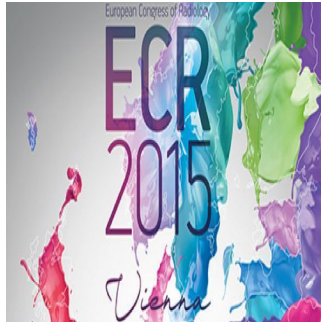

#ECR2015: Computer-Aided Diagnosis Improves Detection but Requires Experience



Computer-aided diagnosis (CAD) can enhance performance but only if it is used correctly, and does not reduce the need for training. In a Refresher Course today at the ECR which runs in Vienna from 4-8 March, experts will talk about how CAD is moving away from pure detection to clinical decision support and will explain how the adoption of new reading paradigms for the screening scenario and improvements in how the technology presents results are vital for it to become an essential imaging tool.

CAD for colonography shows great potential. Since most radiologists come across it, it is important for them to understand sensitivity and specificity issues and when to use CAD. The major benefits of this technique can be derived in 6–9mm polyps, which are often difficult for the radiologist to spot.

According to Dr. Stuart Taylor, professor of medical imaging and consultant gastrointestinal radiologist at University College London, “CAD acts like a spell check for small polyps. There are also instances when tumours and large polyps are missed by the radiologist before CAD draws attention to them.”

He also points out that it is important to keep in mind that CAD is not 100 percent accurate and does not reduce the need for training in CT colonography interpretation. False negatives are another challenge. In most cases, the computer programme looks for the rounded bowler-hat contours of a polyp, but it may miss the flatter polyps and large mass-like lesions that don't have characteristic rounded contours. Manufacturers are developing CAD using validated CT colonography cases in order to improve the technology's diagnostic capacity.

Advances in CAD can also benefit patients regarding full bowel preparation prior to the procedure. This means that patients will no longer have to take unpleasant bowel preparations before CT colonography.

An Italian multicentre screening study has pointed to greater time efficiency of using double-reading first-reader CAD (DR FR CAD). CAD initially reads the image, and this first interpretation is around 90% sensitive. Then the radiologist looks at the image with a primary 2D read. First results show that this double-reading paradigm leads to fast and accurate reporting.

Dr. Taylor says that “if CT colonography is implemented as a population screening test, there will be very large numbers of datasets to read by a relatively small number of trained radiologists. Implementing CAD in a DR FR CAD paradigm may allow the reading of large case numbers in a limited time.”

Prof. Dr. Ulrich Bick, professor of radiology and vice chair of the radiology department at the Charité University Hospital in Berlin says that CAD tools need to factor in potential risks and point the radiologist to the best imaging studies. He also points out that since traditional CAD does not take into account risk factors such as age or genetics and it has a 98 percent sensitivity for finding microcalcifications, radiologist need to decide whether or not the often numerous findings are clinically relevant.

Details of the Refresher Course: Computer Applications

Friday, March 6, 16:00–17:30, Room MB 3

RC 1205 Update on computer-aided diagnosis (CAD)

Chairman's introduction

M. Langer; Freiburg/DE

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A. CT colonography and CAD

S.A. Taylor; London/UK

B. CAD for lung nodules

A.R. Larici; Rome/IT

C. CAD for breast cancer detection

U. Bick; Berlin/DE

Panel discussion: Is CAD ready for prime time

Source: European Congress of Radiology

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