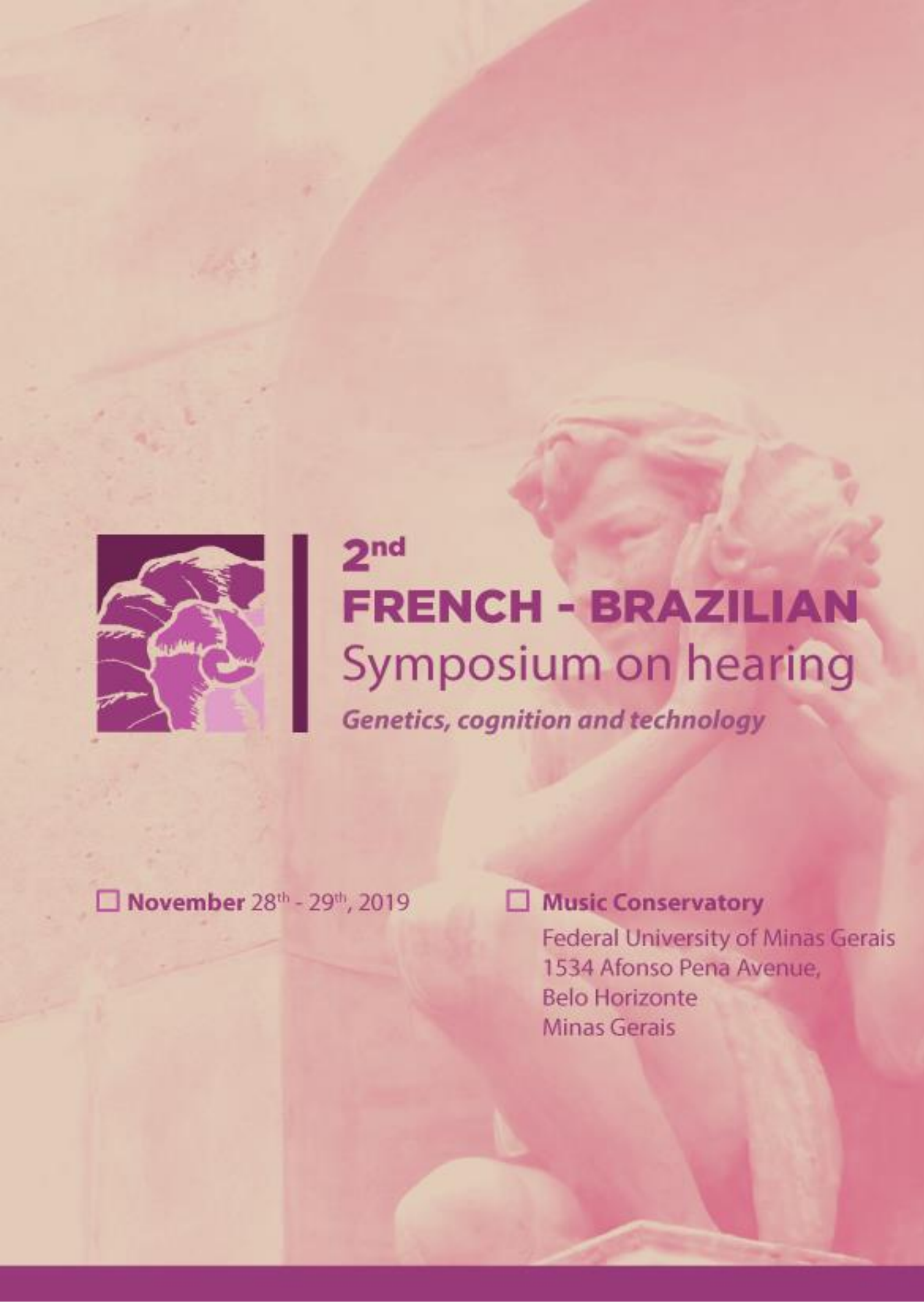
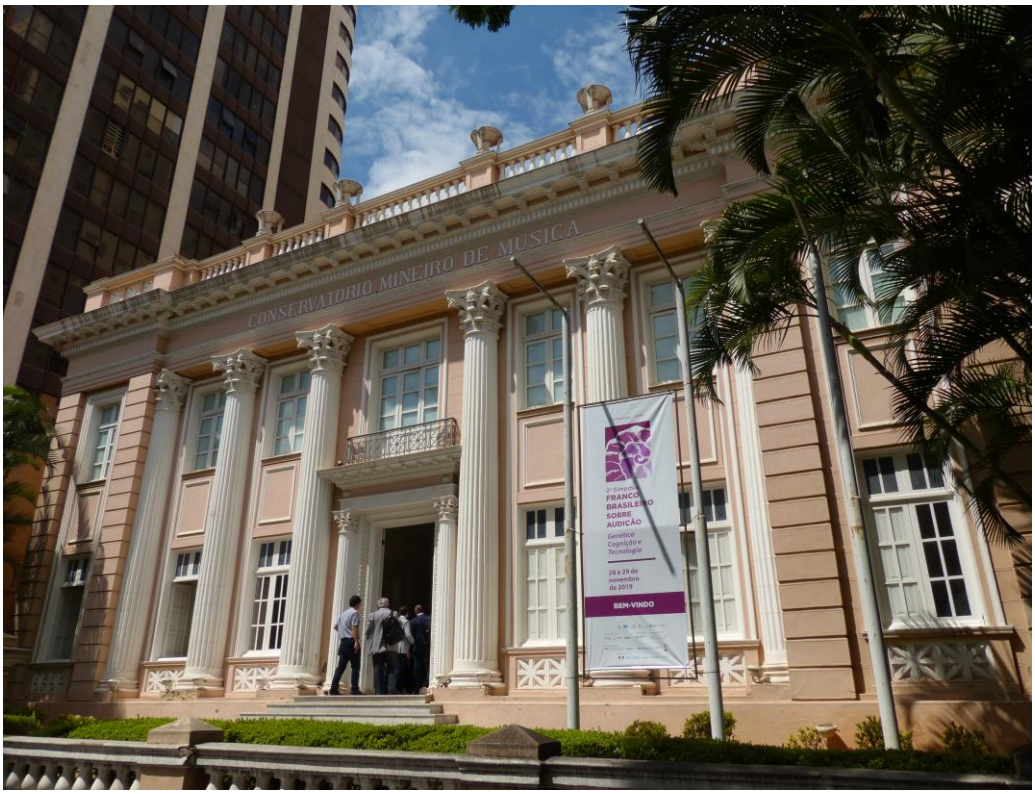


