N°XX | APR/MAY/JUN 2017 | MIAMI - USA

NEUROVIRTUAL news

Asia
the new frontier

Opinion: The Diagnosis and Treatment of Sleep Disorders in **Brazil** by Dr. Geraldo Rizzo

Neurovirtual News: Could you please introduce yourself and tell us a little about your professional career?

Geraldo Rizzo: I am a Neurologist specializing in Sleep Medicine. I graduated in 1976 at UFRGS and completed my residency in clinical medicine and neurology there as well. Subsequently, I completed a fellowship in neurology at Duke University in North Carolina.

Years later, during a neurology congress in the United States, I had the opportunity to speak with the Dean of Harvard University, who encouraged me to consider other areas of medicine, especially family medicine and sleep medicine. I realized that family medicine was not within my field of study, and as you well know, sleep is one of the functions of the brain, so I considered sleep medicine more closely related to neurology.

With that goal in mind, I started my training in Memphis, Tennessee, with Dr. Helio Leme; since the 1990s we have opened and operated a sleep lab here in Porto Alegre, at Moinhos de Vento Hospital, where I work to this day. It is a small lab that currently has two beds. Our goal is to provide very personalized assistance and a high quality of care to our patients, besides conducting some clinical research. The research branch is also greatly limited by the type of patients that we receive. In short, that was my path from neurology to sleep medicine.

Neurovirtual News: What is the main difficulty that doctors and patients find to treat sleep disorders in Brazil?

Geraldo Rizzo: I would say that the main difficulty for doctors and patients to treat sleep disorders would not be the lack of sleep labs nor the lack of doctors, but an indifference to quality of sleep. People today care about diet, they try to maintain their weight; they worry about physical activity and hire a personal trainer. Everyone has a professional to take care of their physical body, but very few people worry about sleep.

We live in a 24-hour society; In Brazil, more so than in developed countries, our lifestyle leads to very late nights. We rarely have dinner before 10 p.m. Places to go out at night does not start before midnight, and the same can be said about discos and nightclubs. Everything is scheduled to postpone sleep. This cultural disregard of normal sleeping times is the main obstacle to treat or recognize sleep disorders, both for physicians and patients.

Neurovirtual News: How do you evaluate public policies and research in the field of Sleep Medicine in Brazil?

Geraldo Rizzo: Well, in my view, these things are still in their early stages. Sleep research in Brazil is still underdeveloped. Only a few institutions are actively conducting clinical research in the country, and even then the research is much more clinical than exploratory.

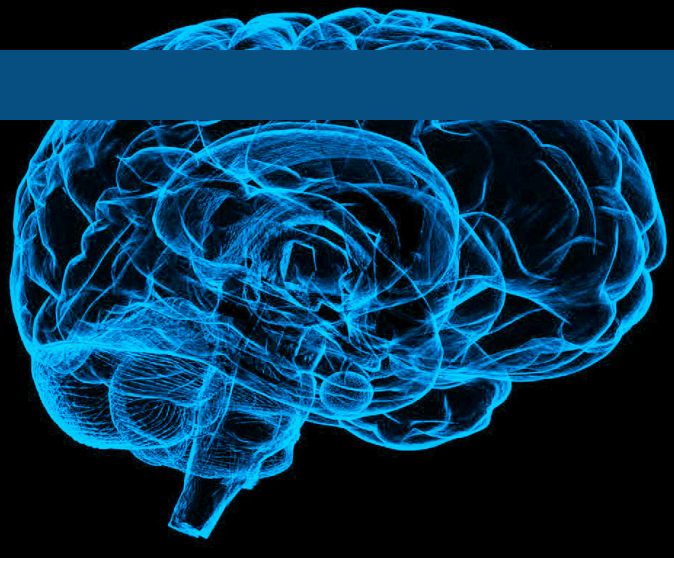
As for public policy, new controls set for obese drivers, or drivers who tend to have sleep apnea brought great hope to doctors specializing in sleep medicine. In cases where a car accident may have been caused by a sleep disorder, the attending physician must conduct a series of tests, including polysomnography. However, it was observed that doctors who work at traffic institutions and places where driver's licenses are renewed rarely ask for the patient´s clinical history of sleep. The possibility of falling asleep while driving is alarming, and affects up to 30% of drivers, but there is still little regulation aimed at properly assessing an individual and preventing an accident caused by a sleep disorder. Therefore, I consider that public policies are also too underdeveloped in relation to sleep disorders.

