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Neurovirtual participates in a 'marathon' of events in various **countries and stands out in Latin America**

There were six congresses in five countries in just two months! The marathon began in early September when the company, in partnership with the Brazilian League of Epilepsy (LBE) and the Brazilian Society of Clinical Neurophysiology (SBNC), promoted the course "Electroencephalogram: From routine to continuous monitoring" in Sao Paulo. More than 100 specialists were interested in improving the diagnostic knowledge and EEG tests, making use of the latest technology equipment of Neurovirtual, especially the BWIII EEG plus ICU, for EEG monitoring.

Course "Electroencephalogram: From routine to continuous monitoring", in Sao Paulo.



Soon after, in September, it was time to participate in the VI Chilean Congress of Sleep Medicine, in the city of Pucón, carried out by SOCHIMES, the Chilean Society of Sleep Medicine. Neurovirtual and its exclusive Chilean distributor were present at this space dedicated to the development of sleep medicine with a booth to present their products, with professionals to answer questions and provide informative material about the equipment.





At the beginning of October, Neurovirtual was present at two different congresses: one in the Dominican Republic and one in Argentina. The Congress of LACE (Argentine League against Epilepsy) provided relevant studies and lectures as well as several cases for the analysis of the

XXVI Congress of the Brazilian Society of Clinical Neurophysiology, in Goiânia, Brazil.



LACE – Argentine League against Epilepsy, in Buenos Aires.



participants. In the Dominican Republic, there were 270 participants in paradisiacal Punta Cana who could see the lectures, which included neuro-pediatrics, neuropathic pain, brain tumors, neurosurgery, and functional neurosurgery, among others. Neuro-virtual set up a booth at the congresses to present its products, highlighting the BWIII EEG.

XVIII Neurology Congress and XVII Journey of the Ecuadorian League against Epilepsy (LECE), in Ecuador.



Next, the company participated in the XVIII Congress of Neurology in Ecuador, organized by SEN (Ecuadorian Medical Society of Neurology), and the XVII Journey of the Ecuadorian League against Epilepsy (LECE). Among the prominent themes were neuroimmunology, multiple sclerosis, movement disorders, cerebrovascular disease, neuromuscular diseases, and Alzheimer's.

At the end of October, Neurovirtual headed back to Brazil, participating in the XXVI Congress of the Brazilian Society of Clinical Neurophysiology, which took place in Goiânia. The schedule had few thematic axes, such as epilepsy, intra-operative monitoring, movement disorders, autonomic nervous system and rehabilitation. Neurovirtual presented its products, with an emphasis on the BWIII EEG Plus ICU EEG Monitoring.

4th Sleep Disorders Congress, in Puerto Rico.



And so, Neurovirtual, the company in the area of neurology and sleep medicine that is growing the most in Latin America, is increasingly established as a reference for doctors and technicians. In two months the company traveled to several countries, listened to specialists from



different areas of work, understood their needs and presented the main equipment for a humanized diagnosis focused on the well-being of patients.



Failure of antiepileptic drugs in controlling seizures in epilepsy: What do we do next?

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Abstract

Medically intractable epilepsy is a clinical condition of concern that arises when a patient with epilepsy suffers seizures and cannot achieve control of them, despite a trial of two or more antiepileptic drugs (AEDs) suitable for the type of epilepsy that are prescribed at maximum tolerated doses. This diagnosis could be related to cortical dysplasias. We report the case of a 5-year-old girl with previously normal neurological development and no family history of epilepsy who presented with focal-type seizures at age 4. She started treatment by taking different AEDs for seizure control. She continued having frequent seizures that sometimes progressed to generalized seizures and status epilepticus. After a focal cortical resection was performed in the area where interictal spikes were detected, the pathology confirmed a type IIb cortical dysplasia as the cause of the epilepsy. This article discusses cortical dysplasia as a cause of pharmacoresistant epilepsy and its treatment.

