

## Dysfunctional FINDINGS IN EEG. About 18 Cases were Seen in Consultation in our Hospital

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**Medical note:** "NOT ... any pathology is structural. Dysfunctional cases were entering the EEG. Before starting a premise we specialize in clinical neurophysiology with an experience in the last 14 years of about 12,500 ELECTROENCEFALOGRAMAS- about EEG. And so we can say positively, which is set forth below is very close to the truth. "

Scheme slides EEG different pathologies. Most of these pathology cases were counted unless there was a normal MRI or bland.

### Introduction

Attention deficit/hyperactivity disorder (ADHD) is a disorder in the nervous system development in children, characterized by behaviors of inattention, hyperactivity and impulsivity. This syndrome can affect 3 to 7% of the child population, by country, and more likely in boys than in girls.

Its diagnosis is based on a combination of symptoms defined in the "Diagnostic and Statistical Manual of Mental Disorders (DSM V)" and the "Assessment of Attention Deficit Hyperactivity Disorder Scale (ADHS)." However, as the symptoms are behavioral, there is some subjectivity in its determination. The possibility of determining an objective method of diagnosis and monitoring treatment easier.

These children show a wide range of symptoms suggesting that this is a heterogeneous group of patients. Therefore, it defined within the ADHD syndrome subtypes: predominantly inattentive, predominantly hyperactive/impulsive or combined type. This indicates that the treatment they should receive should be according to precise undiagnostic.

Some studies have found that this syndrome may be due to underactivity sistemacatecolaminérgico that projects into the prefrontal cortex. The use of stimulant medication that increase the efficiency of neurotransmitters catecolaminérgicos. En many countries the treatment used is methylphenidate or amphetamine derivatives are recomendasonel. In the US, the treated children show an improvement in their symptoms around 80% of these children.

### Methods

EEG recording:-morphological Descriptive analysis

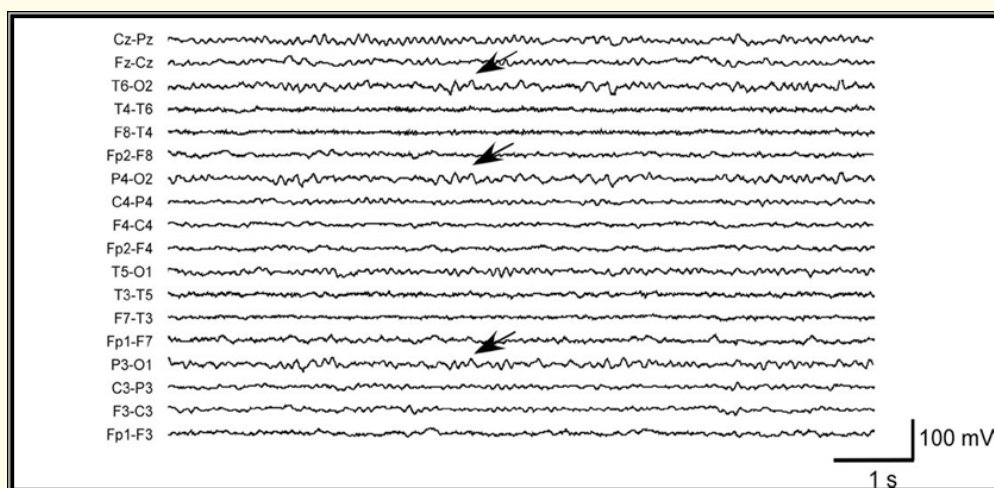
Records electroencephalographies (EEG) were performed in the Department of Neurophysiology at the Hospital of Santa Lucia in Cartagena, Murcia.

For the record the EEG equipment electroencefalográfico brand Nihon Kohden, EEG caps and type (Electro-cap international) according to the international 10/20 system was used.

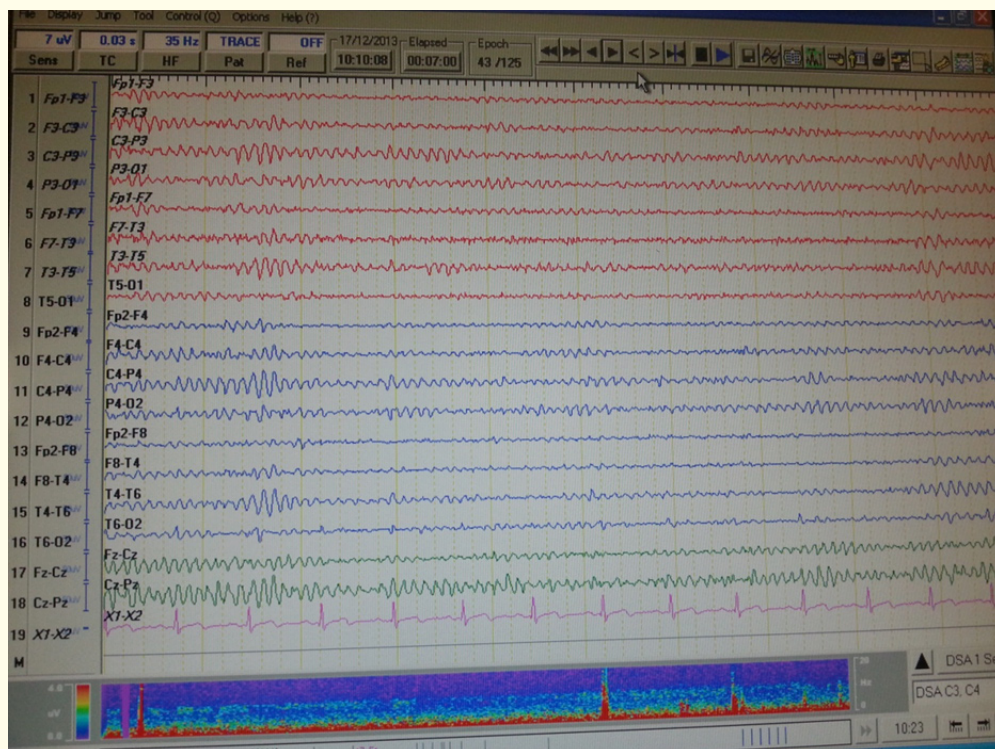


The electrical signal acquired at a particular electrode is the resultant of the electric potential difference between two points, the particular electrode placed on the scalp (frontal areas, temporal, parietal and occipital) and preset reference electrode 42. Cunha M). Electroencephalogram (EEG) with international 10/20 system for electrode placement, bipolar, longitudinal and transverse mounting, short and long distance, and referential assembly is done.

