Personalized medicine's success needs accurate classification of tumors

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If cancer patients are to receive optimal treatment, clinicians must have an accurate histologic classification of the tumor and know its genetic characteristics, said William D. Travis, M.D., attending thoracic pathologist, Department of Pathology, at Memorial Sloan Kettering Cancer Center in New York City. Dr. Travis made his remarks today at the 16th World Conference on Lung Cancer (WCLC) hosted by the International Association of the Study of Lung Cancer (IASLC).

Dr. Travis said the pathology and oncology professions made a big step towards this goal with the release of 2015 WHO Classification of Tumours of the Lung, Pleura, Thymus and Heart (Fourth edition), which is available at the conference and online at http://whobluebooks.iarc.fr/ or http://www.who.int/bookorders/.

"WHO Classifications represent a pathologic and genetic classification and grading of human tumors designed to be accepted and used worldwide. They provide standard criteria for pathology diagnosis, clinical practice, cancer registration, epidemiologic studies, clinical trials and cancer research," said Dr. Travis.

The 2015 WHO Classification of Lung Tumors captures a decade of remarkable advances in all lung cancer specialties including: pathology (histology, cytology, immunohistochemistry, molecular testing), clinical, epidemiology, radiology and genetics. The rapid expansion of molecular and immunohistochemical tools have provided a strong foundation for the classification and a rationale for reclassification of specific entities.

As a result, the role of the pathologist in lung cancer diagnosis and management has dramatically changed. Accurate pathologic diagnosis and tissue management has become more critical.

Historically, the main question asked of pathologists was to distinguish between small cell carcinoma and non-small cell carcinoma. This limited the role of pathologists in the management of lung cancer patients. However, with therapeutic and genetic advances (particularly regarding targeted therapies in patients with driver mutations in EGFR, ALK, ROS1, BRAF and RET) where treatment strategies are highly dependent on histology and genetics, pathologists now have to make more precise diagnoses and preserve tissue for molecular testing.

Since two thirds of lung cancer patients present in advanced stages, this is the most important group of tumors to address. Because these patients are not good surgical candidates, they are diagnosed based on small biopsies and cytology specimens. However, previous WHO classifications did not focus on diagnosis in small biopsies and cytology, so this is a completely new aspect to this WHO Classification and probably the most important. The urgent need for this is driven by therapeutic and genetic advances that make accurate histologic classification as well as genetic testing essential for patient management.

Critical aspects of this include:

1. New diagnostic criteria and terminology for lung cancer in small biopsies and cytology;
2. More accurate histologic subtyping;
3. Strategic management of small tissues;
4. Streamlining workflow for molecular testing;
5. Local multidisciplinary strategy for obtaining, processing and reporting these specimens.

"Most major advances in our understanding of the pathology of surgical resection specimens have occurred in lung adenocarcinoma. For resected lung adenocarcinomas, the introduction of comprehensive histologic subtyping and classification according to predominant subtype has provided a powerful tool that has led to multiple new discoveries," Dr. Travis said.

Provided by International Association for the Study of Lung Cancer