Epileptiform EEG abnormalities in autism seem to be limited. Some authors have suggested that the EEG is an important tool in differential diagnostics between autism and Landau-Kleffner syndrome (LKS). Two of four completed studies have also supported this suggestion. Shevell et al. [6], found one possible case of LKS in a sample of 50 children with autism spectrum disorders (2%). Battaglia & Carey [7] also found one LKS case in a sample of 85 children with pervasive developmental disorder (1.2%). The other two studies were negative [8,9].

Many authors focused their research on the relationship between EEG abnormalities and autistic regression. Our analysis included only studies that involved autistic children with and without regression, i.e. clinically non-selected samples. We excluded studies involving only children with regression, or only children with EEG abnormalities. A summary of our findings is presented in Table 1.

A large majority of the studies (7 of 9 studies) did not find any significant relationship between EEG abnormalities and autistic regression. Only two studies were positive [10,11]. Of all the studies, Tuchman & Rapin [10] had the largest sample (385 children) but only part of the sample (392 children) had EEGs available (i.e. sleep EEGs; only sleep EEGs were performed in this study). Readers of the Tuchman & Rapin [10] study should note that the overall rate of epilepsy in the autistic sample was quite low (11%), as was the rate of epileptiform EEG abnormalities in non-epileptic autistic patients (15%). In comparison, other studies listed in our summary gave higher rates of epileptiform abnormalities in non-epileptic autistic children, 19% [12], 22% [13], and 24% [14]. The overall rate of epileptiform EEG abnormalities in the whole sample (21%) was also very low, where other comparable studies were in the range of 28 - 48% [5,11,14-17].

Oslejskova et al. [11] performed a retrospective study involving 205 autistic children and found a positive association between epileptiform EEG abnormalities and autistic regression. Unlike Tuchman & Rapin [10], they did not exclude patients with epilepsy from the analysis. Furthermore, the rate of epileptiform abnormalities in their study was very high (48%) in contrast to Tuchman & Rapin [10] although they did not exclusively use sleep EEG recording as did Tuchman & Rapin.

Despite prevailing negative (and sometimes disappointing) results, the role of electroencephalography in autism research is not closed yet. Further research on the topic is needed.

References

**Table 1: Relationship of EEG abnormalities and autistic regression.**

<table>
<thead>
<tr>
<th>Study</th>
<th>Dg</th>
<th>N</th>
<th>Age (years)</th>
<th>Regression rate (%)</th>
<th>E-EEG abnorm. (%)</th>
<th>Epilepsy excluded</th>
<th>Relationship found</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kurita et al. [15]</td>
<td>A</td>
<td>196</td>
<td>7.4 ± 3.6</td>
<td>26</td>
<td>28</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>Rossi et al. [12]</td>
<td>ASD</td>
<td>106</td>
<td>3-31</td>
<td>41; 25; 36*</td>
<td>19 **</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>Tuchman, Rapin [10]</td>
<td>ASD</td>
<td>565</td>
<td>5.8</td>
<td>34</td>
<td>21</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Hrdlicka et al. [5]</td>
<td>ASD</td>
<td>77</td>
<td>9.1 ± 5.3</td>
<td>26</td>
<td>38</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>Canitano et al. [13]</td>
<td>A</td>
<td>46</td>
<td>7.8 ± 2.7</td>
<td>52</td>
<td>22; 35 †</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>Baird et al. [16]</td>
<td>A</td>
<td>64</td>
<td>2-4</td>
<td>61</td>
<td>31</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Oslejskova et al. [11]</td>
<td>ASD</td>
<td>206</td>
<td>10</td>
<td>35</td>
<td>48</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>Giannotti et al. [17]</td>
<td>A</td>
<td>104</td>
<td>2.3-7.1</td>
<td>33</td>
<td>41</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>Parmeggiani et al. [14]</td>
<td>ASD</td>
<td>345</td>
<td>2-37</td>
<td>16; 27; 34*</td>
<td>46</td>
<td>NO</td>
<td>NO</td>
</tr>
</tbody>
</table>

Dg – diagnosis;  
N – number of patients;  
E-EEG abnorm. – epileptiform EEG abnormalities;  
A – autism;  
ASD – autism spectrum disorders.

* Percentages separately given for patients without epilepsy and E-EEG abnormal; for patients with E-EEG abnormal, but no seizures; and for patients with epilepsy.  
** Percentage given for patients without epilepsy.  
† Percentages separately given for patients without and with epilepsy.