Neurovirtual News: Do you believe that the majority of the population has access to treatment for sleep disorders?

Geraldo Rizzo: On the one hand, we must consider that a large part of the Brazilian population does not have access to education nor to healthcare in general, and much less to sleep medicine. On the other hand, I would say that larger cities in the country offer the population access to treatment centers for sleep disorders.

So, what is the problem? I believe that only 1 in 10 individuals with sleep problems seek a doctor to treat the problem. There is no outreach that encourages people to seek diagnosis or treatment of sleep disorders. The greatest demand is for the treatment of sleep-disordered breathing, which is one of the disorders that requires no equipment to diagnose. A doctor with good judgment and a detailed clinical history of the patient can diagnose and treat this particular disorder without specialty devices or training.

However, other disorders require diagnostic equipment, and for these, there is a limited demand. I believe that this brings up the question of whether most people have access to a proper sleep study, and I would say that the answer is no. The people do have access to sleep specialists however, as has been argued, they do not seek them.



Lennox-Gastaut syndrome: Secondary bilateral synchrony as an EEG pitfall

WHEN MESIAL FOCAL DYSPLASIA MIMICS LENNOX-GASTAUT SYNDROME: SECONDARY BILATERAL SYNCHRONY AS AN EEG PITFALL

Introduction

• Lennox-Gastaut syndrome (LGS) is a challenging diagnosis in epileptology that could be misunderstood with different etiologies as focal cortical dysplasia (FCD) (Bourgeois et al., 2014).

• If a patient has many seizure types, he is more likely to be incorrectly diagnosed (Camfield & Camfield, 2007).

• Moreover, mesial surface lesions (MSL) could result in false localizations leading to EEG misinterpretation.

• In turn, patients with mesial lesions could have secondary bilateral synchrony (SBS) in their EEG, as demonstrated by Tükel and Jasper since the 1950s (Tükel & Jasper, 1952). It is described as exhibiting 2-4Hz high-amplitude, synchronous, almost symmetric diffuse slow sharp waves (DSSW).

Objectives

To highlight SBS as a pitfall when an EEG presents a case of FCD mimicking LGS.

Case Report

• A nine-year-old boy from Acre with previous LGS diagnosis underwent a pre-surgical evaluation for callosotomy in our epilepsy center.

• His mother had malaria during pregnancy which required medications; however, the pregnancy was completed without complications (term delivery).

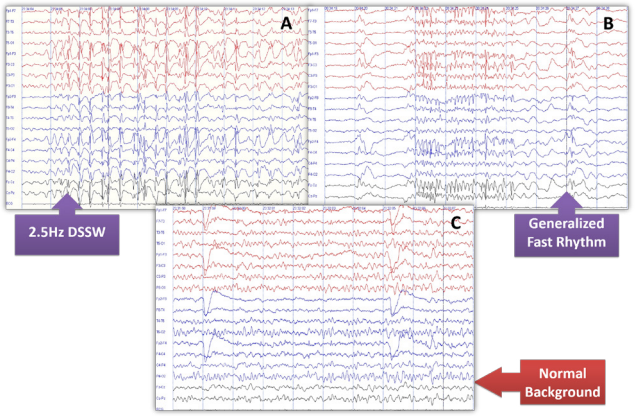
• His neurodevelopment was normal until the age of three, when left focal motor seizures started and quickly evolved to tonic-clonic, tonic and drop seizures plus atypical absences.

• Consequently, moderate neuro-psychomotor impairment occurred as mild left hemiparesis.

• Serial EEGs showed LGS's hallmarks: 2.5Hz DSSW andgeneralized fast rhythm.