Background

Epilepsy is a common neurological disorder worldwide. Seizure freedom is the mainstay therapeutic goal of patients with epilepsy since repetitive seizures are associated with an increased risk of intellectual disabilities, mortality, and other comorbidities.

Case presentation

The patient is a 5-year-old girl from Costa Rica who came to our hospital, a high complexity hospital in Bogotá, Colombia, South America, in January 2011, because of medically intractable epilepsy. The patient's seizures started at age 4. She was previously a healthy girl without any remarkable medical history. Her neurological development was normal. At the time she started having seizures, she was attending kindergarten. There was no family history of epilepsy.

From the beginning, her seizures started with left-sided head and eye deviation. The seizures lasted a few seconds, and she recovered immediately. At that time, she was seen by a neurologist, and she started to take antiepileptic drugs (AEDs). Her brain MRI was normal as well as her physical and neurological exams. Blood tests including amino acids were normal.

She continued having frequent seizures; later, they occurred almost daily. The seizure semiology remained as before with leftsided head and eye deviation, but followed with left arm extension and splutter sound. Sometimes, seizures progressed to a bilateral asymmetric tonic seizure, lasting for five to 10 seconds. According to parents' report, a video-EEG showed bilateral discharges without ictal localization.

She had had two previous episodes of status epilepticus that needed hospitalization in the intensive care unit (ICU) for several days. By the time she was seen by us, she was having several seizures each day. She had three seizures during a visit in the doctor's office at our facilities, and later, she was admitted in the pediatric ICU with status epilepticus.

Because of the patient's seizures, she was not enrolled in school, and home schooling was difficult because of the side effects of AEDs

and seizure frequency. The longest seizure-free period experienced by the patient was 16 days.

Previous AEDs included the following: carbamazepine, phenobarbital, lamotrigine (which provoked rash), clonazepam, oxcarbazepine, and topiramate. At the time we saw her, she was on levetiracetam, gabapentin, clobazam, and primidone. Her physical exam revealed ataxia because of the side effects of AEDs. No cognitive deficit was reported by her parents.

While she was in the pediatric ICU, a midazolam drip was started, as well as lacosamide 30 mg/kg. At the same time, continuous video-EEG was performed. It showed interictal right frontal spikes and ictal right frontal onset-fast activity. Several clinical seizures were recorded with the patient's typical semiology.

Investigations

We performed a brain MRI with special images for cortical dysplasia that was normal. A brain CT PET scan after the patient's status epilepticus was resolved that showed right dorsal frontal hypoperfusion (Fig.1). During the PET scan time acquisition, video-EEG was continued; no seizures were recorded (Fig. 1).

Treatment

The patient's case was presented in the neurology/pediatric neurology–neurosurgery–radiology conference management for epilepsy surgery. One week after the patient's admission, she underwent a focal cortical resection guided by neuronavigation and intraoperative electrocorticography with subdural grid. Focal cortical resection was performed in the area where interictal spikes were detected. One electrographic seizure was recorded from the same

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Fig. 1. Correlation of the images from the patient's neurologic exam. A. Normal brain MRI. B. Brain CT PET scan showing right frontal hypoperfusion. C. Video-EEG ictal right frontal fast activity at seizure onset. D. Haematoxylin and eosin section from the lesion showing a balloon cell, confirming FCD type IIB. area. The pathology showed a type IIb cortical dysplasia in the right frontal superior cortex.

Outcome and follow-up

After surgery, no seizures were reported and some AEDs were discontinued: When she was discharged she was on lacosamide and primidone (the patient's parents reported some degree of seizure control with this medication). Six months after the surgery, the patient was seizure-free. She was only on lacosamide 20 mg/ kg. She went back to school, and is having a normal neurological development.

Discussion

Epilepsy is a common neurological disorder occurring during childhood with an approximate incidence of 45 per 1000 cases per year [1]. It is characterized by recurrent, unprovoked seizures. The first-line therapy for epilepsy consists of antiepileptic drugs (AEDs). However, other therapeutic options include surgery, vagus nerve stimulation, and ketogenic diet when AEDs fail to control seizures. Seizures in approximately 20% of the pediatric population do not respond to the use of AEDs, and these patients are considered to have medical intractable epilepsy [1].