The EEG was performed in all cases in the same way and under the same conditions; the baseline EEG records 68 and 56 subsequent records to confirm and analyze EEG assessment have been made during the day, during periods of wakefulness and hospital clinic schedule. The plots have a minimum duration of 20 minutes, opening and eye close the first 5 minutes, after that we proceed to the realization of about 3 minutes of hyperventilation, with closed eyes and behind the same and when the patient is relaxed quiet proceeds to the ELI (intermittent light stimulation) in different frequency bands ranging from 5 Hz to 25 Hz. Always have been informed by the same EEG specialist in clinical neurophysiology. We have always used the reference assembly to analyze the EEG, despite being able to display the analog EEG in different assemblies to better determine the characteristics of the EEG grafoelementos (Figure 1).



**Figure 1:** EEG recording 10 seconds of duration in ADHD. : Note the slow activity in theta range (4-8 Hz), unlike in adjacent areas found alpha (9-12 Hz) in patients with ADHD in the EEG recording of a boy of 9 years old, with diagnosis ADHD clinic. slow wave morphology and epileptiform not appear spontaneously both eye opening and closing the bilateral parietal region with the highest voltage in this case dcho hemisphere. , O1-P3, P4-O2, O2 and T6-Cz-Pz leads (arrows).



**CASE 1: NORMAL EEG**

CASE 1.- a normal EEG.

Registration waking EEG performed with acceptable patient cooperation.

The bottom trace is basically comprised of regular alpha activities spindle at a frequency of 9-10 Hz, 30-60 microvolts amplitude reagent opening and eye closure and subsequent predominance and beta rhythms few low voltage and former dominance.

No inter-hemispheric asymmetries valuable.

Filtro alto: 30 Hz.

Filtro bajo: 0.5 Hz.

Barrido: 10 milisegundos. 10 segundos por pantalla.

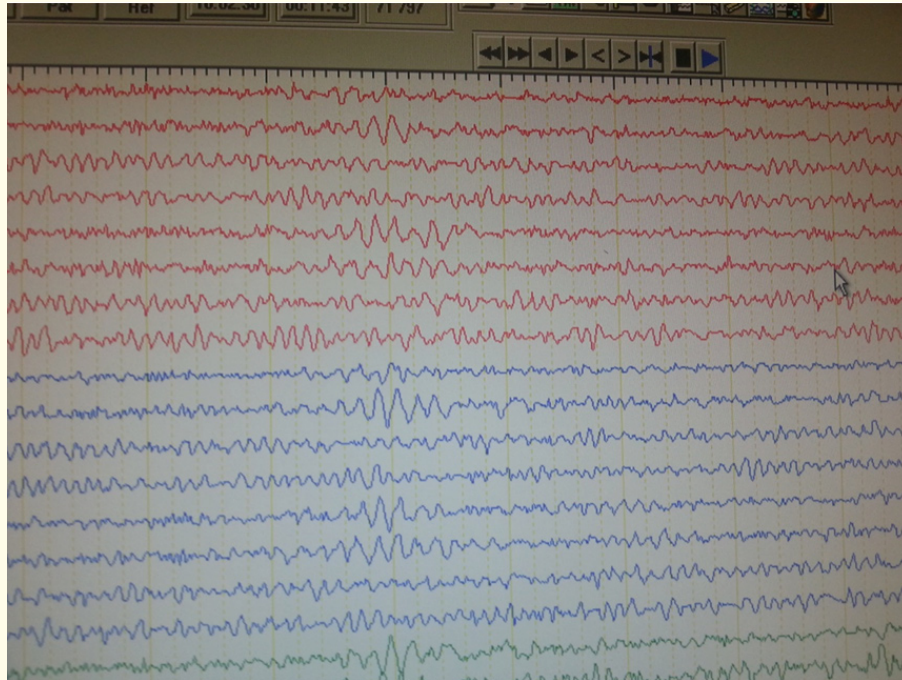
Sensibilidad: 7 microvoltios.

High filter: 30 Hz.

Low filter: 0.5 Hz.

Sweep: 10 milliseconds. 10 seconds per screen.

Sensitivity 7 microvolts.



**CASE 2: ADHD.** Minimum temporal parietal cortical dysfunction bilateral, accentuated to intermittent photic stimulation at 5 Hz, in patients with ADHD. To assess the neuronal migration defects during pregnancy?

Filtro alto: 30 Hz.

Filtro bajo: 0.5 Hz.

Barrido: 10 milisegundos. 10 segundos por pantalla.

Sensibilidad: 7 microvoltios.

High filter: 30 Hz.

Low filter: 0.5 Hz.

Sweep: 10 milliseconds. 10 seconds per screen.

