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Cost-Effective CT & MRI Contrast Agents



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Reply

Reinhard Groell

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Contrast-enhanced Spiral CT of the Head and Neck

The article by Groell et al (1) concerning contrast injection rates in head and neck CT raises several important issues that deserve further dialogue. I am in complete agreement with the authors that adequate opacification of the cervical vessels is crucial, and a cornerstone of high-quality head and neck CT. Outside studies referred to our institution for interpretation are frequently suboptimal in this regard. There is no mention in the Methods sections of the Groell article of angulation of the gantry so as to avoid the dental fillings found in many patients. In my opinion, this is of critical importance in obtaining a good head and neck CT study and something that is very often overlooked, to the detriment of the examination.

The optimal injection rate/volume established by the authors would not work if they were to angle around the fillings. They would run out of contrast material, and therefore I take exception to their conclusions and fear that to adopt them might lead to suboptimal imaging. At the M.D. Anderson Cancer Center we scan as follows: the scans are obtained from inferior to superior (the extra few seconds it takes to get up to the oral cavity is thought to facilitate better delivery of contrast material to those structures and thus better lesion visualization). We start with an initial bolus of 75 cc of 320 mg IV contrast material at an injection rate of 1.5cc/s and begin scanning after a 50-second delay. At the bottom of the dental fillings, we stop scanning and reangle the gantry, a process that takes approximately 60–80 seconds. During this reangling, we give an additional bolus of 50 cc at a rate of 1cc/s. This extra contrast material assures adequate opacification of the vasculature as the upper neck and skull base are scanned. This protocol works very well for us and is quite reproducible.

Obviously the iodine dose is higher (40 g vs 30 g), but in order to have good vascular opacification and avoid dental fillings, more contrast material must be administered.

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Reference

1. Groell R, Willfurth P, Schaffler G et al. **Contrast-enhanced spiral CT of the head and neck: comparison of contrast material injection rates.** *AJNR Am J Neuroradiol* 1999;20:1732–1736

Reply: We thank Dr. Ginsberg for his comment on our article, and we completely agree with him that angulation may improve the quality of spiral CT studies of the head and neck when dental fillings cause severe artifacts. The primary task of this study was to determine the bolus dynamics after intravenous administration of contrast agent. Therefore we designed a scanning protocol that was similar and comparable with protocols used in a majority of other institutions. Our review of the recent literature revealed that most institutions obviously perform such studies without angulation, and that is why we chose such a protocol.

Nevertheless, we believe that the results of our study may help to determine enhancement kinetics of cervical tissues even when different scanning parameters are used.

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