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Epileptic-Like Disorder as an Underlying Condition in ASD, OCD, and ADHD

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Abstract

Background: In our clinical practice, we have observed epileptic-like disorders that often accompany autistic spectrum (ASD), obsessive-compulsive (OCD), and attention deficit hyperactive disorders (ADHD). From these observations, we hypothesized that epileptic-like disorders aren't simply a frequent comorbid syndrome but rather an underlying etiological factor of the three disorders. **Purpose**: Care for these patients is problematic, and their disease seriously affects their quality of life. Finding an appropriate pharmacological treatment is central to improving their condition. **Methods**: We present the clinical vignettes of two patients with ASD, OCD, and ADHD at various intellectual levels. These patients are very different in many aspects of their life story and pathology. They differ in the severity of the three disorders, their location on the ASD spectrum, and their intellectual level. **Results**: Our observations gave us grounds to suspect a common epileptic-like root. The tuning of antiepileptic treatment in the first patient and introducing Pregabalin for the second reduced their symptomatology and substantially increased their quality of life. **Conclusions:** In our experience with ASD, OCD, and ADHD comorbidity with different clinical profiles and intellectual levels, adjusting or introducing the antiepileptic treatment showed positive effects. This fact seems consistent with our hypothesis. We would welcome more studies on this subject that could lead to a quantitative assessment of our idea.

Keywords

Autistic Spectrum Disorder (ASD), Epileptic-Like Disorders, Obsessive-Compulsive Disorder (OCD), Attention Deficit Hyperactive Disorder (ADHD), Psychoanalysis, Jung, Freud, Baudouin

1. Introduction

Autism spectrum disorders (ASD) present a highly varying severity in several areas of development, including reciprocal social interactions and communication skills and the presence of maladaptive behaviors, restricted interests, and stereotyped activities. The quantitative impairments that define this condition present significant variations in the level of development or mental age of the person (American Psychiatric Association, 2000). ASD is a lifelong disabling condition and, except for Rett disorder, has no exact etiological and neurobiological definition. Intellectual disability (ID) is severe in Rett and Kanner syndromes and varies in severity. It may not be present in Asperger's syndrome, where there may be significant giftedness.

The population with ASD, therefore, covers a vast spectrum from a significant presence of ID to sometimes extreme giftedness (more than 150 IQ).

Considering the population with Rett and Kanner syndromes, epileptic seizures and classic epilepsy have often been reported, with an incidence of episodes of aggressive behavior disorders (aggression towards others or oneself) related to epilepsy, which we must consider because they represent a significant social and clinical problem (Marsh & Krauss, 2000; Schachter, 2001). We distinguish three different types of aggressive behavior based on their relationship to the epileptic event: 1) interictal aggression, 2) ictal aggression, or 3) postictal aggression (Božić & Mišić Pavkov, 2013; Delgado-Escueta et al., 1981, 2002; Gyimesi, 2022). Anatomical and electrophysiological data suggest that temporal and frontal dysfunction occurs in ictal/postictal bite behavior and that all of these assaults occur in a context of high emotional arousal, anger or fear (Abd Wahab et al., 2019; Alberto Tassinari et al., 2005; Grant et al., 2013; Ito et al., 2007; Marsh & Krauss, 2000; Stanzani Maserati et al., 2007). Studies have reported self-injurious behavior (SIB), including bruising of the limbs and bites of the tongue and lips (Edelson et al., 2016; Oliva et al., 2008; Peguero et al., 1995; Rathi et al., 2020) associated with a psychogenic crisis. No studies have reported hand and arm bites in patients with ASD and severe ID associated with epilepsy or psychogenic epilepsy.

In the population with ASD and significant Intellectual Disability (ID), we notice stereotyped behaviors, which we could define as an extreme obsessive-compulsive disorder (OCD), significant hyperactivity that we could include in hyperactive attention deficit disorder (ADHD), where the limitations due to the intellectual disability "drown" the attention deficit symptoms. In this population, aggressive behavioral disorders and withdrawal relegate the repetitive behaviors and hyperactivity disorders in the background, still present but relatively more manageable in the daily routine, in family or institutions.

As ID is less important, and this often goes hand in hand with less "classic" and, therefore, less clinically visible seizure disorders, OCD and ADHD disorders come to the fore because they are very problematic in socialization and hinder the normal development of the person who is the carrier.

As we have said in recent publications (Carminati et al., 2023), neurodevelopmental disorders, such as attention-deficit/hyperactivity disorder (ADHD), autism spectrum disorder (ASD), and obsessive-compulsive disorder (OCD), are prevalent in the population and frequently coexist. Prevalence rates vary between studies, but OCD is estimated to affect approximately 2% - 3% of the general population (Gasnier et al., 2014).