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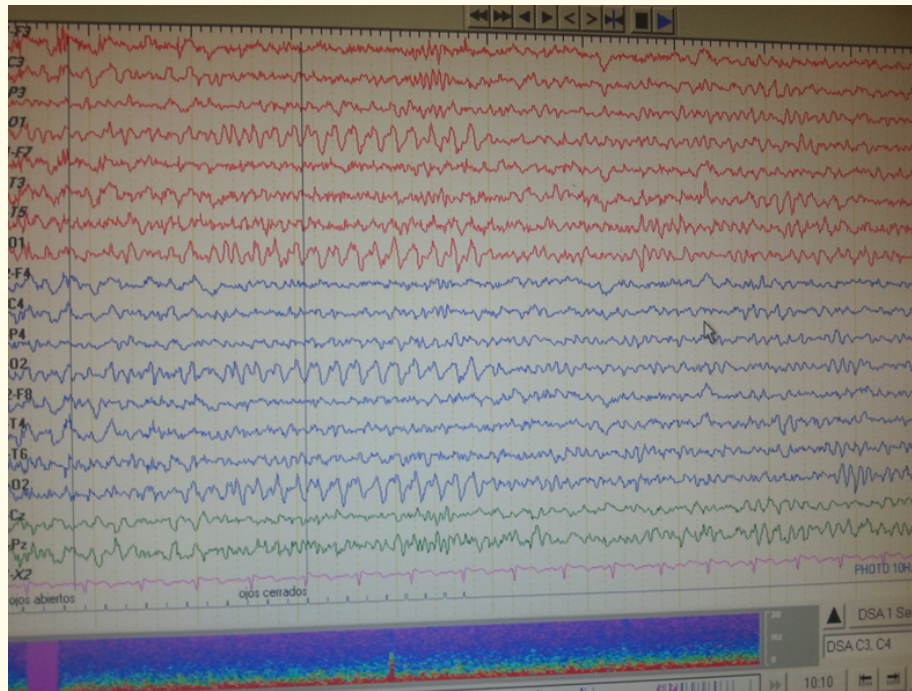
High filter: 30 Hz.

Low filter: 0.5 Hz.

Sweep: 10 milliseconds. 10 seconds per screen.

Sensitivity 7 microvolts.





**CASE 3:** ADHD. Minimum temporal parietal cortical dysfunction left. In patients with ADHD. The image reminiscent of an inverted peak, always in the same location bird. Activity in this case diffuses only slightly as a homologous contralateral area. Hypothesis to assess the neuronal migration defects during pregnancy?

Filtro alto: 30 Hz.

Filtro bajo: 0.5 Hz.

Barrido: 10 milisegundos. 10 segundos por pantalla.

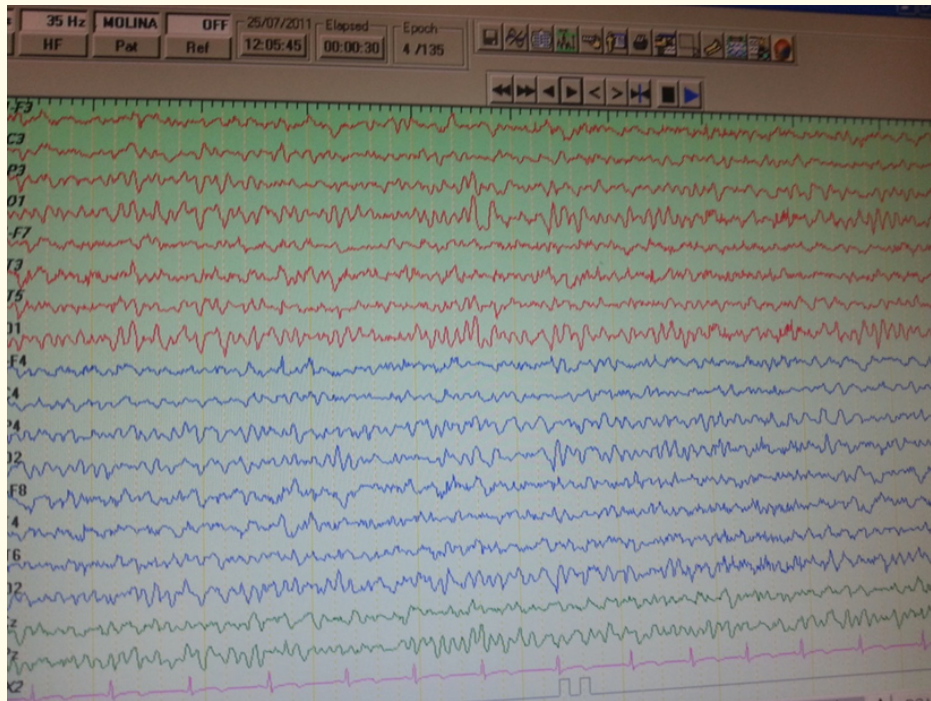
Sensibilidad: 7 microvoltios.

High filter: 30 Hz.

Low filter: 0.5 Hz.

Sweep: 10 milliseconds. 10 seconds per screen.

Sensitivity 7 microvolts.



**CASE 4:** CASE ADHD. Minimum temporal parietal cortical dysfunction left. In patients with ADHD. The image reminiscent of an inverted peak, always in the same location. Activity in this case diffuses only slightly as a homologous contralateral area. Hypothesis: Does neuronal migration defect during gestation?

Filtro alto: 30 Hz.

Filtro bajo: 0.5 Hz.

Barrido: 10 milisegundos. 10 segundos por pantalla.

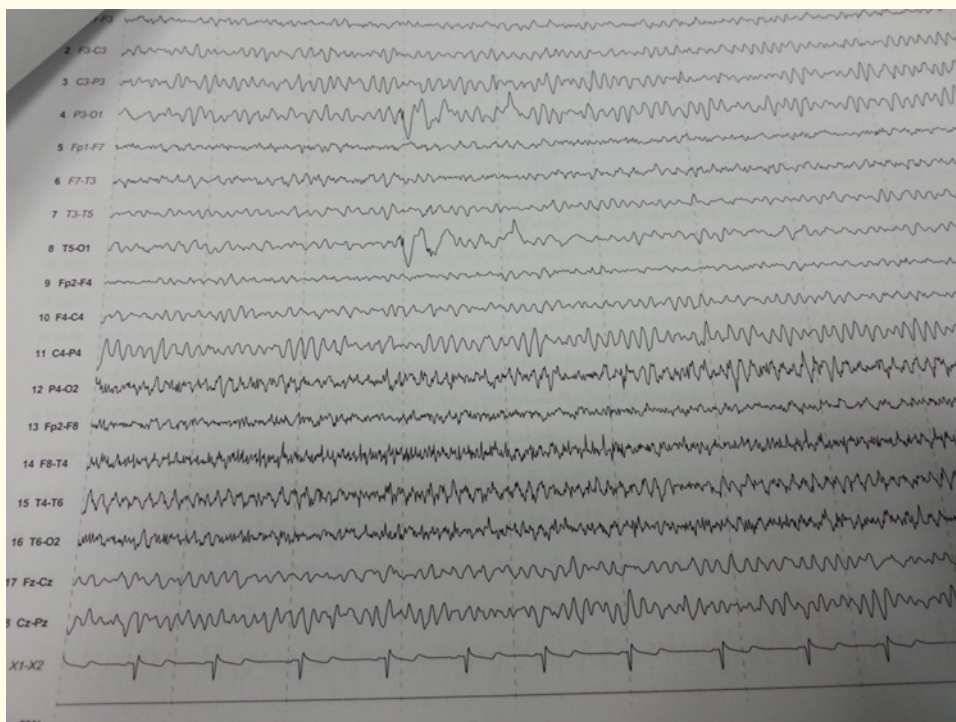
Sensibilidad: 7 microvoltios.

