Tumor Testing and the Transformation of Lung Cancer Treatment

Synopsis

November 2018

The following is a synopsis of information that was discussed during the American Lung Association's live panel discussion, Tumor Testing and the Transformation of Lung Cancer Treatment, which took place on October 18, 2018. The objective of this event was to explain the fast-moving, and often complicated, field of lung cancer precision medicine in a way that is easy for patients and caregivers to understand. Thank you to our esteemed panel members, Justin F. Gainor, M.D, Center for Thoracic Cancers, Massachusetts General Hospital Cancer Center, Assistant Professor of Medicine, Harvard Medical School, Mark Pool, M.D., FCAP, Attending Pathologist at Rush University Medical Center and Sherri Millis M.S., Ph.D., Senior Manager, Clinical Collaborations, Foundation Medicine Inc. for their contributions to this event.

To view recordings from this event please visit Lung.org/tumor-testing-videos.

What tumor testing is and how does it work?

- Tumor testing (sometimes called biomarker or genomic testing) typically involves removing a piece of the tumor through a biopsy and then pulling out the DNA to look for mutations, or changes, that are unique to the tumor and not present in healthy cells.
- Tumor testing also looks for abnormal levels of proteins in the cell. Proteins are key to helping the cell work.
- Information from this testing helps doctors recommend personalized treatment options for patients.

Who should receive this type of testing and when?

- In general, patients with newly diagnosed, advanced (i.e., cancer that has metastasized/spread) non-small cell non-squamous lung cancer should receive this type of testing.
- Non-squamous lung cancers are more likely to have mutations that can benefit from approved targeted therapies. There are some cases where patients who don't fit into this category should be tested, and patients should talk with their doctor about their options.
- Any patient with advanced non-small cell lung cancer should have PD-L1 testing at the time of their diagnosis.
- Testing should be done as soon as possible, typically before any treatment is given. The information the doctor learns from tumor testing is key to recommending the right treatment options.

What are the different types of tests that are out there?

- Pathologists can look for mutations and biomarkers in many different ways, but the most comprehensive way is through next-generation sequencing, which looks at many different changes in your DNA at one time.
- There are several different tests out there and each hospital operates a little differently. At a minimum, patients should be tested for mutations in EGFR, ALK, ROS-1 and BRAFV600E and the protein PD-L1 which can typically be done through a hospital's pathology department.

How do the test results inform a patient's treatment and how does the treatment work?

- The test results help inform whether or not a patient is eligible for a targeted therapy or an immunotherapy or another treatment option like standard chemotherapy.
- Targeted therapies are pills and they generally work by blocking abnormal growth signals caused by genetic mutations.
- The level of PD-L1 in a patient's tumor may help doctors understand how they might respond to an immunotherapy drug, which harnesses the power of the immune system to fight the cancer.

When should a patient be re-tested?

- If someone is recommending a change in your treatment, it is always a good time to reassess, perhaps get a second opinion and see if another test would be appropriate.
- Patients can develop resistance to targeted therapy and a doctor might want to repeat a biopsy and tumor testing to see how the cancer has changed. If your doctor is interested in testing for mutations that you weren't tested for, they may be able to use leftover tissue from your first biopsy.
- Mainly, re-testing may help your doctor know what treatment approach to try next.

What lung cancer advancements might we expect to see in the next few years based on current research?

- In addition to the four mutations for which we have FDA-approved therapies, several other mutations have promising targeted therapies in development.
- Tumor mutation burden (TMB) (how many mutations exist in the tumor), might be an indicator about how a patient would respond to immunotherapy.
- Data is emerging that small cell lung cancer patients may respond better to immunotherapy plus chemotherapy, instead of chemotherapy alone.

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