ESMO issues first recommendations on using next-generation sequencing for advanced cancers

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Recommendations on the use of next-generation sequencing (NGS) for patients with metastatic cancers are being launched today [25 August] by the European Society for Medical Oncology (ESMO), the leading professional organisation for medical oncology.

"These are the first recommendations from a scientific society about the use of NGS," said Dr. Fernanda Mosele, first author of the recommendations paper, medical oncologist at Gustave Roussy, Villejuif, France. "Our intent is that they will unify decision-making about how NGS should be used for patients with metastatic cancer."

NGS is a technology that is used to assess the sequence of DNA in genes. Hundreds or even thousands of genes can be quickly sequenced at the same time at a relatively low cost. It is extensively used in oncology, particularly in metastatic cancer, to determine the mutations in a tissue sample from a tumour. The aim is to select treatment according to the genomic alterations detected in the tumour, applying so-called precision medicine.

"Although NGS has been widely implemented, until now there were no recommendations from scientific societies on how to use this technique in daily clinical practice to profile metastatic cancers," said Mosele.

The ESMO Translational Research and Precision Medicine Working

Group developed the recommendations on the basis of the ESMO Scale for Clinical Actionability of molecular Targets (ESCAT) ranking for genomic alterations occurring in the eight cancers responsible for the most deaths worldwide. For each tumour type, experts used the ESCAT ranking and prevalence of alterations to calculate the number of patients that would need to be tested with NGS to identify one patient who could be matched to an effective drug in daily practice.

In the paper published in *Annals of Oncology*, ESMO makes recommendations at three different levels: recommendations for daily practice with an impact on public health; recommendations for research to improve access to innovation; patient-centric recommendations.

From a public health perspective, NGS should be routinely used in patients with these metastatic cancers: advanced lung adenocarcinoma, prostate cancer, ovarian cancer, cholangiocarcinoma.

In addition to its use in those four cancers, patients with other cancers could decide together with their doctor to order NGS on a large panel of genes—providing there is no extra cost for the public healthcare system and the patient is informed about the relative likelihood of benefit (patient-centric perspective).

"This recommendation acknowledges that a small number of patients could benefit from a drug because they have a rare mutation," said Dr. Joaquin Mateo, co-author and Chair of the ESMO Translational Research and Precision Medicine Working Group, group leader, Prostate Cancer Translational Research, Vall d'Hebron Institute of Oncology (VHIO), Barcelona, Spain. "When an alteration is uncommon, it will be difficult to gather enough patients in research studies to generate the evidence necessary for using NGS. So, beyond the cancers in which everyone should receive NGS, there is room for physicians and patients to discuss the pros and cons of ordering these tests."

The third recommendation is that clinical research centres should perform NGS to generate more evidence about the use of this method and accelerate drug development. "To improve understanding of how to treat patients based on precision biomarkers, we need to accumulate data from thousands of patients," said Mateo. "ESMO is calling on university hospitals and research institutions to generate data and make it accessible to advance innovation. This will enable us to learn how best to use this technology in other tumour types."

Mateo noted that one of the advantages of testing multiple genes simultaneously using NGS is that it only requires small amounts of tissue, thereby avoiding the need for numerous biopsies. "However, we cannot forget that sometimes cancers change over time as they adapt to new therapies," he added. "So, we have to balance testing a lot of alterations at the beginning with being aware that some of them may change over time."

Evidence for the cost-effectiveness of using multigene sequencing in daily practice is currently weak. ESMO's recommendation is therefore that large panels of genes can be used if they generate an acceptable increase in the overall cost, drugs included. Considering that the results of NGS panels could lead to prescription of expensive drugs outside of their approved indications, volumes of NGS procedures should be regulated at the national level. The recommendation from the expert panel is therefore that the use of off-label drugs matched to genomics is done only if an access programme and a decision-making procedure has been developed at national or regional level.

Mateo said: "This paper highlights how difficult it is to move precision medicine approaches from research into everyday clinical practice. For example, we need to address the issue of rare cancer subtypes or biomarkers more common in specific populations that may be underrepresented. ESMO is committed to bridging the gap between

research and practice by providing evidence-based guidance on the use of NGS that leads to equal access to the best care for all patients with cancer."

More information: Mosele F, Remon J, Mateo J, et al. Recommendations for the use of next-generation sequencing (NGS) for patients with metastatic cancers: A report from the ESMO Precision Medicine Working Group. *Ann Oncol*. 2020. www.annalsofoncology.org/artic … (20)39971-3/fulltext

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