2nd FRENCH - BRAZILIAN Symposium on hearing

Genetics, cognition and technology

☐ **November** 28th - 29th, 2019

☐ **Music Conservatory**
Federal University of Minas Gerais
1534 Afonso Pena Avenue,
Belo Horizonte
Minas Gerais



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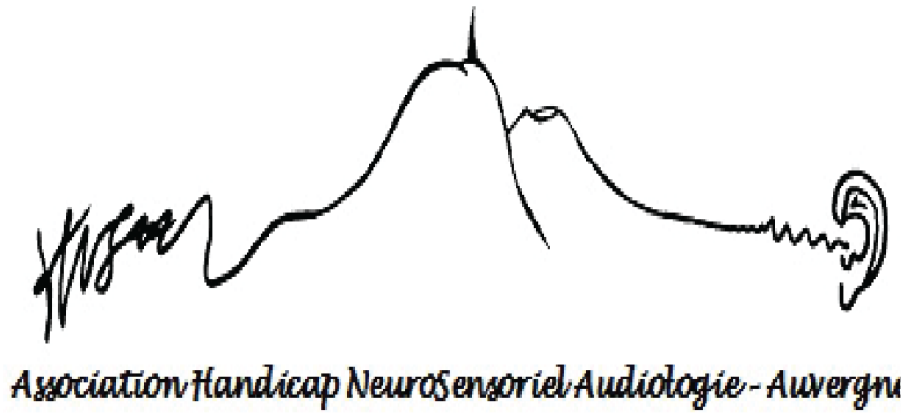

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AUDIBEL
APARELHOS AUDITIVOS

Organizers

Contents

Introduction

French-Brazilian Symposium on hearing: Genetic, cognition and technology

In 2014, a partnership was initiated between Université d'Auvergne and the Federal University of Minas Gerais through the Capes Cofecub cooperation project (Danpe, 861/15) coordinated by professors Paul Avan and Sirley Carvalho. One deliverable of this project was the 1st Franco-Brazilian Symposium on Hearing (FBSH), held in 2018.

