VIBROACOUSTICS IN MEDICINE
Collection of Reports on Vibcroacoustic Therapy
St Petersburg 2002

D.V. Zanegin
(Moscow, National Medical Stomatological University)

Vibroacoustic Therapy Effect on Local Hemodynamics in Periodontitis.

Periodontal diseases affect more than 90% of the world population aged over 40. A big role in causing it is played by microhemocirculation defects in parodentium tissues. Therefore, by influencing this pathogenic section one can eliminate the defects of capillary-trophic function and slow down the progress of the disease.

Numerous researches mention the effect of microvibration on tissue hemodynamics, where the effect depends on frequency, duration and intensity of microvibration. Parameters of this effect are the foundation of therapeutic effectiveness of Vibroacoustic Therapy (VAT). Therefore, we set the task to compare the effect of low-frequency vibrotherapy (VAT) using Vitafon-2 apparatus and ultrasonic therapy using Auzot apparatus operating on frequency 26.5 kHz.

26 patients (15 females and 11 males) aged 20-65 with the slight form of periodontitis were examined. All patients underwent clinical dental examination, radiography, thermometry, rheoperiodontography (RPG) and Laser Doppler Fluometry (LDF) of periodontitis.

Periodontitis treatment included education about professional oral cavity hygiene, removal of dental deposits, oral cavity sanation and VAT. The patients were divided into two groups: I – 10 people (6 females and 4 males) who were treated using Vitafon in position “2” and “4” for 5 min on 4 skin fields on upper and lower jaws; II –

16 people (9 females and 7 males) who underwent ultrasonic therapy using Auzot apparatus - 1 min on upper and lower jaws through the stream of 0.05% chlorhexidine. The course of treatment included 10 daily procedures.

After the course of treatment, suppression of clinical symptoms of the disease (edema, hyperemia, stasis, normalized turgor, Schiller-Pisarev test, normalized gum temperature) was noted in all patients. Rontgenological picture of periodontitis did not have any changes. In the first group of patients, RPG showed lower rheographic index, peripheral resistance rate and vessel tone, and a higher vessel elasticity index. According to LDF, blood flow effectiveness increased due to vasomotor oscillations and the reduced contribution of passive microcirculation mechanisms supplying blood flow to microvessels.

In the second group, RPG showed the same changes in the qualitative characteristics of the curve, and quantitative characteristics had the same direction of changes as in the first group of patients. The comparative analysis of RPG and LDF showed that activation of local blood circulation in the patients of the second group was 10-15% higher.

Thus, the obtained data indicate better normalization of periodontal tissues hemodynamics after ultrasonic therapy than low-frequency microvibration. It seems to be related to the exposure method, since the ultrasound was applied directly to periodontal tissues whereas the vibroacoustic effect was tested on skin projection of the jaws. The second effectiveness factor was chemical effect of chlorhexidine acting as ultrasound conductor*.

Yet, the advantage of VAT is the possibility of having procedures at home.

_____

* Besides, it is likely that vibroacoustic schedule was not optimal. Perhaps, the research using anti-inflammatory vibroacoustic schedule should be continued, and next time a wad of cotton wetted in 0.05% chlorhexidine should be inserted between the gum and the cheek. – noted by V.A. Fedorov