

TECHNICAL ACHIEVEMENTS IN UKRAINIAN MEDICINE

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Анотація

У даній статті наводиться огляд технічні досягнення в українській медицині за останні 12 років, які є кращими за аналоги у світі. Для огляду предствляється титановий ендопротез, еко-інекційний шприц, мамограф, фазаграф, рукавичка для людей з вадами зору, гідроскальпель, персональний тренажер і комп'ютерний фонендоскоп.

Ключові слова: наука, медицина, апаратура, технології.

Abstract

This article gives an overview of the technical achievements in Ukrainian medicine over the last 12 years, which are better than analogues in the world. For examination, titanium endoprosthesis, eco-injection syringe, mammography, phasagraf, gloves for visually impaired people, a gyroscandle, a personal simulator, and a computer fonodoscope are reviewed.

Keywords: science, medicine, equipment, technology.

Many believe that Ukrainian science and medicine do not exist. What better minds sell their inventions to the West or have diverted abroad. But everything is not so. Contrary to the difficult economic situation, low financing, the occupation of the Crimea and the war in the East, Ukrainian science has created a mammogram and a unique titanium prosthetic only in recent years. Also, Ukrainian inventors have released a device that can "prophylaxis" a heart attack and a unique device "Trenar", which allows to quickly develop damaged or paralyzed muscles.

In 2015, scientists from the National Academy of Sciences of Ukraine introduced the endoprosthesis of the hip joint, made of titanium. Development is significantly cheaper than Western counterparts. Developers have said that titanium endoprosthesis is the best solution for implantation in the body - the metal demonstrates high biocompatibility and does not repel human body tissues, in contrast to the often used cobalt, chromium and molybdenum alloy. Another advantage of the Ukrainian invention is the highest wear resistance. It wears out 6 times slower than any other modern counterpart. The probability of fragile destruction at the same time completely excluded. As a result of the research, namely the "passage" of the friction path equal to 200 km or 23 million load cycles, the researchers found no signs of wear. In this case, their development allows a person to move freely, without interrupting her movements and not experiencing discomfort[1].

In 2013, a disability scientist Ivan Bondarenko, who came from Donetsk, created an innovative invention - an eco-injectable syringe. The scientist said that the syringe does not contain plastic and glass, and therefore does not harm the environment, and in addition, a special device can reduce the risk of the spread of AIDS and hepatitis C. According to the inventor, the needle breaks practically without the possibility of secondary use. The syringe did not go unheeded. The product is already interested in large foreign manufacturers of medicines. This syringe would save not only many lives but also save the country's ecological state.

In the same year, scientists of the Donetsk Physical-Technical Institute named after O. Galkin created a new type of mammography. This device is unique in that it diagnoses a tumor with an indicator, which gives a very accurate thermocartectomy of the entire mammary gland, detecting the smallest tumors at a locally elevated temperature. It does not need to do any analyzes. This method allowed the breast examination to be harmless, since it is not necessary to use X-ray irradiation, as well as to detect tumors in the early stages. Subsequently, the MOH adopted an order to place this mammography in all state medical institutions of Ukraine, the author's team sold the license to the Nizhyn Plant of Medical Equipment, where the device was set up[1, 2].

Scientists from Kyiv developed the Fazgraf device, which allows you to detect heart problems in the early stages and diagnose your heart attack in advance. The phasagraph can check the state of the person in a minute and does not require special knowledge for use. The device has already been tested in clinical practice, in diagnostic centers, in enterprises with anthropogenic risk, in secondary schools and sports organizations.

The guy from Luhansk, Ivan Seleznev, presented his project "A New Sense: An Ultrasound Glove for the Spatial Orientation of People with Visual Defects" at the International Intel International Science and Engineering Fair. Such a thing can become very useful in terms of orientation in space. TechnoEyes is an infrared distance sensor - helping people with vision problems navigate the streets of the city. The invention of a young Ukrainian has fallen to the top three of the world's best in 2013[1].

Young scientists from the National Aviation University and the Aerospace Institute in 2012 developed a hydro scalpel. Based on the technologies used in the aircraft industry, the young minds, under the direction of Professor Victor Bocharov, invented a liquid jet scalpel, which allows operations on the liver, stomach, and even the removal of malignant formations - all without damaging the blood vessels. "Under the influence of high pressure, unprotected tissues are removed almost without damage to the vascular system, that is, with minimal blood loss and a reduction in the risk of surgery," - said the professor. After certification, the device was to be launched in batch production. Professor Volodymyr Skyba, Director of the Center for Surgery, says that the scalpel is better than Western analogues - it is reliable, economical and reusable. Many years of clinical trials are already under way, during which the hydro scalpel proved to be effective. The surgeons of the Kyiv City Clinical Hospital №1 have been using the "liquid knife" for several years during complicated surgical interventions. Thanks to the new technique, the manipulation takes two times less time. Because under the influence of high pressure tissues are disengaged practically without damage to the vascular system, that is, with minimal blood loss. This allows not only to shorten the duration and trauma of surgical interventions, but also significantly reduce the period of postoperative rehabilitation of patients.

In 2009, scientists at the Science and Education Center for Information Technology and Systems have created an amazing device that can help people who have survived a stroke, suffer from pathologies of the central or peripheral nervous system, cerebral palsy and many other diseases that affect the muscles and the motor vehicle. "Trainer" really works as a personal trainer, who does what can not be more expensive foreign analogues. The device uses electric pulses to teach damaged muscles to move not only through pre-programmed programs, but also simulating its actions during training. Mass production "Trenar-01" started in 2010 - since then it has been installed in 13 clinics and sanatoriums throughout Ukraine. The device has compact dimensions and stand-alone charge. Later, a more complex "Trainer-02" was released. Prices for Ukrainian inventions are quite acceptable and cost 5-7 times cheaper than imported ones.

Earlier, in 2006, a group of acoustic scientists from the National Academy of Sciences of Ukraine created a computer phonendoscope. A unique computer system for recording and processing breathing sounds allows not only in minutes to establish an accurate diagnosis, but also control the clinical course of respiratory diseases. The basis of the complex is the multichannel recording of sounds using four sensors with further analysis of the information received. It is noted that the traditional system of processing sounds of the respiratory system, adopted in medical practice, gives up to 20% of mistakes in diagnosis, and the Ukrainian invention allows completely to abandon the traditional "listening"[1, 2].

Most of Ukrainians could not hear about these and many other inventions, but in the future, inventions will save many lives.

СПИСОК ВИКОРИСТАНОЇ ЛІТЕРАТУРИ

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