This 1st symposium aimed to elucidate the international consensus, the evidence and tools for a timely diagnosis, using protocols of low cost and high effectiveness in different realities in the world.

The second edition of the French Brazilian Symposium on Hearing prolonged the great success of the first edition in 2018, measured from its attendance. As a natural follow-up to the topic of the first symposium, auditory screening, its focus was "genetics, cognition and technology ".

It is now well-acknowledged that the broad diversity of hearing-aid outcomes rests, in a significant part, on genomic and epigenomic factors as well as on how the brain learns to cope with decreased auditory inputs. These issues are the subject of intense innovative research. Evidence-based strategies for early implementation of appropriate hearing interventions will be reviewed, to guarantee an optimized quality of life through hearing, balance and cognition from birth to old age, including the technological resources for restoring hearing in case of impairment, conventional hearing aids and cochlear implants.

This book of abstracts presents a summary of the discussions that took place during the event, as well as summaries of the papers presented in poster sessions.
We hope in this way to circulate more braodly what was discussed in these days of events.

Professor Paul AVAN and Professor Sirley CARVALHO

Photos: Carol Morena

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Program

Thursday, 28th November					
9:00 - 10:00 am	Check-in				
10:00-10:30 am	Welcome				
Session 1: Moderators – Dr. Nicholas S. REED and Prof. Patrícia Cotta MANCINI					
10:30 - 11:10 am	Prof Paul AVAN – University Clermont Auvergne (UCA) - France An urgent need for new objective tests of auditory disorders: how to take up the challenge?				
11:10 - 11:50 am	Prof John D. DURRANT - University of Pittsburgh, USA Paradigm Shift in Evoked Response Audiometry (ERA) Where It All Started--In the Cortex--And for All?				
11:50 - 12:30 pm	Prof. Maria Cecília MARTINELLI – UNIFESP, Brazil International Classification of Functionality and Audiology Research in Brazil				
12:30 - 1:30 pm	Lunch				
Workshops					
1:30 - 2:15pm	**Auditorium** Workshop HGC / Cochlear Implicações dos problemas auditivos no processo de envelhecimento: descobrindo novos caminhos Speaker: Byanka Cagnacci and Fábio Heleno Lopes Moderador: Nadiana Moreira de Andrade	**Mini Auditorium 1st floor** Workshop Audiomarca / AB Tecnologia Advanced Bionics e Adaptação Bimodal Speaker: Marcela Rosolen Stefanini Placa Moderador: Ana Cristina de Oliveira Mares Guia	**Room 5 - 1st floor** Workshop Telex / Oticon Medical Programação de implante coclear guiada por exames de imagem Speaker: Fabiana Danieli Moderador: Ana Luiza de Freitas Rezende	**Room 18 - 2nd floor** Workshop Med-El / Audiocenter Uma solução para cada perda auditiva Speaker: Renata Beatriz Fernandes Santos Moderador: Ana Lívia Libardi Bertachini	**Room 4 - 1 st floor** Workshop GN Resound Revolucionando a satisfação do deficiente auditivo Speaker: Valéria Cristina Bonichelli Ferreira Moderador: Lorena Gabrielle Ribeiro Bicalho de Castro
2:30 - 3:20 pm (Auditorium)	Workshop OUVIR - Conectividade, atualização e diferenciais na prática clínica Speaker: Talita Sunaitis Donini / Moderador: Isabella Marques Pereira Rahme				
3:20 - 4:00 pm	Coffee break, poster exhibition, part 1, guided visit by the poster committee				

Session 2: Moderators – Prof. Amélia Augusta de Lima FRICHE and Prof. Paul AVAN	
4:00 - 4:40 pm	Prof. Erica de Araújo Brandão COUTO – UFMG- Brazil Cognition, aging, hearing loss and rehabilitation
4:40 - 5:20 pm	Prof. Séverine SAMSON - University of Lille, France How progressive sensorineural hearing loss affects cognitive and emotional skills?
5:20 - 6:00 pm	Dr. Arnaud COEZ - French Society of Audiology (SFA)- Paris, Vice-President, UNSAF- France Brain neuro-development and hearing devices outcomes: fitting strategies and neuro-imaging evidences of hearing rehabilitation benefits
6:00 - 6:40 pm	Musical presentation