• However, awake background activity was normal, an unexpected finding in LGS due to being slow and poorly organized since its onset.

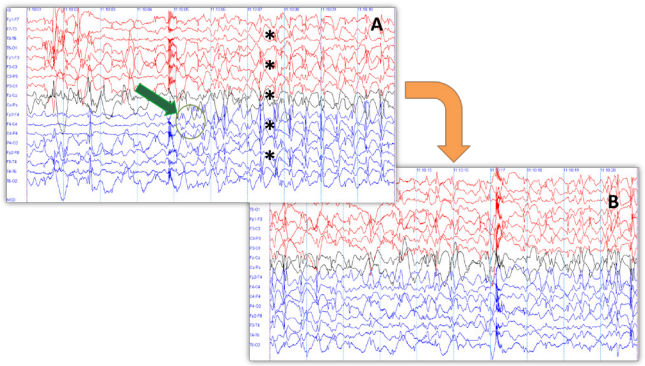
Figure 1: EEG records findings – for and against LGS diagnosis.



Legend: (A, B) In LGS's EEG pattern we expect a triad with 2.5Hz DSSW, generalized fast rhythm and poorly organized background. (C) However, in this reported case a curious finding was his normal background when awake, which did not fit with an LGS diagnosis.

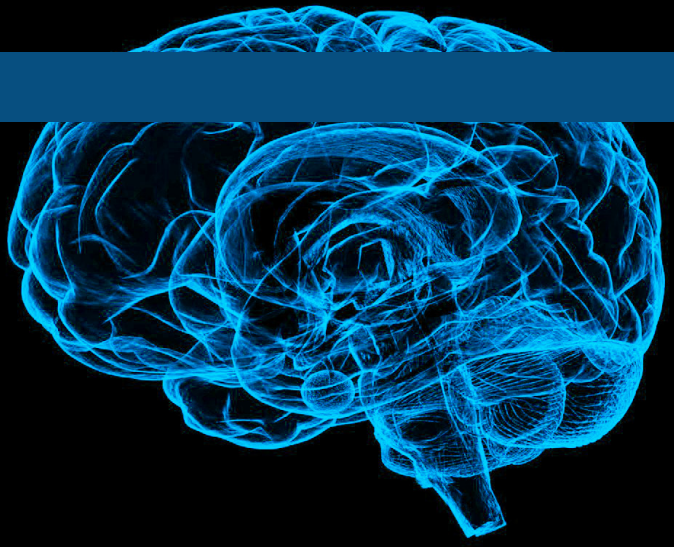
Video-EEG revealed stereotyped and predominantly focal seizures beginning at right fronto-central (RFC) regions that quickly diffuse bilaterally as DSSW. In addition, all mentioned seizures were clinically recorded.

Figure 2: One electrographic seizure recorded during video-EEG with a focal beginning.



Legend: (A, B) Although the EEG shows DSSW morphology (asterisks), the recorded electrographic seizure began at the RFC region (arrow and circle), indicating a likely focal lesion.

Lennox-Gastaut syndrome: Secondary bilateral synchrony as an EEG pitfall



- EEG-guided curvilinear 3T MRI showed FCD at right superior mesial frontal gyrus extending to anterior cingulate gyrus (ACG).

