PI3K-AKT pathway polymerase chain reaction (PCR) array analysis of epilepsy induced by type II focal cortical dysplasia


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Received January 14, 2015
Accepted June 25, 2015
Published August 21, 2015
DOI http://dx.doi.org/10.4238/2015.August.21.5

ABSTRACT. The aims of this study were to observe the differential expression of PI3K-AKT pathway-related genes in seizure-inducing brain lesions in type II focal cortical dysplasia, and to explore the relationship between gene expression and histological changes in dysplastic foci and their epileptogenic mechanism. Typical lesions in brain tissue from three patients with epilepsy induced by type II focal cortical dysplasia were selected for analysis, along with normal brain tissue from two control group individuals. Following quantitative expression analysis using the RT2 Profiler™ PI3K-AKT PCR Array, differential expression of the pathway related genes was detected in the focal brain tissue lesions, and gene function queries were performed. Compared with the control group, thirteen related genes appeared to exhibit marked differences in expression in epileptic lesions from
patients with type II focal cortical dysplasia; those genes were found to be involved in regulation of cell size, morphology, adhesion, migration, and apoptosis, and in immunity, inflammation, and many other domains. The differential expression of multiple genes in the PI3K-AKT signaling pathway in type II focal cortical dysplasia may be an important molecular mechanism underlying histological changes and recurrent seizures.

**Key words:** Cortical dysplasia; Epilepsy; Gene chip; PI3K-AKT signaling pathway