Abstract

OBJECTIVE:
To evaluate the evidence for EEG theta/beta power ratio for diagnosing, or helping to diagnose, attention-deficit/hyperactivity disorder (ADHD).

METHODS:
We identified relevant studies and classified them using American Academy of Neurology criteria.

RESULTS:
Two Class I studies assessing the ability of EEG theta/beta power ratio and EEG frontal beta power to identify patients with ADHD correctly identified 166 of 185 participants. Both studies evaluated theta/beta power ratio and frontal beta power in suspected ADHD or in syndromes typically included in an ADHD differential diagnosis. A bivariate model combining the diagnostic studies shows that the combination of EEG frontal beta power and theta/beta power ratio has relatively high sensitivity and specificity but is insufficiently accurate.

CONCLUSIONS:
It is unknown whether a combination of standard clinical examination and EEG theta/beta power ratio increases diagnostic certainty of ADHD compared with clinical examination alone.

RECOMMENDATIONS:
Level B: Clinicians should inform patients with suspected ADHD and their families that the combination of EEG theta/beta power ratio and frontal beta power should not replace a standard clinical evaluation. There is a risk for significant harm to patients from ADHD misdiagnosis because of the unacceptably high false-positive diagnostic rate of EEG theta/beta power ratio and frontal beta power. Level R: Clinicians should inform patients with suspected ADHD and their families that the EEG theta/beta power ratio should not be used to confirm an ADHD diagnosis or to support further testing after a clinical evaluation, unless such diagnostic assessments occur in a research setting.