods of treating HCV, the number of infected people is actually growing, since about 80% of HCV is asymptomatic and very often infected people are not aware of their infection [8].

It is known that the base of pathogenes of any inflammatory process is the result of two main factors: the irritation of the tissue and local reaction of the tissue. The latter depends on the general state of the body and its local and general immunity [6].

The periodontal tissue is structural-functional complex and participates in different functions of the body: mastication, swallowing, speech and breath. The periodontal diseases belong to the most often kinds of pathology, and inflammatory and inflammatory-dystrophic diseases [11].

In the literature many causes of development of pathological processes of the periodont are described [2,9,10,12]. These causes might be exogenous as well endogenous.

During inflammatory processes of the parodont in gingival pockets, pus and microbic flora accumulate which makes the main disease more difficult. Due to the modern conceptions of pathogenesis of the diseases of the periodont, one of the roles belong to microorganisms of the dental plaques and the products of their activity [13]. The hygienic regime of the oral cavity and morphological-functional particularities of the dental-jaw system is referred to local factors which enable the strengthening of potential bacterial covering and development of inflammatory diseases of the periodont. Novacek G. et al., 2014 [7] has the following finding in patients at the age of 24 to 73 with the diagnosis of chronic generalized periodontitis: 12 kinds of bacteria were isolated. from periodontal pocket. *Prevotella intermedia*, *Porphyromonas gingivalis*, *Streptococcus milleri*, *Peptostreptococcus spp.* were isolated most often.

The objective of the research is the study of microbic status of the tooth-gum fluid in HCV and HBV – infections

Material and Methods

For the study of the microbic picture of the tooth-gum fluid 85 patients were involved; 40 patients with HCV and 45 patients with HBV-infections and 30 patients with inflammatory periodontal diseases (control group), but virally negative. The age of the patients fluctuated from 25 to 63 years, 52 were men, 33 – women. The patients were treated on inpatient basis in infection clinic “Nork” in Yerevan and medical center “Armenicum” during 2016-2017. The comparative group were the patients with HAV-infection – 27. The material for bacteriological examination was taken in the morning before eating and before morning hygiene of the oral cavity with sterile cotton wool from the tooth-gum pockets. The material was brought sterile or physiological solution. Meat peptone broth was added to one part of the material and incubated in thermostate for 18-20 hours, then seeding was made on salt, sugar and 5% of blood agar and agar Endo; for the second part of the disks with urea from SIB Gorky SRI of Epidemiology and Microbiology (Russia) material for determination of urease activity of the probe. Other method of finding is the material based on the

capability of these bacterial to produce more ureasa. The positive results of ureasa test was made 1 minite after the change of the reactive colour from pale-pink to raspberry. The count of results of ureasa activity was made during 24 hours from the begining of the test.

The count identification of the made culture of microorganisms was made after the incubation of the seeding during 18-20 hours in the thermostat in temperature 37⁰C. Hemolytic properties of microorganisms were determined by means of hemolysis zone round the grown colonies in 5% blood agar (after making the simple agar 45-50⁰ C with addition 5% of lysed human donor blood).

Results of the study were subjected to variational-statistical processing with the Student criterion test using the Microsoft Excel 7.0 software package. For comparing the obtained data, as well as evaluating their reliability, the following statistical analysis methods were used: determining the specific gravity of the phenomenon in%, determining the frequency of propagation of the phenomenon in the corresponding medium and the average error, determining the reliability of the difference in relative values.

Results and Discussion

Microbic landscape of the HCV and HBV patients oral cavity was examined separately before pathogenetic treatment of hepatitis. In the table we have the findings of microbic status of tooth-gum fluid before the pathogenetic treatment of the patients.

Analysis shows that in comparison with control group:

- intensive index of grampositive rods in HBV and HCV-infected patients have a tendency of growth;
- intensive index of gramnegative rods in HBV infected patients does not differ and in HCV-infection grows;
- intensive index of *Staphylococci* in HBV and HCV-infected patients have a tendency of growth;
- intensive index of presence *Streptococci* in HBV patients does not differ, HCV has a tendency of growth;
- intensive index of the presence *Candida* in patients HBV and HCV-infection has a tendency of rising;
- intensive index of HP in HBV and HCV-infected patients have a tendency of rising;
- intensive index of *Bacteroids* in HBV-infection has a tendency of decreasing and HCV-infection shows the decrease of the index.

