Authors' response to assessment of intraparenchymal lung collateral ventilation

We thank the writers of the letter[1] for their interest and agree that the potential placement of this novel imaging method in the planning of patient treatment, such as bronchoscopic and surgical lung volume reduction, is not yet determined.

The example of collateral ventilation shown in figure 2 of our paper[2] is intersegmental, however, ^{3}He MRI is able to visualise both interlobar and intralobar collateral and delayed ventilation. The technique images gas as it moves within the lung whether it traverses lobar or segmental boundaries.

Interlobar lung fissure condition and emphysema type are anatomical radiological markers, and while structure is important there are risks to predicting function from form alone. The assessment of collateral and delayed ventilation pathways with hyperpolarised gas MRI is intrinsically functional because we directly visualise the gas itself.

For further information about a region being considered for bronchoscopic lung volume reduction, time-resolved ^{3}He MRI could be used in conjunction with ^{1}H blood perfusion MRI[3] to assess ventilation–perfusion matching, and with ^{3}He diffusion MRI[4] to measure emphysematous destruction at the acinar level.

More research is needed to determine if hyperpolarised gas MRI reliably correlates with catheter measurements in treatment planning, and we look forward to exploring such studies in the future, and welcome this correspondence.

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