Received:
9 March 2016Accepted:
6 April 2016<http://dx.doi.org/10.1259/bjr.20160224>

Cite this article as:

Zhang SW, Xu L, Zhong TK, Diao HS. Comments on "Standard-*b*-value vs low-*b*-value DWI for differentiation of benign and malignant vertebral fractures: a meta-analysis". *Br J Radiol* 2016; **89**: 20160224.

LETTER TO THE EDITOR

Comments on "Standard-*b*-value vs low-*b*-value DWI for differentiation of benign and malignant vertebral fractures: a meta-analysis"

SI W ZHANG, MD, LI XU, MD, TING K ZHONG, MS and HUAN S DIAO, MS

Department of Radiology, Guangdong Provincial Traditional Chinese Medicine Hospital and postdoctoral mobile research station of Guangzhou University of Traditional Chinese Medicine, Guangzhou, Guangdong, China

Address correspondence to: Dr Li Xu

E-mail: 985592610@qq.com

(The Editors do not hold themselves responsible for opinions expressed by correspondents)

To the Editor,

We read the recent article entitled "Standard-*b*-value vs low-*b*-value DWI for differentiation of benign and malignant vertebral fractures: a meta-analysis" by Luo et al¹ published in *Br J Radiol* 2016; **89**: 20150384 with great interest. The authors¹ concluded that the use of low-*b*-value diffusion-weighted imaging (DWI) for the differentiation of benign and malignant vertebral fractures is recommended. We would like to contribute regarding the value of DWI in the discrimination between benign and malignant vertebral fractures. In this study, for benign

vertebral fractures vs malignant vertebral fractures, the authors¹ found that the apparent diffusion coefficient (ADC) value difference was more pronounced in the group of low-*b*-value DWI [standard mean difference (SMD): 2.31, $p < 0.05$] than in the group of standard-*b*-value DWI (SMD: 1.38, $p < 0.05$). In clinical practice, single-shot echoplanar imaging (SS-EPI) is the most widely used DWI technique for minimizing motion-induced artefacts because of its rapid data-sampling ability.^{2,3} As shown in Figure 1, we observed an elevated ADC value in malignant vertebral fracture samples using SS-EPI (SMD = 2.38, 95% CI = 0.95–3.80, $p = 0.001$). This result showed that DWI

Figure 1. The elevated apparent diffusion coefficient value observed using single-shot echo planar imaging was in malignant vertebral fracture samples (SMD = 2.38, 95% confidence interval = 0.95–3.80; $p = 0.001$) indicating good diagnostic performance. SMD, standard mean difference.

Figure 2. Subgroup analysis of single-shot echo planar imaging showed that the apparent diffusion coefficient value difference was slightly more pronounced in the group of standard-*b*-value diffusion-weighted imaging (SMD: 2.44, $p < 0.05$). These observations of subgroup analysis were inconsistent with the findings mentioned in the first paragraph. SMD, standard mean difference.

with SS-EPI sequences based on seven studies in this meta-analysis provided excellent distinction between malignant and benign vertebral fractures. This result was consistent with the work reported by Oztekin et al.⁴ However, the results of subgroup analysis of SS-EPI DWI showed that the ADC value difference was slightly more pronounced in the group of standard-*b*-value DWI (SMD: 2.44, $p < 0.05$, $N = 5$) (Figure 2) than in the group of low-*b*-value DWI (SMD: 2.381, $p < 0.05$, $N = 2$). These observations of subgroup analysis were inconsistent with the findings mentioned in the first paragraph. A further study with a large cohort is required.

In addition, the synthesis of results from individual studies did not include a formal evaluation of study quality.⁵ Although the authors concluded that the heterogeneity they found is related to the lack of technical standardization, there is no mention on the clinical consequences. We thus suggest that research should be improved by using well-defined methods for assessing the quality of articles (e.g. quality assessment of diagnostic accuracy studies criteria). The conclusions drawn from this article should be interpreted with caution.

REFERENCES

1. Luo Z, Litao L, Gu S, Luo X, Li D, Yu L, et al. Standard-*b*-value vs low-*b*-value DWI for differentiation of benign and malignant vertebral fractures: a meta-analysis. *Br J Radiol* 2016; **89**: 20150384. doi: <http://dx.doi.org/10.1259/bjr.20150384>
2. Ma C, Li YJ, Pan CS, Wang H, Wang J, Chen SY, et al. High resolution diffusion weighted magnetic resonance imaging of the pancreas using reduced field of view single-shot echo-planar imaging at 3 T. *Magn Reson Imaging* 2014; **32**: 125–31. doi: <http://dx.doi.org/10.1016/j.mri.2013.10.005>
3. Yamashita K, Yoshiura T, Hiwatashi A, Kamano H, Dashjamts T, Shibata S, et al. Detection of middle ear cholesteatoma by diffusion-weighted MR imaging: multishot echo-planar imaging compared with single-shot echo-planar imaging. *AJNR Am J Neuroradiol* 2011; **32**: 1915–8. doi: <http://dx.doi.org/10.3174/ajnr.A2651>
4. Oztekin O, Ozan E, Hilal Adibelli Z, Unal G, Abali Y. SSH-EPI diffusion-weighted MR imaging of the spine with low *b* values: is it useful in differentiating malignant metastatic tumor infiltration from benign fracture edema? *Skeletal Radiol* 2009; **38**: 651–8. doi: <http://dx.doi.org/10.1007/s00256-009-0668-z>
5. El-Zein M, Parent ME, Rousseau MC. Comments on a recent meta-analysis: obesity and lung cancer. *Int J Cancer J Int Du Cancer* 2013; **132**: 1962–3. doi: <http://dx.doi.org/10.1002/ijc.27854>