High filter: 30 Hz.

Low filter: 0.5 Hz.

Sweep: 10 milliseconds. 10 seconds per screen.

Sensitivity 7 microvolts.



**CASE 5:** CASE dementia. Advanced stage dementia. 5-6 Hz. Advanced stage dementia. 6.5 Hz. Turning to slowing of background plotting to subalfa frequency. Advanced stage dementia. 5-6 Hz. Dementia advanced stage. 6.5 Hz. As they slowdown do they form a subalfa frequency.

Filtro alto: 30 Hz.

Filtro bajo: 0.5 Hz.

Barrido: 10 milisegundos. 10 segundos por pantalla.

Sensibilidad: 7 microvoltios.

High filter: 30 Hz.

Low filter: 0.5 Hz.

Sweep: 10 milliseconds. 10 seconds per screen.

Sensitivity 7 microvolts.



**CASE 6:** CASE ADHD. Minimum temporal parietal cortical dysfunction left. In patients with ADHD. The focal activity, in this case moderate voltage creates a clear interhemispheric asymmetry, and always in the same location as in other cases of ADHD, left temporal parietal area. (Areas 19 and 40 of Brodmann), near the area of reading comprehension region. Activity in this case diffuses only slightly as a homologous contralateral area. Hypothesis neuronal migration defects during pregnancy?

Filtro alto: 30 Hz.

Filtro bajo: 0.5 Hz.

Barrido: 10 milisegundos. 10 segundos por pantalla.

Sensibilidad: 7 microvoltios.

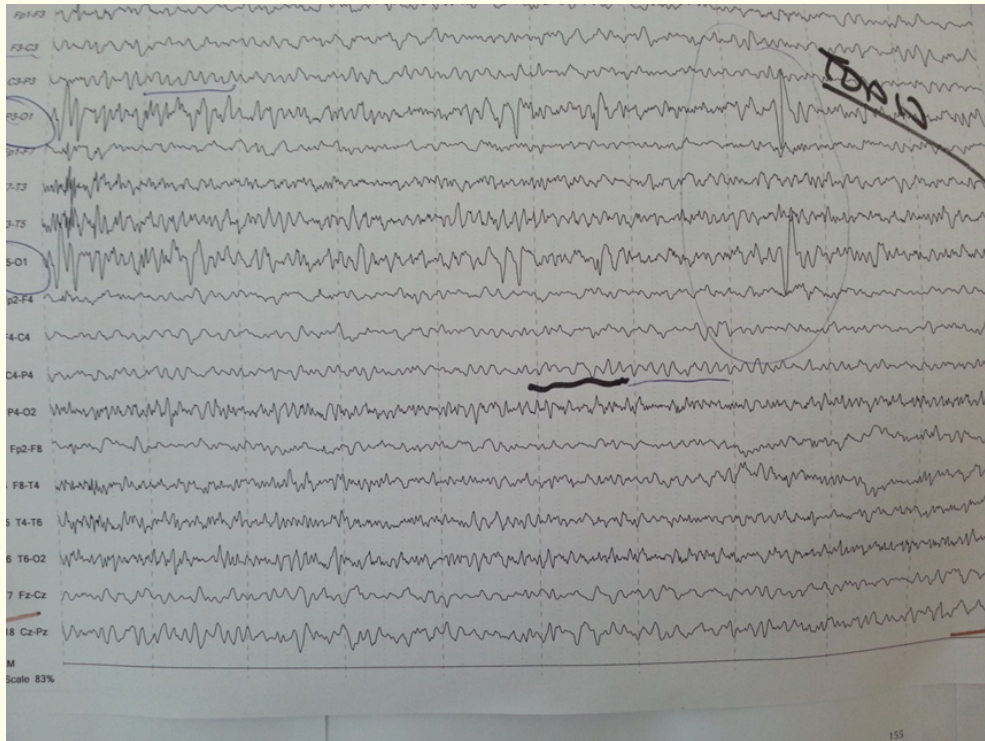
High filter: 30 Hz.

Low filter: 0.5 Hz.

Sweep: 10 milliseconds. 10 seconds per screen.

Sensitivity 7 microvolts.





**CASE 7: RIGHT BRAIN TUMOR CASE. Parieto occipital RIGHT. BRAIN TUMOR AND EEG. Note as structural damage creates itself a slow area at a frequency of 4.3 Hz, and therefore a clear interhemispheric asymmetry.**

