CT Scan Procedure for Lung Cancer Screening in Asbestos-Exposed Workers

To the Editor:

In a meta-analysis by Ollier et al on chest CT scan screening for lung cancer in asbestos-exposed workers in a recent issue of CHEST (June 2014), one source of heterogeneity was omitted: CT scan procedures. Among the seven studies included in the meta-analysis, slice thickness obtained with CT scans was heterogeneous. Not all CT scan procedures in the seven studies used thin slices. Most reported slice thicknesses were ≥5 mm. The exceptions described a 1-mm slice thickness but with reconstruction intervals of 10 mm, and another failed to report CT scan parameters (Table 1). The importance of the article on lung cancer screening among smokers was weakened by a protocol using a 10-mm slice thickness, previously described in the Early Lung Cancer Action Project (ELCAP).

Nonetheless, slice thickness has demonstrated improved detection of pulmonary nodules, with an importance of slice thickness reduction below 3 mm for detailed analyses of focal pulmonary abnormalities. A retrospective study on pulmonary metastasis diagnosis by helical CT scan in slice thicknesses of 3 and 5 mm showed a significant difference in sensitivity of lesion detection and concluded that reducing slice thickness may not only improve treatment and outcome of patients with metastasis, but also increase the rate of false-positive results. These studies did not evaluate the clinical consequences of a higher detection rate of smaller nodules. However, if smaller slice thickness increases false-positive results, we can also expect it will permit earlier detection of lung cancer with a potential for a better prognosis.

We contend that as a part of a low-dose CT scan screening of lung cancer in asbestos-exposed workers, it should be important to also standardize CT scan procedures. A thin-slice study appears to be the optimal CT scan procedure for a systematic screening of lung cancer in asbestos-exposed workers (in addition to the recommended low-dose protocol reconstructed through contiguous images).

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References


## TABLE 1 | CT Scan Procedures of the Seven Studies Included in the Meta-analysis of Ollier et al

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<td>% Lung cancer diagnosed</td>
<td>1.34</td>
<td>4.28</td>
<td>0.86</td>
<td>0.4</td>
<td>0.77</td>
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<tr>
<td>No. of workers screened</td>
<td>972</td>
<td>187</td>
<td>1,045</td>
<td>1,119</td>
<td>516</td>
<td>602</td>
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<td>120</td>
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<td>2:1</td>
<td></td>
<td>3</td>
<td>1.5</td>
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<td>Slice thickness, mm</td>
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<td>5</td>
<td>10</td>
<td>10</td>
<td>10</td>
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<tr>
<td>Reconstruction interval, mm</td>
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<td>5</td>
<td>5</td>
<td>10</td>
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rot = rotation.

*No direct information on pitch.*