Differentiation diognosis of central lung tumor from postobstructive lobar collapse or postobstructive pneumonitis by magnetic resonance imaging: a companion with CT

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Objective To investigate the ability of different MR imaging sequences to differentiate central tumor from postobstructive lobar collapse or postobstructive pneumonitis and to study the feasibility of diffusion weighted imaging (DWI) to distinguish them.

Methods twenty-two cases diagnosed central lung cancer with secondary changes by CT underwent MRI examination of the thorax .There were twenty-three malignant lesions(one case with two primary tumors in right lung) .All lesions were proved pathologicaly,11squamous cell carcinomas ,10 adenocarcinomas and 1 small cell lung cancer. MR examinations were done at 1.5T MR. Scan sequences were as follow, SE-TIWI, FRFSE-T2WI, STIR and DWI with b=500s/mm^2,4 NEX and breath holding. Contrast enhanced CT examinations were done 28-30 seconds after injection of nonion iodine at GE 64 -row CT.

Results Most of DWI images were good enough to satisfy the need of diagnosis and b=500 was fit for differentiation. The differentiation ability of SE-T1WI was inferior to that of CT, CT inferior to T2WI, STIR and DWI（P<0.05）.But there were no difference among T2WI, STIR and DWI. The image SIR and CNR of STIR were higher than T2WI (P<0.05).There was significantly different in signal intensity of DWI images between tumor and obstructive atelectasis or pneumonitis. And the ADC values were significantly different, 1.92 ± 0.64 x10^{-3} s/mm^2 and 2.95 ± 0.99x10^{-3} s/mm^2 respectively for tumors and secondary changes.

Conclusion The differentiation ability of MR sequences was obviously superior to that of contrast-enhanced CT. Applying DWI to differentiate central tumor from secondary change was practicable and highlighted the tumor. We got better SIR and CNR at STIR images than T2WI, which would be helpful for some cases being difficult to distinguish.

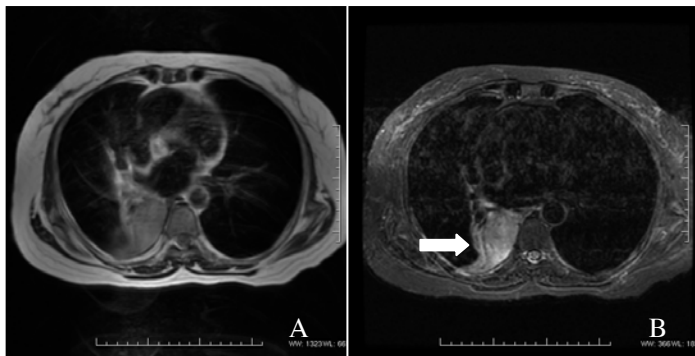**Key words** magnetic resonance imaging; diffusion weighted imaging; atelectasis; Tomography, x-ray computed

Figure 1. A: T2WI image ,the boundary of tumor is obscure；B: STIR image, tumor can be distinguished from atelectasis clearly (white arrow).
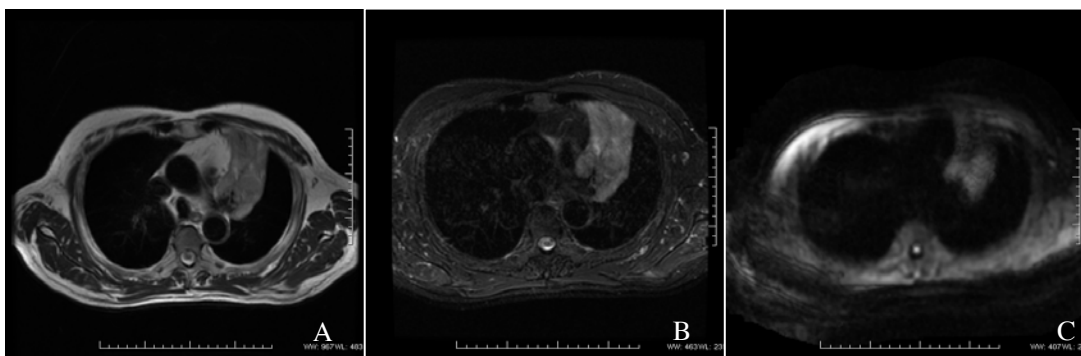

Figure 2   A : T2WI image, tumor and atelectasis can be distinguished. B: STIR image ,the interface of tumor and atelectasis is   clearer. C: DWI image ,highlight the central tumor.