New danger of dental implants discovered by Siberian scientists

Scientists of Siberian Federal University (SibFU) and Institute of Medical Problems of the North, while identifying the possible cause of a dangerous infection — peri-implantitis, suggested that it could be traces of foreign inorganic substances on the surface of new sterile dental implants. Intermediate results of the experiment are published in the journal "Dentistry".



Many dentists today use dental implantation as a method of rehabilitation for patients. The number of complications associated with it is increasing, including cases of peri-implantitis, an infection when soft tissues of the oral cavity inflame, bone tissue in the prosthesis area are irreversibly destroyed. Gum swelling, bleeding and suppuration occur.

An effective treatment for this infection is laser therapy, which cleans surfaces of an implant from any foreign substances and organisms. However, surfaces vary greatly in cleanliness, which largely depends on the manufacturer.

SibFU scientists evaluated the morphological and elemental composition of various implant surfaces treated with a laser with a wavelength of 2780 nm, compared to the implants not touched by a laser in patients with peri-implantitis.

Researchers studied implant samples with surfaces from different manufacturers. All of them were in use from 3 to 10 years and were removed due to the development of peri-implantitis in patients. As control samples, one implant from a sterile packaging from each manufacturer was used.

Three types of surfaces were compared: the infected surface of the prosthesis from a patient with peri-implantitis, the infected surface treated with a laser, and the surface of a completely new sterile implant. On the new implant, traces of contamination by inorganic compounds and a large number of foreign chemical elements that could cause the disease were found. The surface of untreated implants was expectedly contaminated - carbon, phosphorus, sulfur, silicon and other substances formed during inflammation were detected in huge quantities. The surfaces were cleaned with a laser.

The authors of the study believe that with the help of laser radiation it is possible to effectively clean the surface of completely new implants from foreign impurities, which can provoke the body's immune response no less than bacteria.

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