Lung nodule matching software dramatically increases radiologists' efficiency

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An automated lung nodule matching program can improve radiologists' efficiency almost two-fold, a first of its kind study shows.

The study found that the time required for manual nodule matching ranged from 1 second to about 11.4 minutes, whereas automated nodule matching ranged from less than one second to about 6.6 minutes, said Chi Wan Koo, MD, the lead author of the study.

The study conducted at New York University Langone Medical Center in New York, included 57 patients, yielding a total of 325 pulmonary nodules identified on CT. Four thoracic radiologists manually identified and manually matched the pulmonary nodules on serial CT examinations while being timed. After six weeks, all four radiologists evaluated the same CT studies using the automated nodule matching software and were timed again.

"Pulmonary nodules may be benign or malignant so we follow these nodules over time with repeated CT scans to watch for changes in each nodule. When many nodules are present, it can be difficult to match nodules up for comparison purposes" said Dr. Koo.

The study found that "the greater the number of nodules needing to be matched, the greater the benefit in using the software," said Dr. Koo. Matching of nodules 6 mm or smaller was "particularly aided by use of the automated program," she said. The locations of the nodules and change in nodule size did not have a significant impact on matching

efficiency, Dr. Koo added.

The study also found that accuracy was not sacrificed for efficiency. "The interpreting radiologists indicated that the automated program correctly matched nodules anywhere from 79% to 92% of the time," said Dr. Koo.

"Prior studies have evaluated automated nodule matching accuracy, however no study to our knowledge has assessed the impact of a nodule matching program use on CT interpretation efficiency, where efficiency entails both accuracy and speed," Dr. Koo added.

The study is included in the July, 2012 American Journal of Roentgenology, published by the American Roentgen Ray Society.

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