Q&A column

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Submit your pathology-related question for reply by appropriate medical consultants. CAP TODAY will make every effort to answer all relevant questions. However, those questions that are not of general interest may not receive a reply. For your question to be considered, you must include your name and address; this information will be omitted if your question is published in CAP TODAY.

Q. Are Pancoast tumors a fast-growing, untreatable cancer?

A.March 2022—Pancoast tumors are named after Henry Pancoast, MD, an American radiologist who, in 1932, described six tumors associated with pain, Horner syndrome, and atrophy of the hand muscles.[1] Dr. Pancoast mistakenly assumed these tumors arose from extrapulmonary structures in the superior sulcus, the uppermost portion of the costovertebral groove along the vertebral column.

Today Pancoast tumors are considered an uncommon subset of cancers arising from the apex of the lung and are almost always non-small cell carcinomas. The histologies have shifted over the past few decades from predominantly squamous to frequently glandular.

It is difficult to treat Pancoast tumors, even though they are not fast growing, because they often invade local structures, including the ribs, pleura, brachial plexus, subclavian vessels, and sympathetic chain or stellate ganglion. Prior to the 1950s, Pancoast tumors generally were fatal. In the 1950s, the practice of combining preoperative radiation with subsequent en bloc resection as a form of treatment brought the five-year survival rate up to 30 percent. In the early 2000s, adding chemotherapy to the neoadjuvant radiation, followed by complete resection, increased the five-year survival rate to 54 percent.[2]

The current standard of care for Pancoast tumors is trimodal therapy consisting of radiation (45–50 Gy), chemotherapy, and radical surgical resection. More than half of tumors can be expected to show good pathologic response, with minimal or no tumor remaining after chemoradiation. Patients who respond to neoadjuvant treatment and undergo complete resection have survival outcomes similar to those with other stage-matched non-small cell lung cancers.

Unresectable Pancoast tumors can be treated with chemoradiation (up to 60 Gy). Clinicians may want to follow this with immunotherapy for patients who do not progress and who overcome the high-grade toxicities from treatment.[3]

1. Pancoast HK. Superior pulmonary sulcus tumor: tumor characterized by pain, Horner's syndrome, destruction of bone and atrophy of hand muscles. *JAMA*. 1932;99(17):1391–1396.
2. Rusch VW, Giroux DJ, Kraut MJ, et al. Induction chemoradiation and surgical resection for superior sulcus non-small-cell lung carcinomas: long-term results of Southwest Oncology Group Trial 9416 (Intergroup Trial 0160). *J Clin Oncol*. 2007;25(3):313–318.

3. Antonia SJ, Villegas A, Daniel D, et al. Durvalumab after chemoradiotherapy in stage III non-small-cell lung cancer. *N Engl J Med*. 2017;377(20):1919–1929.

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Q. When performing reagent lot-to-lot correlation studies, some staff believe it is better to perform instrument calibration before a new reagent lot check while others believe calibration is not necessary. What is the appropriate practice?

A.The purpose of new reagent lot correlation studies is to confirm that the new reagents will not affect patient test results. Matrix interference among different reagent lots may impact the calibration status of instruments and, thereby, the accuracy of patient test results.

The need to calibrate an instrument before performing a new reagent lot check varies by test system. The instructions for some instruments require recalibration when introducing new reagent lots. Therefore, laboratories need to review the recalibration criteria in the manufacturer's instructions, including how often to recalibrate, and consider their past experience with the instrument.

The CAP Laboratory Accreditation Program requires laboratories to recalibrate or perform a calibration verification of instruments when changing reagent lots unless laboratories can demonstrate that using different lots does not affect the accuracy of patient test results. Data from reagent lot-to-lot studies that used specimens at different concentrations can be evaluated to determine if the instrument needs to be recalibrated.

Using patient samples for new reagent lot studies is considered best practice because it eliminates the possibility of a matrix effect. Requirement COM.30450 in the CAP's all common checklist provides examples of additional materials that may be used for these studies, such as reference materials or QC products provided by the method manufacturer with method-specific and reagent lot-specific target values and proficiency testing materials with peer group-established means. Refer to the checklist note in COM.30450 for a more comprehensive list of examples.

Clinical and Laboratory Standards Institute. EP26-A: User Evaluation of Between-Reagent Lot Variation; Approved Guideline, 1st ed.; 2013.

Miller WG, Myers GL, Rej R. Why commutability matters. *Clin Chem*. 2006;52(4):553–554.

Standard: Calibration and Calibration Verification Procedures. 42 CFR §493.1255(b)(3). https://bit.ly/493-1255b3

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