

Mucci (Bioscience), 'prevention is intercepting growth drivers'

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“Cancer Driver Interception is a tumor prevention methodology that was developed and implemented by Bioscience Genomics, a spin-off of the University of Tor Vergata. It is the first company in the world to introduce this patented algorithm, which allows intercept the physiological conditions of the individual which, when they alter, become drivers, therefore promoters or prodromal of the development of the tumor”. Instead of “waiting for the tumor to form”, we intercept “the physiological conditions that allow us to understand if we are in a phase of carcinogenesis and therefore to be able to intervene”. Thus Giuseppe Mucci, president of the Bioscience Foundation, speaking this morning in Rome at the event organized by Cnel, the National Center for Economy and Work, the Aiom Foundation (Italian Medical Oncology Association) and the Bioscience Foundation.

“The incidence of cancer is increasing – recalls Mucci – while mortality is reducing from year to year, but the shocking fact is that in the coming years there will be an increase in the incidence, even of cancers that were rare. This is happening on a global level , not only Italian. The fact that the incidence increases and that mortality is reduced is an important issue” because the patients

to be treated and the costs increase, which are around 20 billion per year in Italy. Observing the trend over time, we see that “mortality from cancer is reduced by 3%, while that from heart attack is reduced by 40%”. This result at a cardiological level was achieved by “keeping hypertension and cholesterol under control”. In the management of cancer, there is a lack of “identification of the pathophysiological conditions, such as genomic instability, which can determine it. We come to look for precancerous lesions, but this is an early diagnosis which reduces deaths, but increases the number of patients”.

What makes the difference is the “monitoring of the physiological alterations prodromal to cancer – reiterates the expert – To date they have not been investigated because they cannot lead to the prescription of a drug. We know – continues Mucci – of the existence of environmental risk factors and of lifestyle that cause damage to DNA every day. Damage to DNA, in the presence of active tumor suppressor genes, is repaired. If the oncogene is inactive, there are somatic mutations that accumulate. It is the pathophysiological condition from which it develops the tumor. At this point we can intercept this genomic instability. For example, the P53 tumor suppressor gene: if it is inactive, therefore mutated, it can be identified” with a blood test. “If we want to prevent the disease, we must therefore identify the accumulation of mutations and keep genomic instability as a prevention target.” It is the so-called “liquid biopsy that measures free circulating DNA, which is different from circulating tumor DNA and circulating tumor cells”.

Early diagnosis is distinguished from intercepting the driver conditions because “in early diagnosis – Mucci specifies – the tumor is there, even if it has just formed, while in Cancer Driver Interception, as the word itself says, we are in the before, we intercept the conditions from which it develops. This was not possible before 2016-2017, when somatic mutations were intercepted which are representative of the damage suffered by the DNA and which have not been repaired”.

The pathophysiological conditions linked to the development of a tumor are complex. “In addition to DNA damage – argues the president of the Bioscience Foundation – there is a situation of systemic inflammation, alterations of the immune system and of the intestinal microbiota. They must be considered in an integrated way. Monitoring these physiological conditions reduces gene instability and improves the quality of life. What we have done is to make those parameters indicated by the scientific world measurable. The aim is to create a flow of information that can be managed by the doctor from a blood sample, reducing the costs of healthcare facilities. The doctor can monitor, thanks to the IT system, these parameters”.

“In the presence of an altered physiological condition – remarks Mucci – no drugs are used, but there is chemoprevention with specific chemical and biological agents to avoid the formation of tumors. These are substances already in use and defined by clinical studies. There are thousands of biological chemopreventive agents – beta carotene, folic acid, vitamins A and E and selenium, for example – but self-administration is wrong because excess supplements cause the same problem as deficiency. A doctor is always needed.”