AJNR

Reply:

R.D. Nawfel and G.S. Young

AJNR Am J Neuroradiol 2017, 38 (8) E56
doi: https://doi.org/10.3174/ajnr.A5242
http://www.ajnr.org/content/38/8/E56

REPLY:

We would like to thank Dr. Ikuta et al for their interest in our paper and comments on the data underlying Fig 4, which illustrates the variation in peak skin dose with patient head size.[1]

In our study, the effective diameter of adults undergoing head CT/CTA ranged from 14.9–18.7 cm. As Ikuta et al note, prior studies have demonstrated an exponential relationship between patient size and patient dose. McCollough et al[2] demonstrated this in a study showing substantially more variation in abdomen size (20–80 cm) than the head size variation in our study. Anam et al[3] reported that the normalized dose/100 mAs over a range of head sizes was only approximately 4 mGy. As such, we agree with Ikuta et al that the small range of head sizes encountered in our study, as compared with variation in abdominal girth, likely accounts for the absence of an exponential relationship between head size and dose in our data.

We believe that our use of effective diameter to represent head size, following the method of AAPM Reports 204 and 220, is appropriate because body mass index and weight are not necessarily well correlated with head size.[4,5] AAPM Report 220 reports only a slight change in size-specific dose estimate when using water equivalent diameter (D_w) as compared with effective diameter as a conversion factor. Hence, we doubt that using D_w as a surrogate for head size would have changed our results significantly or demonstrated an exponential relationship between head size and peak skin dose.

To the contrary, our data provide support for the recommendation by Huda et al[6] that a standard head size is appropriate for adult dose assessment because of the minimal variation in adult patient dose related to head size.

http://dx.doi.org/10.3174/ajnr.A5242

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R.D. Nawfel
Department of Radiology
Brigham and Women's Hospital
Boston, Massachusetts
Department of Radiology
Harvard Medical School
Boston, Massachusetts
G.S. Young
Department of Radiology
Brigham and Women's Hospital
Boston, Massachusetts
Department of Radiology
Dana Farber Cancer Institute
Boston, Massachusetts
Department of Radiology
Harvard Medical School
Boston, Massachusetts