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INVITED COMMENTARY

Alas, ALARA! Why the (con)fusion?

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Ionizing radiation exposure is worrisome for all vascular physicians. Despite ongoing research, the full extent of biological damage caused by repeated exposure during vascular intervention remains unclear — especially for long and complex operations in high volume centres. Radiation safety is therefore a priority and should be taken very seriously.

The manuscript by Hertault et al.[1] carries an important message — we can reduce radiation exposure using strict protocols based on the ALARA principle. It is very interesting to observe that different centres from different countries can achieve homogeneous profiles by adhering to a common protocol, when performing standard infrarenal EVAR. More importantly, the reported exposure rates are much lower (by a factor greater than 10) than those reported in previous meta-analyses,[2,3] which is a strong indicator of the advantage of the proposed strategy and sets the example for others to follow.

The obvious limitation of the study is the lack of a comparator. That makes it very difficult to measure the actual benefit of individual components of the protocol and in particular of image fusion. In compensation, the authors resort to historical controls with their inherent risk of bias and also not accounting for technological progress and learning curve of those used for comparison. Furthermore, for standard EVAR cases, mobile C-arms are usually of sufficient quality and associated with less radiation exposure.[2] It is likely that fusion in hybrid rooms has greater benefit in limiting contrast administration and less in reducing radiation exposure if one avoids unnecessary digital subtraction aquisitions, being particularly useful for complex cases when multiple vessel catheterisation is necessary.[2] Fusion may actually increase radiation exposure to the patient if a cone beam CT is performed for registration[3] (not the case in this study where bi-view registration was used). In the literature as in this report, the accuracy of registration is rarely mentioned. Moreover, there is no evidence suggesting fusion alone allows comparable accuracy for endograft positioning, especially if the patient is treated under local anaesthesia as patient movement limits the use of fusion significantly. Although desirable, the actual added value of fusion in standard EVAR remains to be demonstrated and unavailability of fusion should not detract from adopting the other (potentially more relevant) recommendations.

Another important aspect not explored by Hertault et al. is the effect of personal protection such as shields and lead drapes. The study uses dose area product (good surrogate for patient exposure) as an endpoint. For professionals, however, personal exposure is of major relevance. If dosimeter measurements were used, one could fully assess the efficacy of the protocol in terms of professional exposure risk.

Lastly, the study is a registry not a trial, therefore more prone to bias. The authors argue that included centres represent real world practice. However, these are still expert centres with access to hybrid rooms and fusion technology, so arguably not the real world at all. And just the mere fact of participating in such a registry is a signal of concern over radiation safety.

Despite the above, it is most relevant to demonstrate that application of a multifactorial but relatively simple protocol results in homogeneous exposure reduction and hopefully safer practice for patients and doctors. This study sets the standard, with or without fusion. Let's hope doctors, technicians, administrators and regulators follow.

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