Table

Microbic picture of the tooth-gum fluid in patients with HCV and HBV-infections before pathogenetic treatment

Microbic picture	Control group		HBV		HCV	
	N	P±m	n	P±m	n	P±m
<i>Grampositive rods</i>	14	5,05±1,32	16	5,78±1,40	15	5,42±1,36
<i>Gramnegative rods</i>	11	3,97±1,17	11	3,97±1,17	13	4,69±1,27
<i>Staphylococci</i>	17	6,14±1,44	18	6,50±1,48	19	6,86±1,52
<i>Streptococci</i>	9	3,25±1,07	11	3,97±1,17	12	4,33±1,22
<i>Fungi of the genus Candida</i>	8	2,89±1,01	9	3,25±1,07	10	3,61±1,12
<i>HP</i>	6	2,17±0,87	8	2,89±1,01	9	3,25±1,07
<i>Bacteroids</i>	7	2,53±0,94	6	2,17±0,87	5	1,81±0,80
All strains	72		79		83	

Microbic status of tooth-gum fluid in HBV and HCV- infection in figure. As a result of the research of tooth-gum fluid for the determination of the microbic picture in HBV infection patients the strains of *Grampositive rods* 17.7%; *Gramnegative* – 16.2%; *Staphylococci* – 25.3%; *Streptococci* – 11.1% and fungi of the genus *Candida* – 13.8% were more often discovered. For the determination of ureasa activity ureasa test was made. The positive activity in 9.5% cases witnesses the presence of *HP* in those patients. *Bacteroids* were discovered in 6.4% cases. As a result of the research of tooth-gum fluid for the determination of the microbic picture in HCV- infection patients the strains of grampositive rods – 17.1%; *Gramnegative* – 15.7%; *Staphylococci* – 26.9%; *Streptococci* – 10.5%; fungi of the genus *Candida* – 14.0%, *HP* – 8.8%; *Bacteroids* – 7.0% cases were more often discovered.

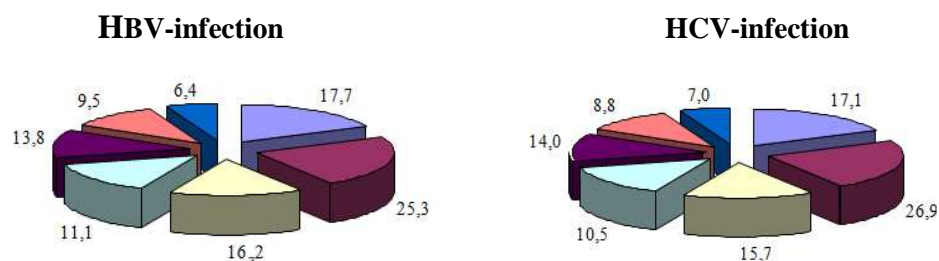
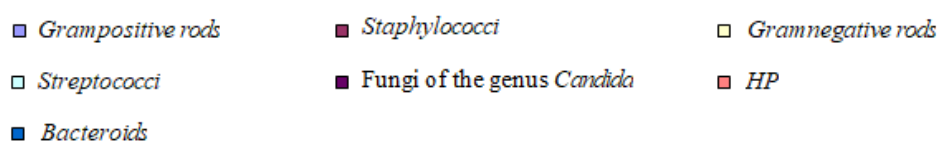


Figure . Microbic status of tooth-gum fluid in HBV and HCV- infections (%)



Conclusions

Thus, the microbic picture of tooth-gum fluid in patients with HCV and HBV-infections did not differ. The picture may witness that in studied hepatitis microbic landscape of tooth-gum fluid, homogenous microbiological examination shows that hepatitis viruses don't influence on the microbic part of the oral cavity and periodont and don't lead to marked deviations of the structure of microbic landscape before pathogenetic treatment of such patients.

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Микробиологическая характеристика зубо-десневой жидкости при HCV- и HBV- инфекциях

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Проведено микробиологическое исследование зубо-десневой жидкости у 85 больных вирусными гепатитами, в том числе 45–HBV, 40–HCV. Контрольную группу составили 30 лиц с воспалительными заболеваниями пародонта, без вирусных гепатитов. Микробная картина зубо-десневой жидкости у больных с различными нозологическими формами вирусных гепатитов значительных отличий не имела.

Ատամնալնդային հեղուկի մանրէաբանական բնութագիրը HBV և HCV վարակների դեպքում

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Իրականացվել է ատամնալնդային հեղուկի մանրէաբանական ուսումնասիրություն: Հետազոտվել են վիրուսային հեպատիտով 85 հիվանդ, այդ թվում՝ 45 HBV, 40 HCV: Հսկիչ խումբը կազմում էին հարատամնաբորբ հիվանդություններով 30 անձ՝ առանց վիրուսային հեպատիտների: Ատամնալնդային հեղուկի մանրէային պատկերում վիրուսային հեպատիտների տարբեր նոգոլոգիական ձևերի դեպքում նշանակալի տարբերություն չի հայտնաբերվել:

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