

Doublecortin (DCX) immunoreactivity in hippocampus of chronic refractory temporal lobe epilepsy patients with hippocampal sclerosis.

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Abstract

INTRODUCTION:

Status epilepticus increases the production of new neurons (hippocampal neurogenesis) and promotes aberrant migration. However chronic experimental models of epilepsy and studies performed in human epilepsy showed controversial results suggesting a reduction in hippocampal neurogenesis in late stages of the disease. Doublecortin (DCX) has been validated to determine alterations in the production of new neurons in the human hippocampus.

OBJECTIVES:

Determine DCX expression in human hippocampal sclerosis (HS) from patients who underwent epilepsy surgery for refractory temporal lobe epilepsy (TLE).

METHODS:

Hippocampal sections of 9 patients with HS and TLE who underwent surgery, were processed using immunoperoxidase for DCX. Archival material from 5 normal post-mortem hippocampus were simultaneously processed.

RESULTS:

Significantly lower staining intensity was observed in DCX-positive neurons localized in dentate gyrus (DG) and in CA1 of epileptic hippocampus; lower DCX reactive area was observed in pyramidal layers of CA1; and a reduced in the mean number of DCX-positive neurons were determined in DG compared to normal hippocampus ($p < 0.05$).

CONCLUSIONS:

This study found a decrease in DCX expression in hippocampus of patients with HS and chronic and refractory TLE suggesting alterations in NG and hippocampal synaptogenesis with potential cognitive and emotional repercussion.

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