Landau-Kleffner Syndrome: Localization of Epileptogenic lesion Using Wavelet-Crosscorrelation Analysis
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Magnetoencephalographic findings in a 6-year-old patient suffering from acquired aphasia with convulsive disorder (Landau-Kleffner Syndrome, LKS) are presented. The data were analyzed using wavelet-cross-correlation analysis, a nonstationary analysis method developed to analyze the localization of an epileptogenic lesion and the propagation of epileptiform discharges. The results indicate that LKS might be a disorder of the primary temporal cortex, and that the auditory neural network may function as the circuit for the epileptic discharge propagation.
FIG. 4. Localization of epileptogenic lesion and mean propagation speeds and directions of epileptiform discharge. The purple circles depict the origins of the magnetic field and the arrows show the direction and the speed of spread. The thick (red) and thin (blue) arrows indicate 5-20 and 0.5-5 m/s, respectively.

FIG. 5. Summary of propagation of epileptiform discharges. First, the spike wave appeared from ①, and propagated to ② and ③. Second, the sharp wave appeared from ② and then the slow wave appeared from ③.