Cortical abnormalities and their cognitive correlates in patients with temporal lobe epilepsy and interictal psychosis

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PURPOSE
To determine whether cortical abnormalities are more severe and widespread in patients with temporal lobe epilepsy (TLE) and interictal psychosis (IP) compared to those with TLE only (NIP) and healthy controls (HC), and to explore the associations between cortical parameters (area, thickness and volume), psychotic symptoms, and cognitive performance.

METHODS
Twenty-two patients with IP (9 male; 10 hippocampal sclerosis, HS), 23 TLE nonpsychotic (NIP) patients (11 male; 13 HS) matched for duration of epilepsy and 20 HC participated. Surface-based morphometry (SBM) was used to measure cortical parameters. Cognition was examined in IP and NIP patients. Associations between cortical parameters and cognition were examined using linear mixed models adjusted by age, gender, and brain volume.

KEY FINDINGS
IP patients had an earlier onset of epilepsy, more status epilepticus, and worse cognitive performance than NIP patients. In IP patients, cortical thickness was reduced in the inferior frontal gyrus (IFG), and their current IQ was associated with decreases in area, but not thickness, in regions of the frontotemporal cortex.

SIGNIFICANCE
IP likely reflects the interplay of psychosis-related genetic factors and the cumulative effects of seizure activity on the brain. Cortical thinning in the IFG, a region implicated in schizophrenia, is likely to be related to seizure activity, whereas changes in IQ, associated with reductions in area of frontotemporal cortex, may be related to the presence of psychosis.