*Filtro alto: 30 Hz.*

*Filtro bajo: 0.5 Hz.*

*Barrido: 10 milisegundos. 10 segundos por pantalla.*

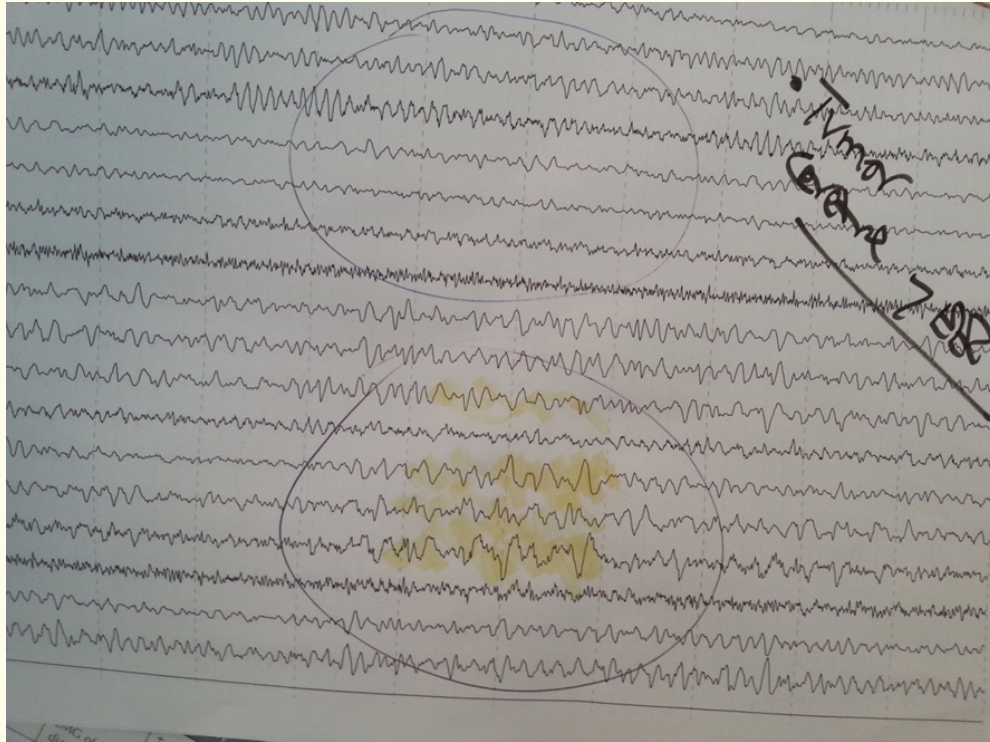
*Sensibilidad: 7 microvoltios.*

*High filter: 30 Hz.*

*Low filter: 0.5 Hz.*

*Sweep: 10 milliseconds. 10 seconds per screen.*

*Sensitivity 7 microvolts.*



**CASE 8:** SD CJD Creutzfeldt-Jakob. Rapidly progressive dementia. Jacob Creutzfeld sd. Rapidly progress dementia. JacobCreutzfeld. COMPLEX PSEUDOPERIODICOS periodic activity, less than 4 seconds, formed by the succession of paroxysmal graph elements v phase morphology, separated by nearly equal intervals. 1-1.5 milliseconds intervals. The graph elements are always wider than the background activity, ranging from 100 to 300 microvolts.

Filtro alto : 30 Hz.

Filtro bajo : 0.5 Hz.

Barrido: 10 milisegundos. 10 segundos por pantalla.

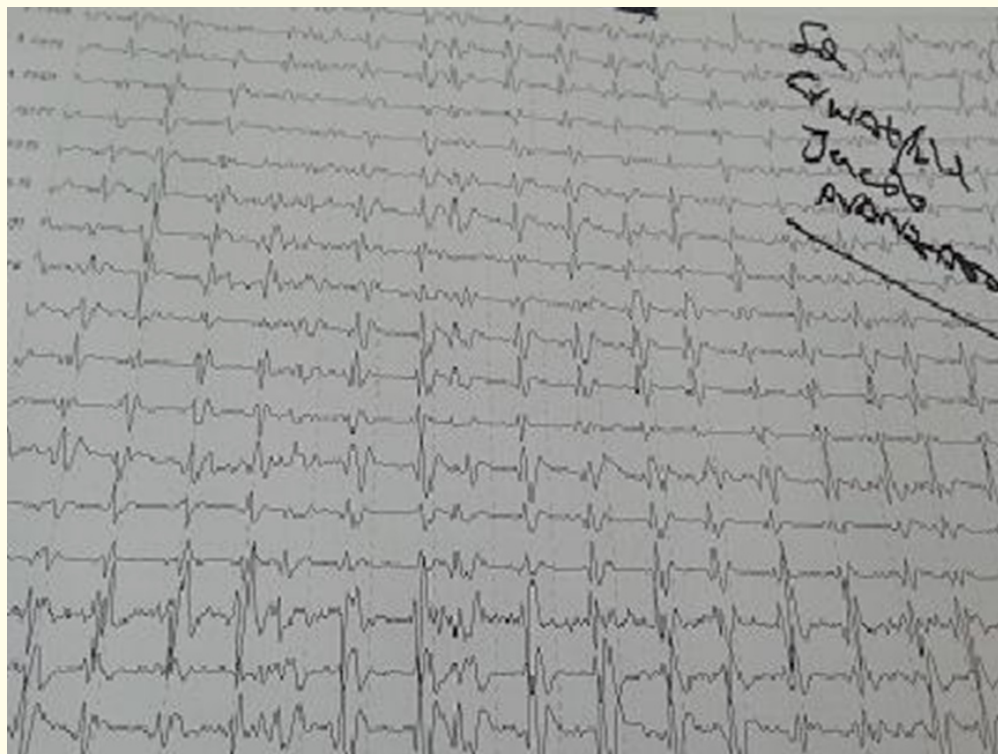
Sensibilidad: 7 microvoltios.

High filter: 30 Hz.

Low filter: 0.5 Hz.

Sweep: 10 milliseconds. 10 seconds per screen.

Sensitivity 7 microvolts.



**CASE 9:** CASE generalized epilepsy. NO. Absence seizures. POINT - WAVE 3 Hz. typical absences. Point- wave 3 Hz, generalized and symmetrical.

Filtro alto: 30 Hz.

Filtro bajo: 0.5 Hz.

Barrido: 10 milisegundos. 10 segundos por pantalla.

