University of Granada researchers identify changes in tumor cells that lead to metastasis

posted on: january 17, 2012 - 4:04pm

Researchers at the Centro de Genómica e Investigación Oncológica (GENYO) –of which the University of Granada, Pfizer and the Andalusian Regional Government are members– have identified the genetic and phenotypic changes that cause tumor progression and metastasis. The process of metastasis -which is the main cause of cancer death- is caused by tumor cells invading distant organs with no direct anatomical relationship with the organ originally affected. For this to happen, it is necessary that these cells –which researchers call "circulating tumor cells" (CTCs) –, travel to these organs through blood.

The researchers detected CTCs undergoing cell division in a breast cancer patient on systemic treatment. Thus, CTCs have been demonstrated both to be able to adapt to hostile microenvironments as blood, and to resist treatment and divide and proliferate in other organs and tissues, causing metastasis. So far, this behavior had not been observed in this type of microenvironments.

The results of this study were described in the article "Biodynamics of Circulating Tumor Cell, Tumor Microenvironment and Metastasis", published in the journals *Cancer Biology & Therapy*, Clinical Translational Oncoly y Annals of Oncology. The researchers found that breast cancer patients with circulating tumor cells (CTCs) at baseline tend to develop metastasis and have shorter disease-free survival after treatment. Thus, detecting CTCs during and after treatment allows physicians to identify which patients are responding favorably to chemotherapy. Consequently, patients with CTCs while receiving chemotherapy have shorter disease-free survival and lower overall survival rates. This is due to the fact that these cells are resistant to conventional treatments performed according to the genetic characteristics of the tumor. Therefore, CTCs can survive chemotherapy and produce metastasis to other organs.

More Efficient Individualized Treatments

University of Granada professor José Antonio Lorente -GENYO manager director and coordinator of the research group- affirms that the study of Circulating Tumor Cells (CTCs) is crucial "not only because they may be responsible for the development of metastasis, but also because they have genetic characteristics different to those found in the primary tumor and in metastatic cells. Such characteristics make these very aggressive cells resistant to the immunologic system and to the therapeutic agents generally used in cancer patients". Most of these treatments are targeted against proliferating tumor cells. Conversely, CTCs are found in a "dormant" phase, i.e. in a "non-proliferation" phase.

As these cells may indicate negative response to treatment, if they were isolated and genetically characterized, patients could be classified according to their chances of relapse, which would allow individualized follow-up.

Source: **University of Granada**

Post new comment

Your name: *

Anonymous

E-mail: *

The content of this field is kept private and will not be shown publicly.

Homepage:

Comment: *

Popular Today:

- Radio telescopes capture best-
black hole jets
- Study suggests oxytocin makes
but not gullible
- Effects of Tamiflu still uncertain
Roche continues to withhold k
- Enhancing cognition in older a
personality
- Sleep-deprived people make ris
based on too much optimism

- Space Is A Carpet Woven Fron
- Open Access Biology Is So Shi
- Social Games For Health Beha
- Racked Up A Million: Should I
- People Who Believe In Upper I