As for ADHD, it is estimated at 2.2% (Sasson et al., 1997) in children and adolescents and 2.8% in adults (18 - 44 years, range 0.6% - 7.3%) (Faraone et al., 2021; Fayyad et al., 2017). For Asperger's syndrome, prevalence rates range from 0.03 to 4.84 per 1000 people and, in 2014, 1.68% for 8-year-old (Baio et al., 2018; *Erratum*, 2018; Fombonne & Tidmarsh, 2003). It is also important to note that significant psychiatric comorbidity has been observed in people with Asperger's syndrome (Mazzone et al., 2012).

2. Jeanine: Clinical Vignette of an ASD Patient with Significant ID and Epilepsy

We discuss the educational support experience of Jeanine (not her real name), a 40-year-old woman who has been living in an institution since adolescence and carrying ASD.

The clinical observation process is reduced—and ultimately lost—in the daily educational routine. The tell-tale signs of abnormality are buried in the common-sense discourse, as they are discreet. What we see—or think we see—in this fog tends to be subliminal to our minds and senses. Occasionally, there is an emergence of what is ordinarily invisible due to the daily distractions and hubbub. A "strangeness" emerges, the beginnings of an "investigation," still without guaranteeing that these potentially significant traces rise to the surface.

The following is a retrospective summary of clinical signs observed from Jeanine over two years. These observed signs are manifestations of epileptic symptoms that, at the time, we could not objectify. An EEG in an emergency ward following a tonic-clonic seizure ended these hesitations and established the diagnosis: focal type epileptic focus (partial epilepsy). The crisis that brought the patient to the hospital emergency room is a focal crisis that became widespread. During the previous year, a filmed sequence of what we called a "quirk" was presented in a medical tripartite. The medical staff reassured us at the time because Jeanine was already treated for epilepsy with Valproate.

Just after adolescence, Jeanine begins her institutional journey in a care center of humanist inspiration in the neighboring region. Since childhood, she had been diagnosed with a developmental disorder and followed a specialized educational trajectory that resulted in sheltered work in artisanal workshops.

While eager to integrate well into the group's life, Jeanine exhibited violent, impulsive behaviors in response to frustrations she did not tolerate.

Since her integration into the Residence where she currently lives, Jeanine has benefited from the introduction of a TEACCH structured program (Carminati et al., 2017; Gerber et al., 2008).

This program was subsequently reinforced by introducing a strict daily schedule due to her challenging behaviors. An elaborately structured communication board supported the planning of her daily routine. Another part of the board regulated the monthly plan to introduce clarity and predictability. To lessen Jeanine's relational complexity with those around her, she followed a yellow badge held by an educator during the time of day. Her wardrobe was locked. Every act of her daily life was programmed and accompanied. There were some progressive rituals in the evening, with a social setting concluding her day. A control ritual evaluated behavioral criteria three times a day. For each satisfied criterion, Jeanine received a reinforcer pictogram. In the early evening, she got some tokens as a reward if the day had passed in compliance with these criteria.

About five years ago, renovation works made her move to another apartment in the institution, on the top floor under the roof, in the heart of the urban center. This place did not meet the necessary standards: nothing was locked, not even the front door. The educational team also lost cohesion for two reasons: its reference points were undermined, and half of the staff was being renewed. In this context, bordering on chaos, an "almost stealthy miracle" (Gaillard, 2008) of this patient appeared before our eyes. She took new initiatives that surprised us.

Significant indicators showed a surprisingly positive condition: 1) a decrease in drug reserves (from more than a hundred anxiolytic reserves per year to less than 10); 2) a gradual return to her summer camps; 3) she could go on morning outing alone; 4) greater autonomy and initiative in her daily life.

The decrease in outbursts of anger allowed a much finer observation of other behaviors that we used to call "quirks."

Jeanine used to turn her head to the right and fix her gaze on the refrigerator behind her; Her body was rigid. Then she would stare at the ceiling, head back, and raise, following an imaginary fixed line with her eyes. She then walked towards her room, stopping a few centimeters before the toilet door for 15 to 20 seconds. She would then return to us, walk to her room, and come out again.

When Jeanine was standing or sitting, she started to mumble inaudible sounds, onomatopoeia. She held the head slightly backward, then forward, eyes slightly closed, the right arm flapping in a "dysrhythmic" manner. Eventually, she put her right hand over her face, supporting the moving arm with her opposite hand.

When walking outside, suddenly, instead of staying on her trajectory, Jeanine deflected, bending her as if momentarily "absent," on the verge of falling.

There were also behaviors related to particular situations. When in a medical analysis laboratory for a blood test, Jeanine pressed her head on the shoulder of her accompanying educator, which was surprising because Jeanine did not usually seek contact. We found out that it was a brief absence.