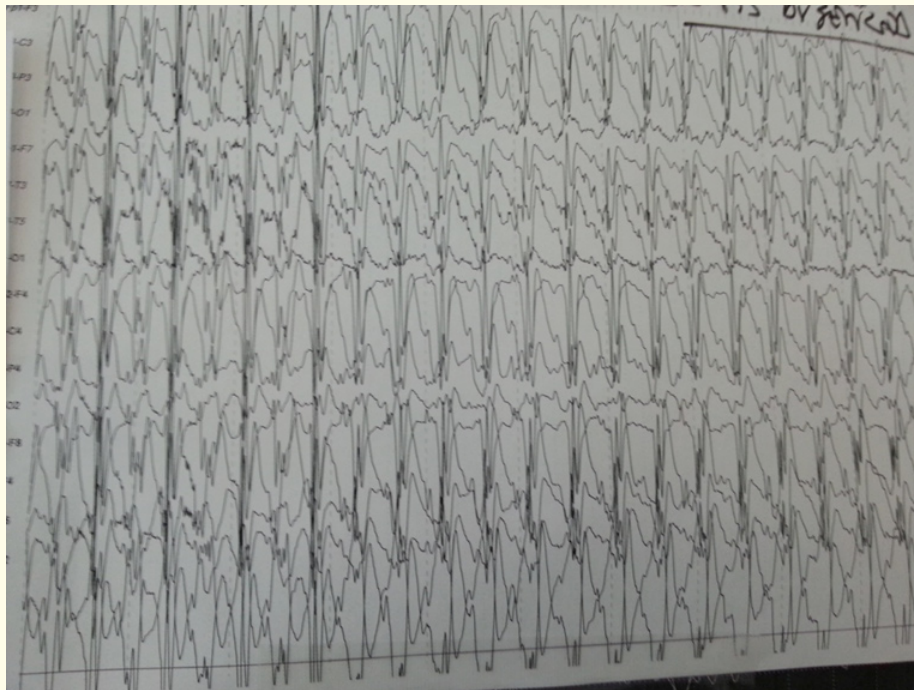
Sensibilidad: 7 microvoltios.

High filter: 30 Hz.

Low filter: 0.5 Hz.

Sweep: 10 milliseconds. 10 seconds per screen.

Sensitivity 7 microvolts.



**CASE 10:** ABSENCES typical. Generalized epilepsy. Point-wave 3 Hz, generalized and symmetrical, symmetric and synchronous activity that is distributed widely stitches formed by complex wave to 3 Hz. Abrupt onset.

Filtro alto: 30 Hz.

Filtro bajo: 0.5 Hz.

Barrido: 10 milisegundos. 10 segundos por pantalla.

Sensibilidad: 7 microvoltios.

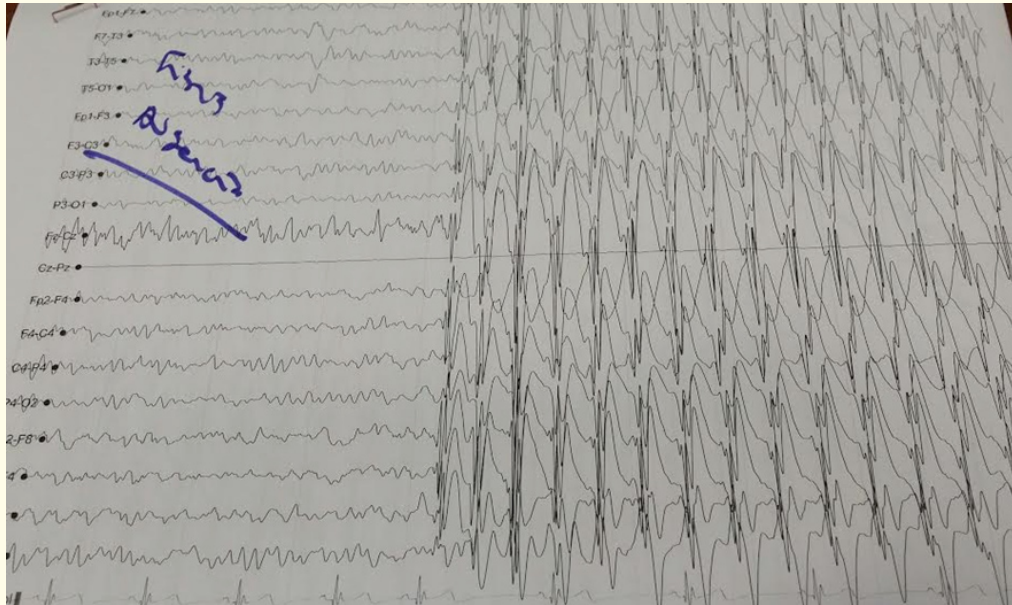
High filter: 30 Hz.

Low filter: 0.5 Hz.

Sweep: 10 milliseconds. 10 seconds per screen.

Sensitivity 7 microvolts.





**CASE 11:** Dementia. emerging stage dementia 7- 8 Hz. As for the slowdown of the layout of background, defragmenting the alpha rhythm. 67 years.

Filtro alto: 30 Hz.

Filtro bajo: 0.5 Hz.

Barrido: 10 milisegundos. 10 segundos por pantalla.

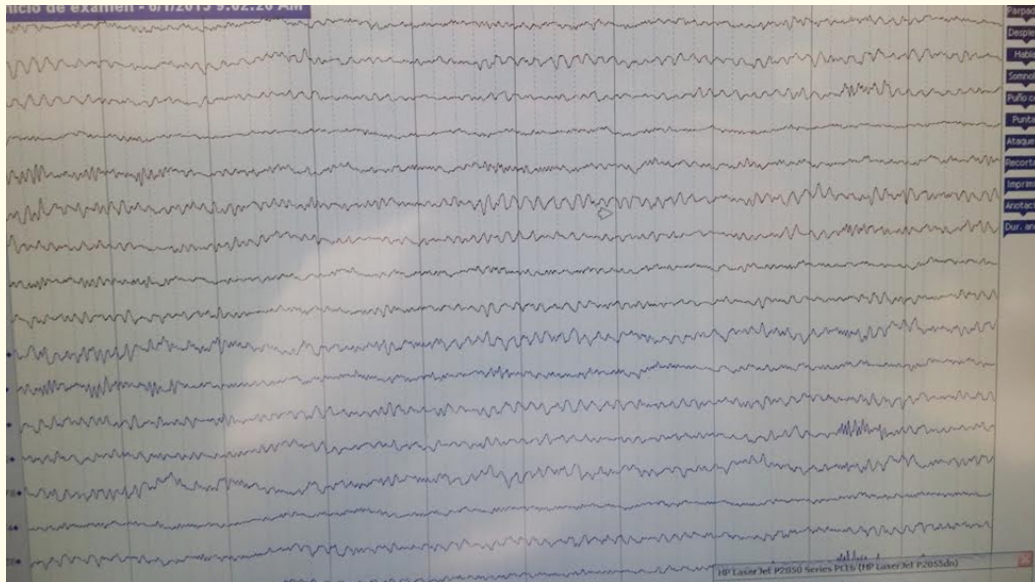
Sensibilidad: 7 microvoltios.

