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LETTER TO THE EDITOR

Reply to the comments by Eibach et al.

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Dear Editor:

We thank Drs. Eibach and Pang for the interest in our recent publication which was actually initiated by their previous study [1].

It seems that the main point of discussion is the location of the primary and secondary neural tubes. Although the classic view puts the secondary neural tube at the lumbosacral region, the study which had elaborated the cellular and molecular features of the junctional neurulation proposed the idea that unlike the mouse, chick and human may have a wide range of the "junctional neural tube" corresponding to the thoracolumbar region in humans [2]. Hence, if the spatial extent of the junctional neurulation is modified to include up to the low thoracic region, the clinical and electrophysiological findings of the two cases stated in our study may not be interpreted as "unsuitable" for junctional neural tube defect (JNTD). It should be noted that this wide range of the location of junctional neurulation not only gave us clues to connecting segmental spinal dysgenesis (SSD) with JNTD but also provided an explanation for the peculiar involvement of the distal thoracic and upper lumbar regions in caudal agenesis, a well-known anomaly of the secondary neurulation.

We agree that the cord change in SSD may well be a secondary phenomenon from bony compression as such a narrow spinal canal has not been seen in cases of JNTD per se. Nonetheless, it is not easy to overlook the striking similarity of the shocking appearance of the spinal cord in the two entities. Also, the fact that, unlike other spinal vertebral anomalies, SSD is almost always limited to the distal thoracic and lumbar region should also be considered.

Our cases did not show a "complete, total" absence of functional connection between the primary and the secondary neural tubes. However, we do not think that this makes the cases unsuitable as JNTD because the transition between primary – junctional – secondary may not be an "all or none, stochastic" phenomenon.

As Dr. Eibach and his colleagues have well-stated, we, too, believe the controversy and debate on the normal and anomalous process of neurulation will challenge and improve the old paradigms and central dogma of the embryology of the central nervous system.

Compliance with ethical standards

Conflict of interest The authors declare that there is no conflict of interest.

References

1. Eibach S, Pang D (2020) Do junctional neural tube defect and segmental spinal dysgenesis have the same pathoembryological background? Childs Nerv Syst. https://doi.org/10.1007/s00381-020-04512-x
2. Dady A, Havis E, Escriou V, Catala M, Duband JL (2014) Junctional neurulation: a unique developmental program shaping a discrete region of the spinal cord highly susceptible to neural tube defects. J Neurosci 34:13208–13221

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