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Letter to the Editor

Is cerebral oedema a pathophysiological factor of SUDEP?

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Letter to the Editor

With interest we read the article by Dibue et al. about a literature review of 19 eligible studies reporting 623 patients with sudden unexpected death in epilepsy (SUDEP) of whom 17% had a mild to moderate diffuse cerebral oedema on post-mortem clinical examination (autopsy) or on cerebral computed tomography (CT) [1]. It was concluded that seizures preceding SUDEP may in certain cases elicit acute oedema, which may represent an additional contributing factor in the cascade of events leading to sudden death [1]. We have the following comments and concerns.

Cerebral oedema can be assessed according to various methods. Cerebral oedema can be assessed macroscopically, by the pathologist, or according a formula using intracranial dimensions and cerebral weight [2]. Though rater and the formula show good agreement there is poor agreement between macroscopy and the rater and the formula [3]. A fourth method uses normalised cerebral weight, which relies on putting cerebral weight in relation to the intra-cranial volume [3]. Post-mortem time and cooling time were negligible for this method. We should know according to which method cerebral oedema was assessed in those cases undergoing autopsy. Unfortunately, the authors do not mention how many of the 623 patients underwent autopsy, how many underwent post-mortem imaging, and how many both. Since cerebral oedema may depend on the post-mortem time until autopsy and the cooling time, we should know if these parameters were included in the evaluation. A shortcoming of the normalised cerebral weight is that age at death may confound the oedema classification due to pre-existing cerebral atrophy leading to lower cerebral weights [3]. If post-mortem time, cooling time, and age at death were not considered in the evaluation false positive results may have ensued.

A further shortcoming of the study is that the pathophysiology of cerebral oedema in the included SUDEP patients remains speculative. How did the authors exclude that cerebral oedema was a post-mortem phenomenon. Fluid re-distribution post mortem has been reported [3]. Cerebral oedema may be also due to ischemic stroke, intracerebral bleeding, sinus venous thrombosis, encephalitis, hyertensive encephalopathy, posterior reversible encephalopathy syndrome (PRES), reversible cerebral vasoconstriction syndrome [4], or hepatic failure [5]. Were all these differentials thoroughly excluded among the 623 included patients?

It is unclear in how many patients focal and in how many patients generalised oedema was found. Knowing the extension of the oedema is crucial as it may help to uncover the underlying cause.

Overall, the interesting study has a number of limitations in addition to those already mentioned in the article. Criteria for diagnosing cerebral oedema clinically or on imaging should be provided and post-mortem time, cooling time, and age at death should be included in the evaluation to avoid the production of false positive results.

DECLARATION OF COMPETING INTEREST

There are no conflicts of interest.

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