High filter: 30 Hz.

Low filter: 0.5 Hz.

Sweep: 10 milliseconds. 10 seconds per screen.

Sensitivity 7 microvolts.



**CASE 12: DRUGS AND EEG. COCAINE.** Regular user of cocaine. 25 years of consumption. FRONT difunctional minimum 7 Hz, which broadcasts to other cortical areas. 41 years old.

Filtro alto: 30 Hz.

Filtro bajo: 0.5 Hz.

Barrido: 10 milisegundos. 10 segundos por pantalla.

Sensibilidad: 7 microvoltios.

High filter: 30 Hz.

Low filter: 0.5 Hz.

Sweep: 10 milliseconds. 10 seconds per screen.

Sensitivity 7 microvolts.





**CASE 14:** 9 YEARS. Speech delay and learning. Minimal slow cortical dysfunction in the same areas that observed in patients with ADHD is observed.

*Filtro alto: 30 Hz.*

*Filtro bajo: 0.5 Hz.*

*Barrido: 10 milisegundos. 10 segundos por pantalla.*

*Sensibilidad: 7 microvoltios.*

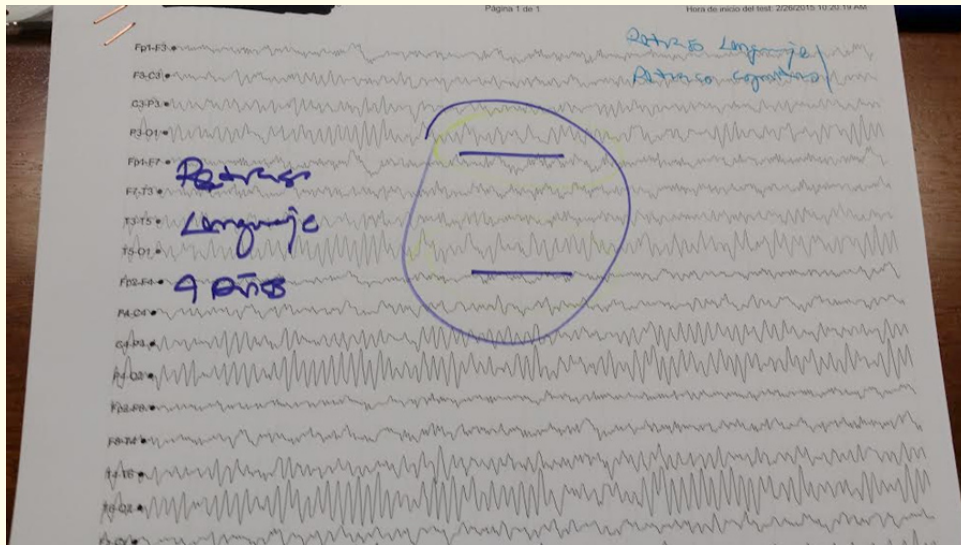
*High filter: 30 Hz.*

*Low filter: 0.5 Hz.*

*Sweep: 10 milliseconds. 10 seconds per screen.*

*Sensitivity 7 microvolts.*





**CASE 15:** Pervasive developmental disorder. PDD and ADHD. 2 YEARS.

Filtro alto: 30 Hz.

Filtro bajo: 0.5 Hz.

Barrido: 10 milisegundos. 10 segundos por pantalla.

Sensibilidad: 7 microvoltios.

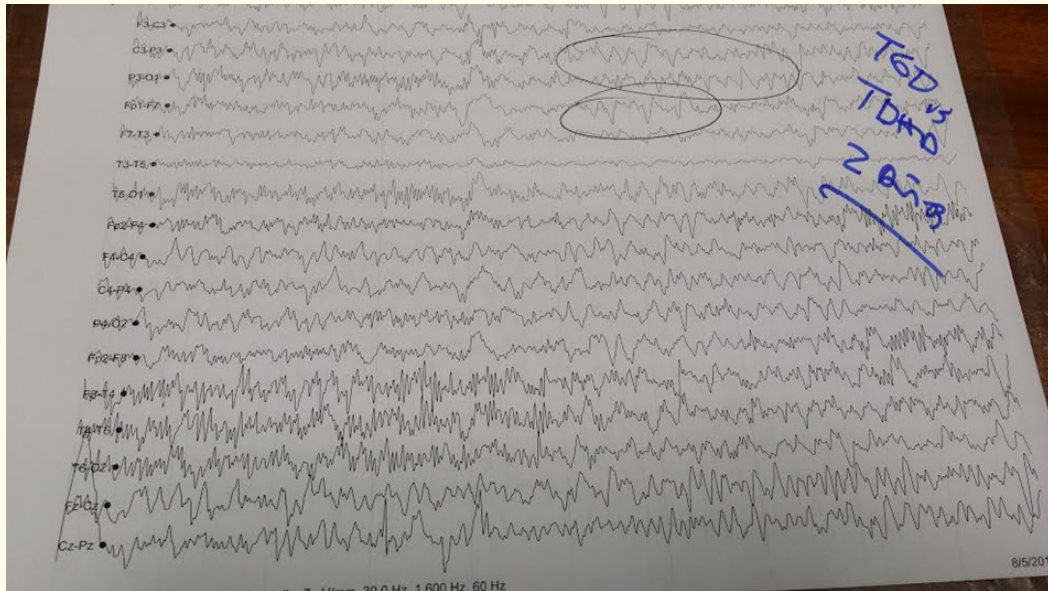
High filter: 30 Hz.

Low filter: 0.5 Hz.