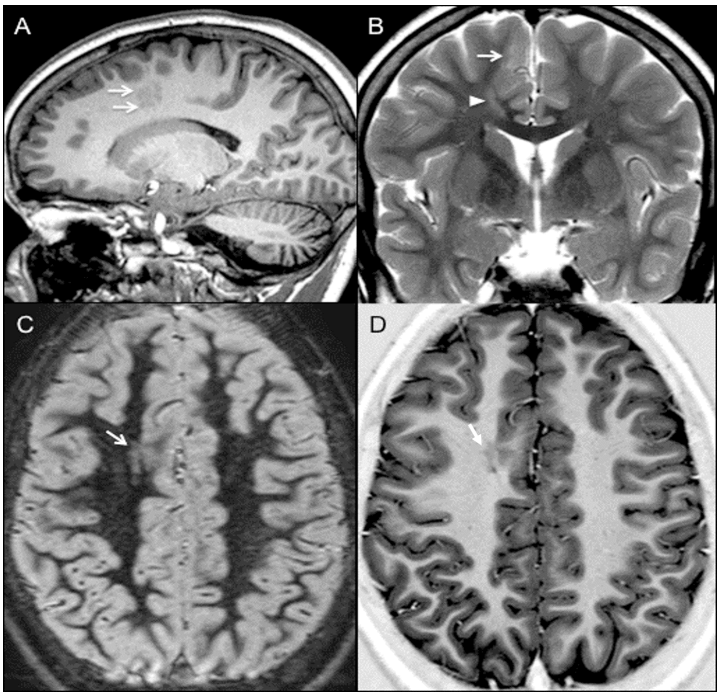


Figure 3: The role of neuroimaging guided by EEG localizing the lesion.

Legend: Once EEG recordings showed a focal beginning at the RFC region, a 3T MRI localized the lesion (arrows) in the right frontal parasagittal region in sagittal T1 (A) and coronal T2 sequences (B), such as axial DIR (C) and IR (D). The transmantle sign is shown as an arrowhead in (B).

[DIR: double inversion-recovery; IR: inversion-recovery]

- The patient underwent a lesionectomy with electro-corticography; pathology confirmed FCD type I.

Discussion

- This case displays a pseudo-LGS with MSL at the frontal/temporal lobes leading to SBS.
- In Gastaut's series (1987), misdiagnosis of LGS in symptomatic partial epilepsies ranged from 37.0%-51.5%, mainly when drop attacks were present.
- Furthermore, fast rhythms and tonic seizures could also mislead differentiation.
- Cortical areas on the mesial surface, around corpus callosum such as ACG, set abnormal electrical activity that rapidly involves both hemispheres generating SBS with similar morphology to generalized seizures – an EEG's pitfall (Lennox & Robinson, 1951).

Conclusions

Better outcomes depend on accurate history associated with detailed EEG analysis, avoiding misinterpretations.

References

1.BOURGEOIS BFD, DOUGLASS LM, SANKAR R. Lennox-Gastaut syndrome: A consensus approach to differential diagnosis. Epilepsia. 2014;55(4):4-9.

2.CAMFIELD P, CAMFIELD C. Long-term prognosis for symptomatic (secondarily) generalized epilepsies: A population-based study. Epilepsia. 2007;48:1128-1132.

3.TÜKEL K, JASPER H. The electroencephalogram in parasagittal lesions. EEG Clin Neurophysiol. 1952;4:481-494.

4. GASTAUT H, ZIFKIN B, MAGGAUDA A, MARIANIL E. Symptomatic partial epilepsies with secondary bilateral synchrony: Differentiation from symptomatic generalized epilepsies of the Lennox-Gastaut type. In: WIESER HG, ELGER CE, eds. Presurgical Evaluation of Epileptics. Springer-Verlag, Berlin Heidelberg, 1987.

5.LENNOX MA, ROBINSON F. Cingulate-cerebellar mechanisms in the physiological pathogenesis of epilepsy. EEG Clin Neurophysiol. 1981;3:197-205.

Authors

Figueiredo NSV (1); De Marchi LR (1); Zetehaku AC (1); Gomes ACD (1); Girotto PN (1); Guilhoto LMFF (1); Guaranha MSB (1); Carrete Jr. H (1); Centeno RS (1); Yacubian EMT (1).

Second Diploma Course in Sleep Medicine at the Hospital Universitario Austral in **Argentina**

Neurovirtual, always committed with passing on knowledge in sleep medicine, received an invitation from the Hospital Universitario Austral in Argentina to participate in the Second Diploma Course in Sleep Medicine through a practice workshop conducted by Dr. Daniel Pérez Chada, Dr. Stella Valliensi, and Dr. Arturo Garay.

