EEG PHENOTYPE IN ASD PATIENTS WITH AND WITHOUT CLINICAL EVIDENCE OF EPILEPTIC SINDROMES.

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Introduction:

There is a high comorbid prevalence between epilepsy and ASD and it is estimated that approximately 30% of them presented some type of epileptic disorder (1), while this percentage in the general population ranged between the 1 to 10% (2). In addition, 70% of patients with ASD will present alterations in the EEG (3). Considering that when patients with ASD present epileptic symptoms that are difficult to distinguish from some manifestations of their autistic condition the role of video-EEG is essential for an adequate diagnosis of an epileptic condition of the patient.

If we have good cooperation with the neurophysiology department in a specific health area, cross-sectional studies can be obtained allowing the knowledge of the clinical-neurophysiological phenotypes of a healthcare population with epidemiological value, and not with a unit values that can be affected by referral hospital biases (4).

Therefore, we planned to study the neurophysiological profile of patients with ASD in our reference area, in whom we suspected the presence of an epileptic disorder.

Objective:

Description of the EEG findings between autistic patients with evidence of epilepsy (ASD-Epil) versus autistic patients who present paroxysmal symptoms of behavioural and sleep disorders (ASD-Sus-Epil) in a reference population of 32,321 children under 15 y.o. health department (Figure 1).

Figure 1: Setting and Study Population

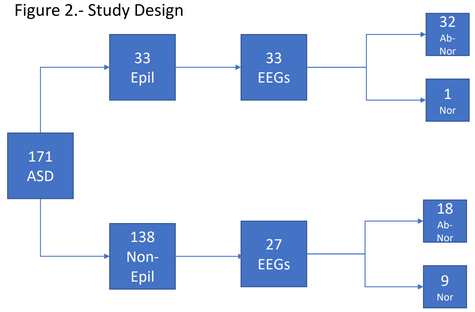
Spanish Population	48.592.909 inh.	100,00%
Valencian Community Population	5.316.478 inh	10,94%
Alicante Province Population	1.964.651 inh.	36,95%
17th Department Population	235.062 inh.	11,96%
17th Department Population under 15 y.o.	32.221 inh.	13,71%

Patients and interventions:

Between January 2020 and December 2022, 171 new patients, registered in public databases, were received with diagnosis of ASD and the presence of epilepsy based on the parents' history and/or by direct observation of professionals. The criteria for suspecting the diagnosis of epilepsy were the presence of sleep disorders, motor or non-motor paroxysmal disorders and the presence of pre- and post-ictal manifestations recorded with various electronic/digital systems, all reflected in paroxysmal disorder diaries. **Inclusion criteria:** 1) patients with a confirmed diagnosis of ASD either in the neuropediatric or child psychiatry units. 2) Patients who belong to the health area in which our hospital centre is a reference. **Exclusion criteria:** 1) Health area patients who are seen in our service for second opinions. 2) Patients in whose clinical picture, ASD symptoms represent a minor comorbid impact in relation to the underlying disease.

The ASD-Epil 33 had an EEG. In 138 cases, there was no evidence of epileptic seizures. Of these, 27 were ASD-Sus-Epil, and also had a first EEG done. Association tests were carried out between the variables studied (Figure 2)

Figure 2.- Study Design



Results:

In 32 out of 33 ASD-Epil cases a pathological EEG was found (97%) while in 18 (66.7%) cases of ASD-Sus-Epil cases presented pathological EEG (Chi-square=7.75; p=0.005). (Sensitivity=97%; Specificity=33%; Positive predictive value=64%; Negative predictive value=90%). In 62.5% of ASD-Epil, the EEGs were focal while they were only in 50% of ASD-Sus-Epil without significant differences. A multifocal pattern was present in 6 patients in the ASD-Epil group while no one in ASD-Sus-Epil. Focal activity did not present differences between hemispheres or between wakefulness and sleep. There was a global predominance of alterations in both temporal lobes in 107 (78.7%) compared to 29 (21.3%) for the rest of the lobes.

Figure 3.- Abnormal EEG in ASD patients suspecting epilepsy vs those who not

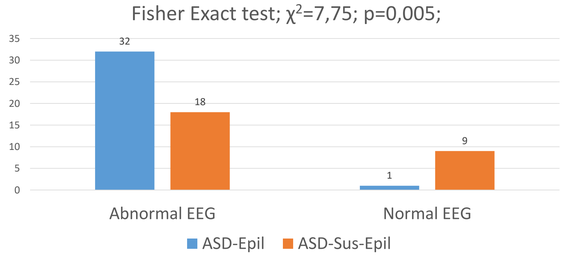
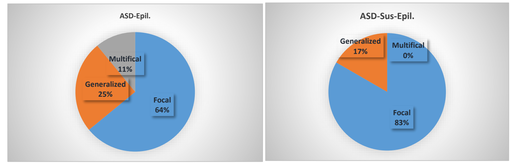


Figure 4.- Type of EEG records in patients suffering from ASD and Epilepsy.



Conclusions:

1) The EEG study in ASD patients is highly sensitive, although not very specific if non-epileptic paroxysmal disorders are studied together.
2) In more than half of the ASD-Sus-Epil patients, epileptiform abnormalities were detected in the EEG.
3) No significant differences appeared in the types of abnormal records obtained between groups.

References:

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Acknowledgements and Contact

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