Sweep: 10 milliseconds. 10 seconds per screen.

Sensitivity 7 microvolts.

Sensibilidad: 7 microvoltios.



**CASE 16:** Myoclonic astatic epilepsy. Polyspike - widespread wave in patient 7 years.

Filtro alto: 30 Hz.

Filtro bajo: 0.5 Hz.

Barrido: 10 milisegundos. 10 segundos por pantalla.

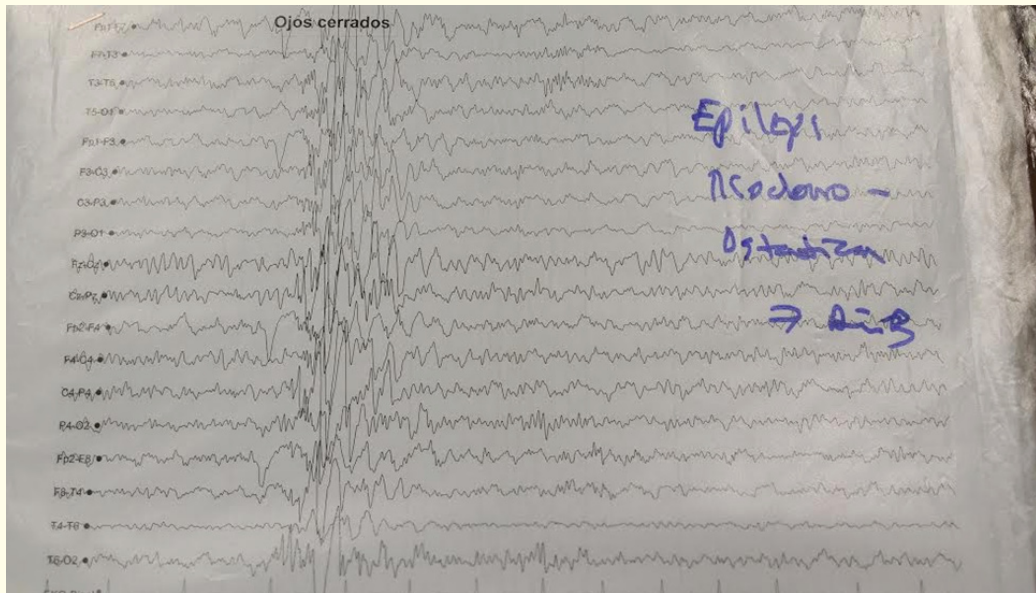
Sensibilidad: 7 microvoltios.

High filter: 30 Hz.

Low filter: 0.5 Hz.

Sweep: 10 milliseconds. 10 seconds per screen.

Sensitivity 7 microvolts.



**CASE 17:** EEG in very violent behaviour. FRONT DYSFUNCTION minimal patient hemisphere in 26 years. VIOLENT BEHAVIOR.

Filtro alto: 30 Hz.

Filtro bajo: 0.5 Hz.

Barrido: 10 milisegundos. 10 segundos por pantalla.

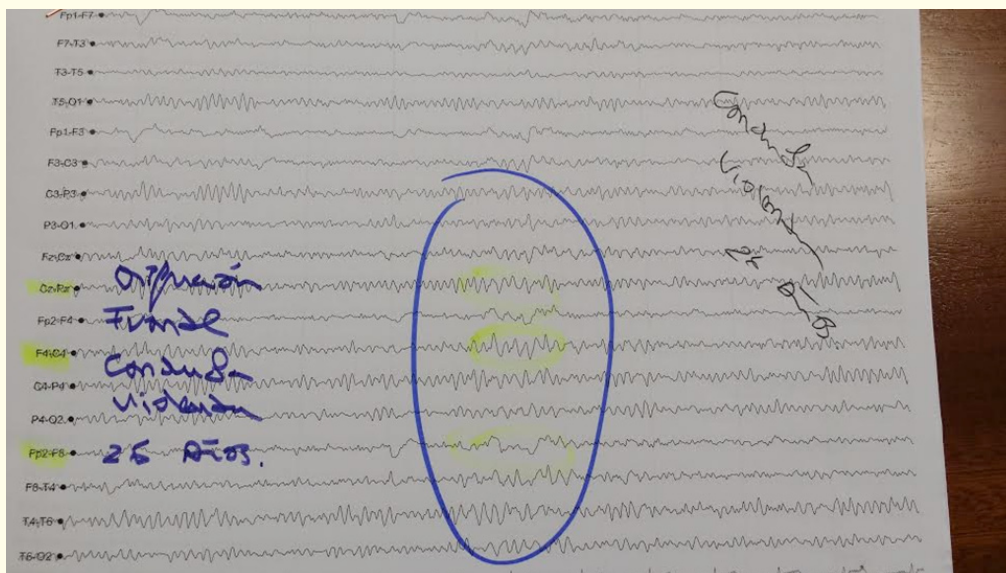
Sensibilidad: 7 microvoltios.

High filter: 30 Hz.

Low filter: 0.5 Hz.

Sweep: 10 milliseconds. 10 seconds per screen.

Sensitivity 7 microvolts.



**CASE 18:** CASE ADHD. 5 YEARS. MINIMUM FRONT DYSFUNCTION. Slow activity that constitutes a significant interhemispheric asymmetry at a frequency of 3 Hz. Subalfa normal background rate with age 5 to 7 Hz.

Filtro alto: 30 Hz.

Filtro bajo: 0.5 Hz.

Barrido: 10 milisegundos. 10 segundos por pantalla.

Sensibilidad: 7 microvoltios.

High filter: 30 Hz.

Low filter: 0.5 Hz.

Sweep: 10 milliseconds. 10 seconds per screen.

Sensitivity 7 microvolts.

## Conclusion

It is essential to EEG for specific pathologies where there is nothing clear structurally, we must recover the electroencephalography- EEG as a diagnostic test, innocuous actual objective that speaks in favor of the anatomical and functional integrity of the cerebral cortex. MRI and EEG has an essential role in the diagnosis of certain diseases, EEG AND LIGHT SHOWS IN CASES WHERE EVEN RNM nothing to say today.

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