During the event held on April 22nd the recommendations of the AASM (American Association of Sleep Medicine) in a diagnostic polysomnography protocol were presented. Physicians who are specialized in different areas, and who arrived in Buenos Aires from different cities in Argentina, had the chance to interact with the latest diagnostic equipment, Sleepvirtual BWIII PSG; to connect electrodes and sensors; and to experience the full methodology to perform a diagnosis of sleep disorders with a real patient. All these professionals were full of expectations.

This is how Neurovirtual conceives work in the development of medicine. Events like this one not only allow the team to interact closely with physicians, but also to show them our technology, its reliability in the results, and to continue exploring new alternatives in diagnosis since our mission is to universalize and humanize diagnostics.

Asia: the new frontier

For years, Neurovirtual has been working with a few talented and driven distributors in Asia and has helped them with the process of growing their market presence in the region. This past February Neurovirtual's CEO, Ed Faria, took a radical shift in making Asia a high priority strategic market for the company and spent four weeks with Product Manager Felipe Lerida CPSGT, strengthening existing relations and assigning new partners for the region. During the four-week trip, both had the pleasure of visiting current customers at the Chun Shan Medical Hospital in Taichung City, Taiwan, meeting with the entire sleep center team, including the MDs and PSG technicians that work with Neurovirtual's equipment on a daily basis. The objective was to listen to their ideas for improving their experience.

Meeting with potential distributors in Beijing

Demonstration at The Min Sheng General Hospital in Taoyuan City Taiwan

One of the reasons for the shift of strategy was the Chinese FDA's (Health Authority) clearance for a few of Neurovirtual's products late last year, making China the top spot on the list for this business trip. Two weeks were dedicated to interviewing potential new distributors in the country, starting in Shanghai, followed by Beijing, and then the surrounding metro areas. The criteria involved prior industry experience, available human resources, connections in the industry, and a solid drive to establish a strong presence in the region.

Mr. Faria ultimately decided to appoint JFR China of Beijing as Neurovirtual's strategic partner in the region, and is looking forward to working closely with their team to achieve great success in product sales and customer relations. The recently signed $2.5 million agreement shows the trust and the quality of Neurovirtual product as a strength for the Chinese market. "I believe Jeffrey Cheng from JFR will be a strategic partner for Neurovirtual not only in China, but in all Asia" said Mr. Faria.

China distribution JFR - Training the distributor

The following week, was used to visited a well-established distributor in Thailand, Central MediTech Co., Ltd. in Bangkok, where Mr. Lerida took time to visit some of the established customers, including the Prince of Songkla University Hospital in Chang Wat Songkhla, Maharaj Nakhon Si Thammarat Hospital in Bangkok and

Prince of Songkla University Hospital - Current BWII customer working to upgrade to BWIII in Chang Wat Songkhla Thailand

Roi Et Hospital in Chang Wat Roi Et. Like most Neurovirtual customers, all are quite happy with their systems and are budgeting for a new Neurovirtual system in the coming months. The last week of the trip was spent in Indonesia, where Mr. Lerida visited PT. Global Medik, the local appointed distributor for Neurovirtual's Neurology product line. "It was a perfect opportunity to install a BWIII EEG at our first customer in Indonesia (Mitra Keluarga Tegal Hospital in Jawa Tengah) and at the same time make a full training for our local team" said Mr. Lerida.


Happy BWIII customer at Maharaj Nakhonsithammarat Hospital, in The, Thailand

Neurovirtual hopes to make Asia an important market that could generate 20%- 25% of the total company revenue in five years' time.


