Seizures in pediatric patients with cerebral AVMs

TO THE EDITOR: We read with great interest the article by Garcia et al.1 regarding the factors associated with seizures at initial presentation in pediatric patients with cerebral arteriovenous malformations (AVMs) (Garcia JH, Winkler EA, Morshed RA, et al. Factors associated with seizures at initial presentation in pediatric patients with cerebral arteriovenous malformations. J Neurosurg Pediatr. 2021;28[6]:663-668). In this article, the authors performed a retrospective study based on a single-center database to investigate the risk factors associated with seizures at initial presentation in pediatric patients with cerebral AVMs. The results indicated that pediatric patients with cortical AVMs in the frontal lobe were more likely to present with seizures. Also, the Supplemented Spetzler-Martin (Supp-SM) grade was highly associated with seizures at initial presentation. We appreciate the great work by the authors. However, we suggest that certain points be clarified to the readers, which would be of benefit.

According to the paper, “multivariate” regression analysis was used to test the risks associated with seizures at initial presentation. It is worth noting that “multivariable” and “multivariate” are actually different concepts.2 Multivariate indicates the type of outcome (repeated measures). Therefore, we suggest revising “multivariate multiple logistic regression” to “multivariable regression” (dichotomous outcomes) in this paper. Additionally, the multivariable logistic regression analysis should contain a crude model, model 1, and model 2, in which different variables are adjusted, to demonstrate the effect of a certain factor on the outcome. This analysis is suggested to be present in the article.

Another concern is about the independent effect of frontal lobe AVM location and higher Supp-SM grade. Frankly, to demonstrate the independence of frontal lobe AVM location, the variables listed in Tables 1 and 3 should be adjusted in the multivariable logistic regression analysis, which is not shown in this paper. For example, the crude model just focuses on frontal lobe AVM location. For model 1, variables, including age and sex, are adjusted. For model 2, variables, including age, sex, AVM size, other anatomical locations, etc., are adjusted. If the odds ratio and p value are consistent in these three models, the independence of frontal lobe AVM location can be achieved. The same way works for the evaluation of the independence of higher Supp-SM grade.

Once again, we greatly appreciate this work, indicating potential risk factors for seizures at initial presentation in pediatric patients with AVMs. The aforementioned points are suggested to be further considered.

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References

Disclosures
The authors report no conflict of interest.

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Response
We thank Dr. Zhao and colleagues for taking interest in our publication and expressing their comments. Although “multivariate” and “multivariable” are often used interchangeably in medical literature, the distinction regarding these two forms of analysis is accurate, and we appreciate the clarification provided by Dr. Zhao and colleagues. The statistical modeling used to identify factors associated with seizures has been previously described. In brief, generalized logistic regression was first performed to identify individual demographic, clinical, and morphological variables associated with seizures on initial patient presentation. Predictive variables with a p value < 0.05 were then included in a multivariable generalized logistic regression model. While the adjusted odds ratios in the final model were not shown in the article, the critical point we wished
to communicate was that the variables identified as predictive were independently significant (p < 0.05). We appreciate the comments raised by Dr. Zhao and colleagues and the opportunity to respond.

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