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## Electroencephalography in Patients with Autism Spectrum Disorder

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## LETTER TO THE EDITOR

## Electroencephalography in patients with autism spectrum disorder

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I read with interest the manuscript entitled: ‘Epileptiform discharges relate to altered functional brain networks in autism spectrum disorders’, written by Dr Tetsu Hirosawa and colleagues. The authors demonstrated that alterations of functional brain networks in children with autism spectrum disorder (ASD) depend on the existence of interictal epileptiform discharges.<sup>1</sup>

Here, I would like to re-emphasize the relationship between interictal epileptiform discharges and cognitive and intellectual problems that are often associated with ASD and propose a research strategy using electroencephalography (EEG) to probably unlock some of the mystery around the cognitive problems in ASD. Usually, and sometimes mistakenly, we assume that something that is common is normal or is not significant! We already know that many patients with ASD may have epileptic seizures or EEG abnormalities without seizures.<sup>2,3</sup> When patients have clinical seizures, we usually start treatment with anti-seizure medications; but, when patients do not have any clinical seizures, we often assume that EEG abnormalities are not significant and should not be treated.

However, recent evidence, including the article by Hirosawa et al.,<sup>1</sup> has shed light on some of the mysteries around the occurrence of abnormal EEG findings in patients with intellectual disabilities (including ASD) and without clinical seizures.<sup>1,4</sup> These findings may have important clinical implications. Firstly, there is a significant negative correlation between interictal epileptiform activity and cognitive performance.<sup>5</sup> It seems that interictal spikes directly disrupt the functional brain networks responsible for behaviour and cognition.<sup>5,6</sup> Secondly, some

anti-seizure medications (e.g. levetiracetam) may affect interictal epileptiform discharges and are associated with improvements in EEG background and cognitive function in children with epilepsy and cognitive dysfunction.<sup>6,7</sup>

As a result, maybe we should consider performing a screening EEG in all patients with ASD and adding abnormal EEG in patients with ASD to the list of exceptions to the adage ‘Treat the patient, not the EEG’. However, whether EEG screening is cost-effective and is indicated in all patients with ASD and whether treatment of interictal epileptiform discharges in patients with ASD (and without clinical seizures) is indicated to improve their cognitive problems should be tested in double-blind randomized clinical trials.

## Competing interests

Consultant: UCB Pharma; Honorarium: Cobel Daruo, Raymand Rad, and Tekaje; Royalty: Oxford University Press (Book publication).

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