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Letters to the Editor

Studies with radiation-based imaging techniques: Where to stop?



Dear Editor,

We read with interest the informative article of Okada and colleagues [1]. The authors evaluated the effect of nitroglycerin on coronary vessel dimensions in patients who underwent coronary computed tomographic (CT) angiography. We would like to remind readers of several issues pertaining to the use of radiation-based imaging techniques and iodinated contrast material, either as performed in this study, or other studies in the literature.

Nitroglycerin is a well-known and generally well-tolerated vasodilator. As Okada and colleagues stated, administration of sublingual nitroglycerin to enhance coronary vasodilatation is a widely accepted procedure before coronary artery imaging such as catheter angiography, intravascular ultrasound, as well as CT angiography. The use of nitroglycerin immediately before coronary CT angiography study has been reported to improve the diagnostic accuracy of imaging in the literature [2]. However some radiologists do not prefer nitroglycerin in their coronary CT angiography protocols for different reasons such as due to the lack of necessity or contraindication of the drug in some patients. Radiologists, as well as Okada and colleagues, could prefer one of the two protocols (with and without nitroglycerin) in their patients.

Coronary CT angiography is a feasible technique to decide whether the patient has coronary artery disease. However, we are confused about the usage of coronary CT angiography twice in the same patient in this study. During a coronary CT angiography a patient receives a radiation dose between 3 and 14 mSv [3]. In fact, the authors reported the total estimated effective radiation dose of both scans to be about 28.2 mSv in this study. It appears that about a half of this radiation dose is from unnecessary second imaging. Although the patients did not benefit from the first or second coronary CT angiography, they were exposed to this radiation dose. Moreover, during the same study, the patients received approximately 60 mL unnecessary contrast material in the first or second coronary CT angiography. In fact, administration of medium iodinated (300 mgI/mL) contrast material instead of a high iodinated contrast material to decrease the total amount of contrast agent as done in this study could also decrease the diagnostic accuracy of the coronary CT angiography [4].

In conclusion, although there is no certain protocol about the usage of nitroglycerin before coronary CT angiography, we think that performing coronary CT angiography twice as described in this study is unnecessary. Radiation-based imaging techniques should be considered for patients likely to benefit from the procedure and not just for experimental purposes.

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Author's reply



Thank you for taking an interest in our study. We would like to thank Dr Ersin Ozturk for raising some important points of discussion regarding our recent publication in the *Journal of Cardiology* [1].

I also think that performing coronary computed tomography angiography (cCTA) twice in the same study is unnecessary as a clinical use. However, our prospective study was designed to