

## Effect of Collimation on Radiation Exposure and Image Quality

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### LETTER TO EDITORS

We have read a recently published article in the Korean Journal of Pain by Seung Woo Baek et al., entitled “A randomized controlled trial about the levels of radiation exposure depends on the use of collimation c-arm fluoroscopic-guided medial branch block” [1]. The researchers presented an interesting investigation on the differences in radiation exposure related to collimation in medial branch block. They concluded that “Collimation decreased radiation exposure and maintained the quality of image. Hereby, the proper use of collimation will be useful to both patients and operators.” Although this issue is a hot topic in health and pain medicine, there are some concerns about the methods used in this study that should be considered before generalizing the results. Here, we provide comments on four points.

First, one of the most important challenges in a trial study is estimating the amount of cases. In the mentioned study, the amount of cases was not estimated and the researchers should have estimated the “power” of this study to compensate for nonvaluable patients and/or any refusal of data.

Second, randomization in a clinical study is crucial and

conclusive. The method used for randomization (e.g. computer-based randomization table, etc.) was not reported in their study by the researchers.

Third, although this study is a prospective trial, it suffers from the lack of a participation fellow chart. There is no accompanying CONSORT (Consolidated Standards of Reporting Trials) [2,3] flow diagram to provide details on how many patients declined consent and overall progress of the participants through the trial. However, the authors show that they enrolled a total of 62 cases of medial branch block into their study and they excluded those patients who had lumbar spine fixation, severe lumbar scoliosis or a history of compression fractures at L4 or L5. But in the analysis of the data, we see sixty two patients who were enrolled at the onset of the study and no one was excluded. This should be stated with more clarity.

Forth, it was previously showed that the exposure index, exposure technique and patient holding by ICU (intensive care unit) staff all affect quality improvement related to radiation safety [4]. Moreover, there is no mention of these criteria recording or even stated in the results section. Thus, one cannot be sure that the groups are balanced for these important characteristics.

Finally, in our opinion, the effect of collimation on de-

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terministic effects such as erythema and epilation need to be considered by the authors. Generally, the use of collimation increases the entrance air kerma rate [5] which is a very crucial consideration if there is to be any possibility of deducing the deterministic effects such as erythema and epilation. Additional studies are needed in this field.

In summary, the mentioned study does add evidence to the current literature, and reveals a beneficial effect of collimation on reducing the radiation exposure to the operator and patient while maintaining the image quality. Obviously, large scale clinical trials with accurate and powerful methods according to a CONSORT statement are required for this topic.

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