Lung cancer

Malignant processes of the lungs are on the first place in the structure of the incidence of all oncological pathology, and they are also leading in mortality.
What does the statistics say?

In the Russian Federation alone lung cancer or bronchial cancer is diagnosed annually within 60,000 people, globally the number is approaching one million.

Also, this pathology causes the death of every fifth person, who has an oncological disease.

Such indicators look discouraging against the background of information about the success of medicine in the fight against cancer.

Indeed, nowadays there are enough capacity and capabilities in the arsenal of oncologists to transfer a lung tumor from the category of a deadly disease to a chronic one, or even provide a full recovery.

Imbalance of detection / treatment

The problem of significant lethality is the late diagnosis of lung and bronchial tumor processes. The likely reason for this situation is that oncologists still use the same methods of detecting tumors as in the 20th or even the 19th century:

- Radiological methods - overall radiogram, spot filming and tomography
- Bronchoscopy
- Magnetic resonance imaging
- Blood tests for tumor markers
- Radioisotope scanning

You can only attribute X-rays to screening methods of detecting cancer suitable for mass and rapid diagnosis of the lungs.

Thus, there is reason to consider that frustrating mortality rates against the background of significant success in the therapy of different forms of cancer are associated with the technology gap of the diagnostic methods.

Modern device Health Monitor allows to remove this gap – it’s the latest development, which is based on a unique, fundamentally new mechanism for diagnosing diseases - the spectrometry of the exhaled air.

What are the disadvantages of the current approach?

The most reliable methods are the use of X-ray - fluorography, overall radiogram and CT. They are based on the difference in tissue density: the denser the tissue, the lighter image on the film/monitor screen will be. Against the background of the full lungs air, the picture is quite contrast.

But if the tumor originates from the same cells as the lung parenchyma, then its density will be the same as the normal tissues and then nothing will be seen in the picture.
Indicators also depend on the resolution of the device: most of them allow you to notice the formation of only 5 mm in diameter. Hence, all tumors of a smaller size in a routine examination can be missed.

As for CT, it has high detalisation of the image. But the method is expensive, so it’s not suitable for rapid screening diagnosis of lung cancer.

And of course, any of X-ray examinations give the organism a harmful radiation load. Blood markers are promising, but the accuracy of the study still leaves much to be desired: mistakes in both directions happen quite often.

Other methods, such as bronchoscopy, MRI, radioisotopes and biopsy with histology, do an excellent job of completing or verifying a diagnosis. But none of them can be considered suitable for rapid and accurate diagnosis of lung cancer.

**Modus operandi of Health Monitor**

The basic concept of the analysis is the spectral analysis of the mixture of gases that the subject exhales.

The spectrum of the exhaled air always changes if someone suffers from any pulmonary pathology. The device allows these changes to be observed, measured and registered. Metabolism of cancer cells significantly changes and they begin to synthesize a number of volatile organic compounds:

- Ammonia
- Isoprene
- Ethan
- Pentane
- Acetone

Each of these substances absorbs light with a certain wavelength. Due to their technological features Health Monitor capture and quantify these spectral disturbances.

If high concentrations of the above compounds are detected in the exhaled air, then this is an occasion to undergo a full screening involving CT, MRI, and so on.

**The possibilities of the new diagnostic principle**

Do not expect the gas analyzer to establish the type of tumor and its stage. No, the device has another area of application - screening diagnosis of lung cancer. All you need is just breathe a few seconds into a special disposable mouthpiece.

Exhaled air enters the chamber with a rarefied inert gas. An electric discharge with predetermined characteristics is passed through the final mixture, and emitted spectrum is registered and analyzed. All this takes no more than 3 minutes.

Due to the use of inert gas, it is possible to increase the sensitivity of the device by 15 times in comparison with analogues. Also impurities are removed, such as exhaled water vapor.
Practical value

Without false modesty, the Health Monitor can be considered a breakthrough and a qualitatively new stage in the early diagnosis of lung cancer:

- The device can be placed in any room: in an outpatient department, a polyclinic, a stationary department.
- It does not require special consumables except for disposable mouthpieces.
- The number of examinations during the day is not limited by anything but the work schedule.
- The economically justified price of one study does not exceed $2.
- The results are personalized and stored digitally. Therefore, they are always available for analysis.
- Due to modern software, the device is easily integrated into any network and database.

Considering the significant rejuvenation of malignant lung processes, such capabilities of Health Monitor allow a big amount of people to maintain health and even life. After all, early detection is the key factor for defeating cancer.