

Study identifies a cause of resistance to colon cancer treatment

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Doctors and researchers of Hospital del Mar and its research institute, the IMIM, have lead a study describing a new pharmacological resistance to cancer. This new mechanism is a mutation in an oncogene called EGFR (epidermal growth factor receptor) causing resistance to treatment using a drug called cetuximab, a monoclonal antibody which specifically attacks the EGFR.

The study proves that, both in lab models and in patients with colon cancer, this mutation appears during the disease and that, when this happens, it stops the drug from being effective and the tumor grows. This finding will benefit a large number of patients since colorectal cancer is the second most frequent tumor and cetuximab is a drug used regularly to treat this form of cancer.

Also, another extremely relevant fact is that tumors acquire this mutation do respond to a treatment using another similar drug, called panitumumab, which is also available for clinical use. This carries important [clinical implications](#), since it suggests the possibility of carrying out [clinical tests](#) to confirm the effectiveness of panitumumab in patients with colon cancer who no longer respond to cetuximab, this increasing the range of therapies that may be used on patients with this cancer.

The relevance of this study is also in the fact that it is the first time that a mutation is detected in the field of oncology instead of a bond with the antibody as a form of resistance. Therefore, it will be interesting to see

whether there are other similar [mutations](#) causing resistance to other pharmacological antibodies which are used frequently to treat other forms of cancer, such as [breast cancer](#).

Therefore, this is a completely new mechanism of resistance to a drug used very often for a type of cancer with a high incidence and relevant clinical implications for the treatment of patients with this type of cancer.

"The discovery of this mutation may explain, at a molecular level, the benefits obtained by some patients with [colon cancer](#) treated with panitumumab and the inefficiency when treating with cetuximab" explains Clara Montagut, an associate doctor of the Oncology service of Hospital del Mar and a researcher at IMIM, who has lead this study.

Colorectal cancer is the most frequent form of cancer in men and women and shows an increasing incidence, and is the main cause of death by cancer when studying the cases in male and female patients jointly. However, over the past decade, treatment has been revolutionized with the introduction of new chemotherapy drugs and treatments targeting cellular targets, such as monoclonal [antibodies](#) or drugs used to treat colorectal cancer. Dr. Joan Albanell, head of the Medical Oncologic service of Hospital del Mar and head of the research group and the author of the study, states that: "This new type of mutation reveals one of the causes why cancer therapy with [monoclonal antibodies](#) may cease to be effective at a given moment and, especially, opens the door to looking for solutions."

Dr. Montagut concludes by saying: "These results justify developing tests to detect this mutation in patients that are being treated with cetuximab for colorectal cancer. Later studies shall also have to validate whether this mutation contributes to acquiring a resistance to [cetuximab](#) in tumors for which it is also used, such as head and throat cancer."

More information: The work will be published in the latest issue of *Nature Medicine*.

Provided by IMIM (Hospital del Mar Research Institute)

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