

審査の結果の要旨

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Mesial Temporal Lobe Epilepsy (mTLE) represents a significant challenge in neurological care due to its refractory nature and limited treatment options. Current pharmacological interventions often fail to provide adequate seizure control, and surgical interventions may not always be successful. Understanding the underlying mechanisms of mTLE and identifying novel therapeutic targets is crucial for improving patient outcomes. This research aimed to address these critical needs by investigating the role of post-seizure neurogenesis in mTLE pathogenesis and its potential therapeutic interventions. By leveraging advanced techniques, the study elucidates the activity patterns of seizure-generated granule cells in the neurogenic niche of the temporal lobe during spontaneous seizures and unravels their impact on seizure dynamics. Investigating the manipulated activity of these cells during a spontaneous seizure, yielded promising results showing that seizure-generated granule cells shorten the spontaneous seizure duration through inhibitory interneurons. The exploration of potential therapeutic interventions represents another significant aspect of this research. By demonstrating that increasing the number of seizure-generated granule cells efficiently ameliorates spontaneous seizures in a mouse model of mTLE, the study offers a promising avenue for future therapeutic development. These findings suggest that stem cell therapy targeting neurogenesis may hold potential as a complementary approach to existing treatments for mTLE, providing new hope for patients with refractory epilepsy.

In summary, this study represents a significant advancement in our understanding of mTLE and offers promising prospects for the development of novel therapeutic interventions. By uncovering the role of seizure-generated granule cells in seizure modulation and exploring potential stem cell-based therapies for the first time, the research paves the way for future studies aimed at improving seizure control and enhancing the quality of life for individuals living with refractory epilepsy.

よって本論文は博士（医学）の学位請求論文として合格と認められる。