

Cystic Fibrosis Research News

Title:

CT evaluation of hyperattenuating mucus to diagnose allergic bronchopulmonary aspergillosis in the special condition of cystic fibrosis

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What was your research question?

The goal of our study was to compare hyperattenuating mucus versus conventional CT signs to diagnose allergic broncho-pulmonary aspergillosis in cystic fibrosis.

Why is this important?

Allergic broncho-pulmonary aspergillosis (ABPA) is an inflammatory disease of airways related to an allergic reaction directed towards the fungus *Aspergillus fumigatus*. The diagnosis is complex and relies on intricate associations of clinical, biological, immunological and radiological data. The most common signs of ABPA viewable via computed tomography (CT) are bronchial dilatation, mucus impaction and infiltrates. In the field of cystic fibrosis (CF), ABPA is often difficult to be established because of large overlap, in clinical and paraclinical presentations, between ABPA and other infectious processes.

What did you do?

The study was retrospective and included 137 patients with CF, aged at least 6-years-old. The presence of hyperattenuating mucus (HAM), central bronchiectasis (CB), mucus plugging (MP) and consolidation/atelectasis (CA) were determined by two radiologists in consensus. HAM was quantified using an absolute mean density value (AMD) and a ratio between mucus and paraspinal muscle (DRM). Sensitivity (Se), Specificity (Sp) and Youden's J-index were

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calculated. The Cystic Fibrosis Conference Consensus criteria to diagnose ABPA were chosen as Gold Standard.

What did you find?

HAM had the highest Youden's J-index ($p < 0.001$) as compared to mucus plugs, bronchiectasis and collapse/consolidation. The specificity of HAM to diagnose ABPA was 100% and, in the specific context of cystic fibrosis, the sensitivity was 69%, which is higher than that previously reported in non-CF ABPA.

What does this mean and reasons for caution?

HAM is the most specific CT biomarker of ABPA in CF, with good sensitivity. Our study suggests that characterization of mucus density may improve the accuracy of imaging criteria to diagnose ABPA early.

What's next?

Future evaluation of HAM using reduction of CT doses down to chest radiograph level should be worth evaluating to reduce radiation exposure. Multicentre longitudinal study should be worth doing along with consensus of experts to clarify the role of CT in the diagnostic flow-chart of ABPA in CF.

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