



In reply: Withholding therapeutic interventions in brain(stem) death: is it a self-fulfilling prophecy?

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To the Editor,

We thank Dr. Rady for his letter regarding our case report.^{1,2} The letter highlights the importance of considering the effects of decompressive craniectomy when diagnosing brain death/death by neurologic criteria (BD/DNC). Our case is unusual because of the type of brain lesion. Here, a combined primary infratentorial and secondary (global hypoxic) brain lesion led to the clinical signs suggestive of BD/DNC. The postanoxic state may have accounted for the delay in recovery of some lower brainstem function, despite immediate suboccipital decompressive craniectomy on the first day. Irrespective of the performance (or not) of craniectomy, in the event of a primary infratentorial brain lesion, the German and several other European national guidelines require

ancillary testing, which in our case prevented the diagnosis of BD/DNC.² For other types of brain lesion, the German guidelines require ancillary testing, or alternatively a second complete clinical investigation after a defined time interval (primary supratentorial brain lesion, ≥ 12 hr; secondary brain lesion, ≥ 72 hr) to prove irreversibility of brain function loss. Our case underpins the use of ancillary testing if there is no unequivocal increase of supra- and infratentorial intracranial pressure. Decompressive craniectomy acutely lowers intracranial pressure, but does not always prevent recurrence of intracranial hypertension, resulting in the eventual loss of cerebral perfusion.^{3,4} Brain death/death by neurologic criteria can, therefore, be diagnosed after craniectomy; however, ancillary testing and/or sufficient waiting periods are advisable. We cannot comment on the case with bilateral supratentorial decompressive craniectomy observed in the UK with recovery after being diagnosed with BD/DNC, referred to in our article and by Dr. Rady,^{1,2} since the medical details have not been reported so far. We agree with Dr. Rady that more studies on the impact of decompressive craniectomy on the development of BD/DNC are warranted.

Nevertheless, we do not share the view that, after the careful diagnosis of BD/DNC including the proof of irreversibility as described above, a global ischemic penumbra might still be present that could allow for the reversal of BD/DNC after decompressive craniectomy. In our case, ancillary testing never showed cerebral circulatory arrest.² Based on the current scientific evidence, it can be stated that the ancillary methods approved for the demonstration of cerebral circulatory arrest, if complying with rigorous quality standards, exclude cerebral perfusion at a level allowing for the

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preservation of viable neuronal tissue, as has been discussed earlier.⁵

Our case report is intended to contribute to the ongoing process of advancement and international standardization of BD/DNC diagnostics and, thereby, to promote its validity.

Conflict of interest Uwe Walter is appointed Member of the Permanent Working Committee on the “Guideline for the determination of irreversible loss of brain function” of the Scientific Advisory Board of the German Medical Association (Bundesärztekammer). Daniel Cantré and Amelia Zitzmann do not report any commercial or noncommercial affiliations that are or may be perceived to be a conflict of interest with the work. Unrelated to this work, Uwe Walter has received speaker honorariums and travel funds from Bayer Vital, Boehringer Ingelheim, Bristol-Myers Squibb, Daiichi Sankyo, Merz Pharma and Pfizer, and a research grant from Merz Pharma. He has received royalties from Thieme and Elsevier Press. He serves as Editor of the European Journal of Ultrasound. Daniel Cantré and Amelia Zitzmann do not report any conflicting interests.

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