PRESS RELEASE

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AN INNOVATIVE VISION OF CANCER CLASSIFICATION IS INDISPENSIBLE FOR RESEARCH AND FOR PATIENTS

From hospital organization to oncologists' specialties, to the structuring of learned societies, regulatory agencies or clinical trials, the totality of oncology today is based on the segmentation of patients based on the organ in which the disease appeared first. A person is diagnosed with liver cancer, lung cancer, or pancreatic cancer, even if the disease has spread to other organs. In a comment published in the Nature journal, medical researchers from Gustave Roussy and Paris-Saclay University explain why it is mandatory to evolve toward a biological classification of metastatic cancers, and how the current segmentation sometimes prevents access to new therapies for millions of patients across the world.
On line article : https://www.nature.com/articles/d41586-024-00216-3

"The authoritative classification in oncology, which is based on the organ in which cancer has first appeared, no longer aligns with therapeutic advances discovered in recent years. At worst, it is sometimes an obstacle, which forbids some patients from having access to an adapted treatment. More than 80 years after the TNM classification's creation by Pierre Denoix, former head of Gustave Roussy, it is today crucial to adopt a molecular-based approach to metastatic cancers, based on research advances", explains Professor Fabrice Barlesi, general director of Gustave Roussy.

With the development of precision oncology, based on the molecular profiling of the tumor and its biological and immune characterization to determine treatments, the current classification, which separates cancers based on the organ of origin, shows its limits. Numerous research has enlightened common characteristics shared by various types of organ cancers, such as the mutation of the tumor suppressor gene TP53, which controls the growth and division of cells.

Thus, within a single type of organ cancer, several subgroups matching a different molecular and biological reality of the disease coexist. Among lung cancer patients, some bear a mutation of the MET gene, others of EGFR, and so on. Concerning treatments, antibody-conjugates, which target membrane proteins expressed in several types of cancer to deliver chemotherapy to cancer cells, have already shown encouraging results in phase I and phase II clinical trials, to treat patients who over-express the HER2 protein. This is without taking into account the cancer's organ of origin. All these arguments support the necessary requalification of metastatic cancers, i.e. those spread at a distance, away from the organ of origin, and which account for 60 to 90 % of cancer deaths every year.

In addition to showing certain limits, the current classification forbids millions of patients from access to innovative treatments. We can take the example of olaparib. It is a PARP inhibitor, which was for the first time tested in a phase I pan-tumor clinical trial in 2014, during which it showed signs of effectiveness among patients with a BRCA mutation. In 2014, the FDA gave the treatment approval, but only for ovarian cancers, an approval that has been broadened in 2018 to breast cancers and in 2020 only to pancreatic and prostate cancers. These delays in the approval process can be explained by the segmentation of clinical trials, which needs to prove their effectiveness organ of origin by organ of origin. The clinical trials for anti-PD1/PDL1, an immunotherapy particularly active among patients whose cancer cells express a high level of the PD-L1 protein, have also been segmented by organ of origin after phase I, delaying the marketing approval for thousands of patients.

What this new classification implies

Phase III clinical trials, which grant marketing authorizations, require a significant number of patients. It can be hard to recruit a sufficient number of patients who all have the same biological specificity combined with histology in a similar organ of origin, to achieve a significant statistical power. Transforming the classification of cancers will help to rationalize and limit the number of clinical trials, and will lead to a new way of teaching oncology, with a major simplification for future students and patients alike.

Nevertheless, classifying cancers based on their molecular reality implies giving patients and medical researchers effective and affordable molecular profiling methods. The “France Médecine Génomique 2025” plan and the deployment of sequencing platforms across France all go in this dynamic. Artificial intelligence can play a role there. In the future, it will be able to identify at low cost genetic abnormalities from patient histology. Changing the way in which cancers are classified is the first step towards precision oncology for everyone, opening up a vast field of research for a deeper biological understanding of cancer mechanisms.

Source
Nature
The way we name cancers needs to change
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Background on Gustave Roussy
Ranked as the leading French and European Cancer Centre and fourth in the world, Gustave Roussy is a centre with comprehensive expertise and is devoted entirely to patients suffering with cancer. The Institute is a founding member of the Paris Saclay Cancer Cluster. It is a source of diagnostic and therapeutic advances. It caters for almost 50,000 patients per year and its approach is one that integrates research, patient care and teaching. It is specialized in the treatment of rare cancers and complex tumors and it treats all cancers in patients of any age. Its care is personalized and combines the most advanced medical methods with an appreciation of the patient’s human requirements. In addition to the quality of treatment offered, the physical, psychological and social aspects of the patient’s life are respected. 4,100 professionals work on its two campuses: Villejuif and Chevilly-Larue. Gustave Roussy brings together the skills, which are essential for the highest quality research in oncology: 40% of patients treated are included in clinical studies.
For further information**: www.gustaveroussy.fr/en, Twitter, Facebook, LinkedIn, Instagram**

PRESS CONTACT

GUSTAVE ROUSSY :
Claire Parisel – presse@gustaveroussy.fr – Phone +33 1 42 11 50 59 – +33 6 17 66 00 26