Pharmacoresistant epilepsy is defined as failure of adequate trials of two or three tolerated AEDs which were adequately chosen and prescribed at maximum tolerated doses to achieve seizure freedom [2]. Patients who are not seizure-free are at increased risk of sudden unexpected death in epilepsy (SUDEP), intellectual disabilities [3], poor developmental outcome, and other comorbidities such as depression. Moreover, it is associated with poor quality of life because of the side effects of medications, associated comorbidities, and failure to achieve or loss of independence [4].

Focal cortical dysplasia (FCD) is defined as a localized region of malformed cerebral cortex [5]. It is commonly associated with refractory epilepsy, and seizure semiology depends on the cerebral region that is involved. Our patient's pathology was reported as a FCD type IIb according to the FCD classification consensus of the ILAE [6]. The pathology showed the presence of abnormal neurons with deposition of Nissl substance in their cytoplasm (balloon cells) and alteration in the cortical layers except the I-cortex layer. Focal cortical dysplasia type II is an important cause of refractory epilepsy and is usually encountered in extratemporal cortical regions. Our patient's cortical dysplasia was in the frontal lobe, a region that is commonly involved. Seizures usually have onset in infancy, and there is a lack of understanding of their cause and why they are medically intractable [5]. The clinical, radiologic, and electrophysiologic studies in our patient showed a correlation of frontal cortical epilepsy foci with fast activity in the frontal leads in the EEG and hypoperfusion frontal foci on the PET.

While we performed a brain MRI with special images for cortical dysplasia, it did not show any structural abnormality in the frontal cortex. However, studies usually reported the presence of structural abnormalities in the brain MRI in patients with FCD type II, such as blurring of the cortical white-matter junction, focally increased signal in T2-weighted imaging, and cortical thinning [5] — findings that were not seen in our case.

The presented clinical case is the typical history of a patient with refractory epilepsy. This is a diagnosis that has to be considered when a patient is not seizure-free despite different trials of AEDs [3]. When we saw this patient, she was on more than three AEDs, and despite being on those medications, she went into status epilepticus. We considered other therapeutic approaches to control seizures since there was a failure of medical treatment. After discussing the case in conjunction with neurosurgery and other specialties, the patient underwent surgery for a focal cortical resection. Since it was a partial-type seizure and there was a focus of hypoperfusion on the PET scan that was correlated with continuous spikes in the same area during electrocorticography, a cortical resection appeared to offer the best chance to control seizures in this patient.

Alternatively, other therapeutic options that may be considered for pharmacoresistant epilepsy include vagus nerve stimulation and the ketogenic diet [3].

There are different case reports and cohorts of patients with pharmacoresistant epilepsy in the literature [7]. They identify risk factors to recognize patients who are more likely to develop medically intractable epilepsy. Predictors include abnormal exam results, abnormal imaging, neonatal seizures, early age at seizure onset, and failure of the first AED to improve seizures or failure of the patient to respond to AEDs during the first year of treatment [1].

Learning points

Epilepsy is a common neurological condition in childhood that is mainly treated with antiepileptic drugs (AEDs). Other therapeutic options include surgery, vagus nerve stimulation, and ketogenic diet when AEDs fail to achieve seizure freedom.

•Medically intractable epilepsy is considered when there is failure of trials of two or more AEDs which were adequately prescribed to control seizures.

•Patients who are not seizure-free are at increased risk of complications such as intellectual disabilities, poor developmental outcome, and psychiatric diseases.

•Focal cortical dysplasia type II is associated with medical intractable epilepsy. Its onset is often in infancy, and clinical manifestations depend on the cerebral cortex that is involved. Patients who fulfill the criteria for medically intractable epilepsy should be referred as soon as feasible to specialized assessment for surgery epilepsy.

•Surgery for epilepsy is currently a therapeutic option for medically intractable epilepsy in certain cases. However, this therapeutic approach needs an interdisciplinary group that assures an adequate assessment of the clinical case in order to offer the best therapeutic option for the patient.