BWIII Installation at Mitra Keluarga Tegal Hospital in Indonesia

Recently issued **CFDA** certificate

中华人民共和国医疗器械注册证

注册证编号： 国械注进20162212736

注册人名称	Neurovirtual USA, INC.
注册人住所	2315 Nw 107th Ave Ste 27 Doral , FL 33172
生产地址	AL. ARAGUAIA , 271-ALPHAVILLE BARUERI , Sao Paulo BRAZIL 06455-000
代理人名称	北京信然宜诚医疗科技有限公司
代理人住所	北京市西城区广安门内大街6号1-1202
产品名称	多导睡眠脑电记录仪 Electroencephalograph
型号、规格	BWIII EEG , BWIII EEG Plus, BWIII PSG, BWIII PSG Plus
结构及组成	该产品含有BW III EEG放大器、BW III EEG Plus放大器、闪光刺激器（EEG Plus）、BW III（PSG）放大器、头盒（PSG）、BW III PSG Plus放大器、PSG Plus闪光刺激器、PSG plus头盒、电源适配器（型号：MW170KB0503F01，制造商：BRIDGEPOWER CORP）、BWAanlysis软件。
适用范围	该产品在临床环境中预期用于脑电图（EEG）和睡眠记录（PSG），可存储和显示EEG与PSG数据，供使用者回顾、注释和标记事件。只用经过培训合格且可进行专业判断的执业医师，才能回顾和解析上述信息。
附件	产品技术要求
其他内容	/
备注	

审批部门： 国家食品药品监督管理总局 批准日期： 二〇一六年九月八日 有效期至： 二〇二一年九月七日

CALENDAR OF EVENTS

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 2017, where Neurovirtual will be presenting its solutions to make neurology and sleep diagnostic more human! We hope to see you there!

USA

AAN 2017 Annual Meeting

Boston Convention & Exhibition Center

22 to 28 April 2017

SLEEP 2017

Hynes Convention Center 900 Boylston St. Boston, MA 02115

3 to 7 June 2017

CANADA

8th Conference of the Canadian Sleep Society

Hyatt Regency in Calgary, Alberta

28 to 30 April 2017

BRAZIL

XV Congresso Paulista de Medicina do Sono

Maksoud plaza R. São Carlos do Pinhal, 424- Bela Vista, São Paulo- SP

12 and 13 Mayo 2017

XI Congresso Paulista de Neurologia

Hotel Sofitel Jequitimar Av. Marjori da Silva Prado- Praia de Pernambuco- Guarujá

24 to 27 May 2017

Curso: Eletroencefalograma da rotina à monitorização contínua

Hotel Blue Tree Premium Paulista

23 September 2017

XXVI Congresso da Sociedade Brasileira de Neurofisiologia Clinica

Centro Convenções Goiânia- Goiás

26 to 28 October 2017

COLOMBIA

III Entrenamiento técnico en Polisomnografía

Centro de Convenciones Cafam Floresta

5 and 6 April 2017

Diplomatura Latinoamericana en Medicina de Sueño

Pereira, Colombia

8 to 20 May 2017

ARGENTINA

Lace 2017 - Congreso Liga Argentina Contra la Epilepsia

Salguero Plaza Jerónimo Salguero 2686 - Ciudad de Buenos Aires

5 and 6 October 2017

54° Congreso Argentino de Neurología

Sheraton Mar del Plata Hotel- Leandro N. Alem 4221, B7602DXC Mar del Plata, Buenos Aires

28 November to 1 December 2017

MEXICO

XL Reunión Anual Academia Mexicana de Neurologia A.C.

Hotel Sheraton Buganvilias Pto. Vallarta

16 to 20 May 2017

XL Reunion Anual del Capitulo Mexicano de la Liga Contra la Epilepsia CAMELICE

Tijuana B.C. Mex.

26 to 29 July 2017

SPAIN

XXV Reunión Anual de la Sociedad Española del Sueño (SES)

Santander, Espanha

20 to 22 April 2017

32º International Epilepsy Congress

Palau de Congressos de Catalunya, Espanha

2 to 6 September 2017

Contact us:
Neurovirtual News - 2315 - NW 107th Miami, FL 33172 USA +1 (786) 693-8200 info@neurovirtual.com / **www.neurovirtual.com**
Designer: Jessika Brito (jessika@neurovirtual.com.br); **Supervision:** Ed Faria (efaria@neurovirtual.com);
Contributors: Sergio Solis (ssolis@neurovirtual.com); Felipe Lerida (flerida@neurovirtual.com); Deisy Rojas (drojas@neurovirtual.com).