AJNR

Reply:

O. Foesleitner, K.-H. Nenning, T. Traub-Weidinger, M. Feucht, S. Bonelli, T. Czech, C. Dorfer, D. Prayer and G. Kasprian

AJNR Am J Neuroradiol published online 4 October 2018
http://www.ajnr.org/content/early/2018/10/04/ajnr.A5822

Published October 4, 2018 as 10.3174/ajnr.A5822

REPLY:

We would like to comment on the letter to the Editor regarding our article on corticospinal tract asymmetries in unilateral polymicrogyria.[1] We thank Drs Jalalvandi and Naderi for their interest in our work and appreciate the opportunity to respond to their remarks.

In most radiologic studies, the κ value is commonly used to assess interrater reliability. However, as emphasized by the authors and initially shown by Byrt et al,[2] it has important weaknesses due to bias and prevalence issues. Byrt et al recommended using the bias and the prevalence indices to address these shortcomings. In addition to several other observations, we documented a high concordance in detecting the presence or absence of corticospinal tract asymmetry in cases of unilateral polymicrogyria by 2 independent observers (9/10 consistent ratings, Table). The low bias (0.22) and prevalence (0.11) indices support the validity of our κ values. If, however, one wanted to use the prevalence-adjusted bias-adjusted κ,[2] in our case reaching 0.78, interrater agreement would still show a substantial strength of agreement.[2,3] Because the issues mentioned above do not apply to our sample, we opted for the classic κ value.

In conclusion, we support the call of the letter for caution when using the κ coefficient. However, the issue of neither prevalence nor bias is relevant for our study. Thus, our results allow the conclusion of reliable visual assessment of corticospinal tract asymmetry in unilateral polymicrogyria involving the motor cortex based on T1-weighted and color-coded diffusion tensor imaging maps at the level of the midbrain.

http://dx.doi.org/10.3174/ajnr.A5822

Assessment of the corticospinal tract asymmetry by raters A and B[a]

Patient	Rater A	Rater B	Agreement
1	1	1	Yes
2	0	1	No
3	0	0	Yes
4	1	1	Yes
5	0	0	Yes
6	1	1	Yes
7	1	1	Yes
8	1	1	Yes
9	0	0	Yes

[a] 1 = asymmetry, 0 = symmetry (data published in Foesleitner et al[1]).

REFERENCES

1. Foesleitner O, Nenning KH, Traub-Weidinger T, et al. **Assessing corticospinal tract asymmetry in unilateral polymicrogyria.** *AJNR Am J Neuroradiol* 2018;39:1530–35 CrossRef Medline
2. Byrt T, Bishop J, Carlin JB. **Bias, prevalence and kappa.** *J Clin Epidemiol* 1993;46:423–29 CrossRef Medline
3. Sim J, Wright CC. **The kappa statistic in reliability studies: use, interpretation, and sample size requirements.** *Phys Ther* 2005;85:257–68 Medline

O. Foesleitner
K.-H. Nenning
T. Traub-Weidinger
Departments of Biomedical Imaging and Image-Guided Therapy
M. Feucht
Department of Pediatrics and Adolescent Medicine
S. Bonelli
Department of Neurology
T. Czech
C. Dorfer
Department of Neurosurgery
D. Prayer
G. Kasprian
Departments of Biomedical Imaging and Image-Guided Therapy
Medical University of Vienna
Vienna, Austria