References

[1]Wirrel EC. Predicting pharmacoresistance in pediatric epilepsy. Epilepsia 2013; 54(Suppl. S2):19–22.

[2]Ramos-Lizana J, Rodriguez-Lucenilla MI, Aguilera-López P, Aguirre-Rodríguez J, Cassinello-García E. A study of drug-resistant childhood epilepsy testing the new ILAE criteria. Seizure 2012; 21:266–72.

[3]Melbourne Chambers R, Morrison-Levy N, Chang S, Tapper J, Walker S, Tulloch-Reid M. Cognition, academic achievement, and epilepsy in school-age children: a case control study in a developing country. Epilepsy Behav 2014; 33:39–44.

[4]Pati S, Alexopoulos AV. Pharmacoresistant epilepsy: from pathogenesis to current and emerging therapies. Cleve Clin J Med 2010; 77:457–67.

[5]Sisodiya SM, Fauser S, Cross JH, Thom M. Focal cortical dysplasia type II: biological features and clinical perspectives. Lancet Neurol 2009; 8:830–43.

[6]Blümcke I, Thom M, Aronica E, Armstrong DD, Vinters HV, Palmini A, et al. The clinicopathologic spectrum of focal cortical dysplasias: a consensus classification proposed by an ad hoc task force of the ILAE Diagnostic Methods Commission. Epilepsia 2011; 52:158–74.

[7]Brodie MJ. Road to refractory epilepsy: the Glasgow story. Epilepsia 2013; 54(Suppl. S2):5–8.



32nd International Epilepsy Congress in Barcelona brings together experts from around the world

Between September 2nd and 6th, Barcelona hosted the 32nd International Epilepsy Congress, a traditional event on the subject. The two-year meeting is a partnership between the International Bureau of Epilepsy (IBE) and the International League Against Epilepsy (ILAE) and offers participants a unique opportunity for interaction with leading experts in the field in the field of epilepsy.



Among the various topics addressed were epilepsy in the elderly, genetics, neuropsychology and epilepsy in adults and children. Professionals from different countries carried out case studies and promoted discussions to share with the participants the most relevant studies in the area.

Once again, Neurovirtual participated in the congress and showed its main equipment for the epilepsy diagnosis. A highlight was the BWIII EEG Plus,

which allows the user to perform both EEG and polysomnography from the same hardware and software platform in equipment that can be easily transported from one location to another.



Felipe Lerida, a Neurovirtual clinical specialist who participated in the event, says, "Neurovirtual participates in the main events and discussions around the world and Spain has had international projection in the subjects related to the subject. Participating in this event enables us to be updated with the main studies available and, thus, offer the best alternative for diagnosis."





Neurovirtual participates in the XXVI Congress of the Brazilian Society of Clinical Neurophysiology in Goiânia

ne of the most modern and complete convention centers in Latin America was the venue of the XXVI Congress of the Brazilian Society of Clinical Neurophysiology, held in Goiânia between October 25 and 28. There were debates and workshops that discussed the most modern techniques in neuro-physiology.

The schedule had a few themes, such as epilepsy, intra-operative monitoring, movement disorders, autonomic nervous system, and rehabilitation, among others. In addition to the plenary sessions and the specific lectures, the congress also offered six courses such as "Polysomnography Update," "Intra-operative Monitoring," and "Continuous EEG Monitoring." A total of 450 people participated in the courses offered during the event.

As a participant and sponsor of the event, Neurovirtual presented its products at the congress. A highlight was the BWIII EEG Plus ICU Monitoring, equipment which, besides the diagnostic examination, allows for the monitoring of the patient in the ICU. The device makes online medical evaluation from any workstation, digital analysis and brain mapping, and stores the EEG data on multiple devices.

Sandro Senra, Neurovirtual's product manager, welcomed participants to the company's booth and showed the latest in diagnostic equipment. "It's always a pleasure to receive the experts at our booth and be able to exchange information. Listening to them and understanding the needs of the users of our products is

fundamental to continue to serve with the best technology available in the market," he says.