An educator told us that during the sports walk, Jeanine, at some point, went off course, walking diagonally on the road and not responding to the educator for a little less than a minute. This situation was dangerous because she was heading down the street unconscious. The same educator related a similar expe-

rience during the winter, again during a sports walk. As she described it, Jeanine lost contact while walking along a small river. She fell or slipped into this stream and had great difficulty coming to her senses. Eventually, Jeanine came back to herself while still confused. The situation was dangerous, as she could have drowned. Another educator reported that he was in front of Jeanine on a terrace, having a drink together. In a moment, her eyes revulsed backward. A short absence accompanies this observation of the revulsed eyes.

Some of the manifestations observed could occur several times during the day when Jeanine was stressed. These quirks lasted no more than 15 to 20 seconds. This loss of contact appeared as quickly as it disappeared, and Jeanine often seemed disoriented. We often observed a loss of memory of her recent activity.

During a summer camp, Jeanine had fallen at night without the educators realizing it immediately. She had a broken tooth, nose and face wounds, and bruises. She was taken to the emergency room, where the examination raised the doubt of an epileptic problem, confirmed by a subsequent major tonic-clonic epileptic seizure event of type "grand mal." At that moment, Jeanine was in a kind of euphoria, an excessive joy that we often see at the beginning of a period of accompaniment and care.

This major epileptic seizure, typical in its manifestation, explained and clarified our description of the various "quirks" that we had gradually learned to detect.

At the emergency ward, an EEG and other specific examinations confirmed the presence of an epileptic focus.

The neurologist added Lamotrigine to her treatment with Valproate, which positively affected her "quirks" in intensity and frequency.

The seizure foci in the frontotemporal lobe produce behavioral disorders that are difficult to classify as classic epileptic phenomena, as they have a somewhat psychotic or obsessive-compulsive expression (Kaplan, 2010; Leveau, 2003; Monaco et al., 2005). In the case of Jeanine, doctors suspected this kind of localization. However, given the anxiety they generate, the difficulty of performing ECG or Pet-Scan evaluations advised a treatment "ex adiuvantibus," and indeed, the addition of Lamotrigine had been beneficial.

We must note that the subject of epilepsy, until this major tonic-clonic seizure event, was given little consideration by the educational team.

Overall, we can hypothesize that Jeanine's challenging behaviors (SIB)[1] linked to epileptic disorders (Casanova & Casanova, 2016) have existed for a long time.

3. Gilbert: Clinical Vignette of a Patient with Asperger's Syndrome, Giftedness, OCD, and ADHD

Gilbert (not his real name) is a man in his fifties, a former lawyer in a large trust company, currently on Disability Insurance.

After a promising career start that saw him quickly "climbing the ladder," he

[1]Ibid.

had a traumatic experience following an audit. Even if this audit did not target him directly, he plunged into a severe depression from which he could emerge only with a significant reduction of his activities and chronic fatigue.

Gilbert arrived in consultation after a tortuous path of long-term psychiatric therapies with several colleagues. He was not a "nomadic patient"; he had had at least ten years of care with the previous psychiatrist and told me about at least two long therapies before that. Indeed, he benefited from psychological help since childhood, when his family worried because of massive anxiety and withdrawal behaviors with friends at school. Intellectually brilliant, he was the best student in high school and passed the first admission exam for the engineering degree. Unfortunately, he failed the second exam, easier than the first, because he could not follow the courses in crowded amphitheaters, which he still describes as terrifying places.

Therefore, he decided to change direction and dedicate himself to a discipline that, allowing him to study almost alone, would cause him fewer problems. And in fact, the choice seemed to be successful, as he graduated without problems and began his career. He says he was also very passionate about sports, getting up at before-down hours to run, stay fit, and "let off steam."

This patient, who has excellent insight, realized that inner tension, despite his sports activity, was increasing and, with it, anxiety. He drifted into risky behavior by frequenting particularly turbulent nightclubs. He did not like alcohol and drugs, but cigarette consumption became staggering.

He consulted a psychologist who referred him to a psychiatrist, and the two gave him long-term support care. Helped by an antidepressant treatment, he could surmount his smoking addiction, struggling to cope with pressure at work that he felt increasingly oppressive.

The world of finance is not a haven of solitary peace, as he had imagined, but an arena where the aptitude for interpersonal relations or even aggressive confrontation is even more important than technical knowledge. Gifted as it was with excellent knowledge but penalized by a harmful perfectionism and a certain naivety in his human interactions, he was utterly devastated by an audit that lasted a few months, of which he was not necessarily the target but which he experienced as a cataclysm.

His physician put him on sick leave because Gilbert began experiencing a feeling of emptiness he refers to as "sidereal" and had confessed to suicidal desires. His psychiatrist confirmed his inability to resume a lucrative activity, at least in the medium term. Gilbert will no longer be able to return to his company.