Mexico holds the XII Biennial Congress of Sleep Medicine



ore than 300 people, including physicians and specialists, gathered at the Grand Hotel in Mexico City from October 26 to 28 to attend the 12th National Biennial Sleep Medicine Congress. The main theme of the event was "The Importance of Sleep Disorders in Public Health," led by Mexico's Health Secretary Dr. José Narro Robles.

There have been several national and inter-national lectures that have brought to the public on what is new and innovative in sleep medicine. In addition to the seminars, there were also workshops where the participants were able to discuss the issues presented with the great experts in the area. An international highlight was the participation of the Medical University of South Carolina in the United States. The event was approved by the Mexican Society of Clinical Neurophysiology A.C. and had curricular value for the participants.

Sleepvirtual participated in the congress and showed the experts the latest in equipment for accurate diagnosis of sleep disorders. By participating in events like this one, it is possible to evaluate all the needs of the specialists and to know the most recent studies of the subject, and in this way to provide an increasingly adequate solution to these needs.



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Neurovirtual participates on average in 20 to 30 congresses and conferences in different countries around the globe. Taking our goal to humanize the diagnostic, we pride ourselves to be part of this community and be able to give our contribution to clinicians and patients.

Below you will find the list of events for 2018, where Neurovirtual will be presenting its solutions to make neurology and sleep diagnostic more human! We hope to see you there!

USA	BRAZIL	COLOMBIA	ARGENTINA
AAN 2018 ANNUAL MEETING ♀ Los Angeles, California 21 - 27 April 2018	Congresso Paulista de Medicina do Sono ← Milenium Centro de Convenções 4 - 5 May 2018	V Congreso Nuevas Tecnologías en Neurología Infantil ♥ Bogotá- Colombia 23 - 24 February 2018	LACE - Congreso da liga Argentina contra la Epilepsia ♥ Buenos Aires 13 - 15 September 2018
ACNS/ICCN 2018 Washington, DC 1 - 6 May 2018	Hospitalar 2018 C Expo Center Norte 22 - 25 May 2018	Actualización de Trastornos de Sueño O Bucaramanga Colombia 1 - 2 March 2018	55º Congreso Argentino de Neurología ♥ Mar del Plata del Plat Hotel Sheraton 30 October - 2
SLEEP 2018 Baltimore, MD 2 - 6 June 2018	37º Congresso da Liga Brasileira de Epilepsia ♥ Hotel Maksoud Plaza, São Paulo 6 - 9 June 2018	Congreso Colombiano de Neurología O Barranquilla- Colombia 15 - 18 March 2018	November2018 MEXICO
AES ANNUAL MEETING New Orleans, LA 30 November – 4 December 2018	17º Congresso da Fundação Otorrinolaringologia ♀ Centro Internacional de Convenções do Brasil, Brasília- DF 16 - 18 August 2018	Simpósio Latino- Americano de EEG e Vídeo EEG ♥ Bogotá- Colombia 22 - 23 June 2018	XXVII Congreso Nacional de la Sociedad Mexicana de Neurologi Pediatrica A.C CHIHUAHUA 22 - 26 May 2018
XXVI Reunión Anual de la Sociedad Española de Sueño 2018 Parcelona	XXVII Congresso Brasileiro de Neurologia São Paulo- SP 11 - 14 October 2018	IV Congreso Internacional de Medicina Física y Rehabilitación ♀ Santa Marta – Colombia 16 - 18 August 2018	LATAM 10th Latin American Congress on Epilepsy
26 - 28 April 2018 MEDICA 2018	47º Congresso Brasileiro de Otorrinolaringologia e Cirurgia Cérvico-Facial ♀ Centro de Convenções de Elorianópolis- SC	Congreso Nacional de Medicina del Sueño ♀ Barranquilla Colombia	(LACE) ♀ San José, Costa Rica 29 September - 2 October 2018

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