A long period of emotional misery followed, with enormous difficulties in getting out of bed, showering, and feeding himself. The antidepressant treatment was increased, accompanied by heavy anxiolysis. An attempt to return to work supported by the unemployment services failed, and, one thing leading to another, Gilbert grudgingly accepted Disability Insurance, realizing that getting back into the world of work had become impossible.

The reasons that brought him to our practice were not immediately evident. Gilbert, who was increasingly interested in psychoanalysis, wanted to be trained without necessarily having ambitions to become a therapist. He wanted to understand better what was happening in his mind.

He had the unpleasant sensation of going around in circles. After a few sessions, he confessed to constantly feeling unable to escape the fantasies about his family of origin, whose influence he continued to perceive as harmful. He realized that his parents had done what they could. Still, he felt and still feels to be the unloved, the bizarre, and the sick person embarrassing everyone with his fears and offbeat behaviors, and who still disturbs those around him with his self-righteous and too direct discourse.

After a few months of therapy, the need to evaluate the presence of Asperger's syndrome (Baron-Cohen et al., 2005) became evident. The diagnosis was unambiguous. We were not in a "gray area." We detected a typical Asperger's profile, which also explained the incredible capacity for social mimicry with the typical exhaustion accompanying the enormous over-adaptation effort.

As in the case of proven Asperger's syndrome, we evaluated the presence of ADHD (CADDRA, 2017) with the DIVA-5 structured interview (Kooij et al., 2019) and of OCD (Mollard et al., 1970, 1989).

The presence of OCD was clear, and the ADHD assessment confirmed the disorder.

The psychotherapeutic work was readapted according to the diagnostic findings to help him accept his situation, i.e., a developmental disorder, rather than seeking at all costs to overcome an alleged neurosis.

Gilbert began to take an interest in his former field of work but only to manage his own economic and legal situation in the face of some problems from a heritage. He now gives himself the right to act at his own pace, with breaks that he likes to fill with walks and rest. He begins to consider his family's inconsistencies more calmly and to take a beneficial distance from the ten-year conflicts between cousins and former tenants of a house he owns. He rediscovers the pleasure of reading economic texts, buys himself, and reads with serenity some historical novels.

The psychotropic treatment remains unchanged—with relative success—Venlafaxine 75 mg/day. Adding a very low dose of Pregabalin, 25 mg/day, avoids anxiolysis and reduces anxiety markedly. This patient, accustomed to having quick thoughts of which he was proud because, based on his experience, they were proof of a sharp intellect, had to adapt to a slower but, to his great surprise, significantly more efficient mode of functioning, with less obsessiveness, less procrastination, and less need for hyper-focused attention. Now, with a "calmer brain," he no longer feels the constant "bike in the head" that used to cause him a sense of emptiness bordering on panic.

This case confirmed our observation, also found in other similar situations, that disorder combining ADHD, OCD, and Asperger's Syndrome with an epi-

leptic-like syndrome, especially if present since childhood, produce an adaptation of the production of thought that leads to considering pathological functioning as normal.

Therefore, it is necessary to prepare patients for a less anxiety-provoking and energy-consuming way of life, so different from their previous one to seem alien to them at first sight.

4. Conclusion

Based on our clinical experience with patients with ADHD, OCD, and Asperger's syndrome, we have noticed a high comorbidity, also mentioned in the literature. Rather than looking at these diagnoses separately, we considered them as degrees on a continuum, supposing a single underlying etiological factor at the root of these diseases. We hypothesize an epileptic-like neurodevelopmental disorder, causing an obsessive mental loop common to these three syndromes. Secondary etiological factors and individual differences would then influence their distinct manifestation. Our observations indicate that stress can aggravate these disorders, while treatment with low-dose antiepileptic drugs improves the patient's condition. We recognize the limitations of this hypothesis based on our limited clinical experience and pharmacological evidence but wish to encourage a debate on these severe conditions with significant personal suffering and social impact. We hope further epidemiological and neurological research will allow to confirm or refute our assumptions.

It is clinically and pharmacologically important to consider seizure or epileptic-like disorders as a constant component of ASD. Indeed, some psychogenic epilepsies seem to be little or not at all sensitive to antiepileptic drugs (Anzellotti et al., 2020; de Toffol, 2010), and the differential diagnosis between atypical epilepsy and psychogenic epilepsy is challenging, but the treatments such as Pregabalin or Gabapentin are also effective for anxiolysis, central in the entire ASD spectrum. We believe they could have a relevant place in the ASD spectrum therapeutic strategy.

5. Disclaimer

This work is in adherence to the Helsinki Declaration for research with human subjects.

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The authors have no conflicts of interest to declare. All co-authors have seen and agree with the contents of the manuscript, and there is no financial interest to report.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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