Friday, 29th November	
Session 3: Moderators – Prof. Denise Utsch GONÇALVES and Prof. John D. DURRANT	
8:00 - 8:40 am	Dr. Joel LAVINSKY – Federal University of Rio Grande do Sul, Brazil Genetic Architecture of Cochlear Synaptic Function in Common and Complex Forms of Neurosensory Deafness
8:40 - 9:20 am	Dr. Aziz El AMRAOUI – Institut Pasteur – Paris-France Understanding hearing and balance impairments through the lens of deafness genes
9:20 - 10:10 am	Round Table 1: Cognition, and hearing loss in aging population. Prof. Maria Aparecida C. BICALHO – UFMG, Brazil, Prof Leonor BEZERRA GUERRA – UFMG, Brazil, Prof Denise U. GONÇALVES – UFMG, Brazil (Coordinator: Prof. Helena BECKER)
10:10 - 10:50 am	Coffee break, poster exhibition part 2, guided visit by the poster committee
Session 4: Moderators – Dr Arnaud COEZ and Dr Ludimila LABANCA	
10:50 - 11:30 am	Prof. Paulo CARAMELLI - UFMG, Brazil Prevention of cognitive decline and dementia: evidences and perspectives
11:30am - 12:10 pm	Dr Fabrice GIRAUDET - University Clermont Auvergne (UCA) France New views on auditory ageing in normal subjects and patients with comorbidities
12:10-12:30pm	Dr. Philippe MAKANY – French Ambassador in Brazil Future of the collaboration between France and Brazil in audiology, possible axes and logistics
12:30-01:30pm	Lunch break
Session 5: Moderators – Prof. Luciana Macedo de RESENDE and Dr. Fabrice GIRAUDET	
01:30 - 02:10 pm	Prof. Ricardo FERREIRA BENTO – USP - Brazil Cochlear Implants - New frontiers
02:10 - 03:00 pm	Dr. Nicholas S. REED – Johns Hopkins University, USA Hearing Loss and the Health Care System: Using Epidemiologic Evidence to Address a Public Health Issue
3:00 - 03:40 pm	Round Table 2: Engineering and audiology Pedro Lemos – UNCISAL, Brazil, Prof. Eduardo Romeiro Filho – UFMG, (Coordinator: Dr Thamara Dos Santos – UCA, France)
3:40 - 04:45 pm	Round Table 3: Cochlear implant and Balance Dr Mariana DENARO – HC-UFMG, Brazil, Dr Celso BECKER, UFMG- Brazil, Dr Arnaud COEZ, French Society of Audiology (SFA, Paris, France) and Prof Patrícia Cotta MANCINI. (Coordinator: Dr. Anna Paula Batista de Ávila Pires – UFMG, Brazil)
04:45 - 5:10 pm	Announcement of poster prize ranking and Farewell Ceremony

Opening Ceremony, Conferences, Round Tables and Sponsors Lectures

Opening Ceremony

The opening ceremony was attended by representatives from various segments, besides the French and Brazilian presidents of this symposium:

- Prof. Paul AVAN, president of this symposium from University of Clermont-Auvergne, France.
- Prof. Sirley CARVALHO, president of this symposium Federal University of Minas Gerais, Brazil
- Prof Humberto José ALVES, Director of School of Medicine of UFMG
- Prof. Luciana Macedo de Resende, Representing the president from the Brazilian Academy of audiology, Dr Katia Almeida.
- Ms. Raimundo OLIVEIRA NETO, The President of the 6th Regional Speech Therapy Council

Professor Paul Avan opened the ceremony talking about how the collaboration between the two universities starting in 2014 led to the organization of the first French Brazilian Symposium on Hearing. He also emphasized that intense innovative research in all the fields relating to audiology is going on. Technology bridges the gap between genes and molecules on the one hand, cognition on the other hand. Audiologists whose everyday tasks are hearing-aid prescription and fitting need frequent updates as to how basic science opens new prospects for their practice. The FBSHs have taken up the challenge to contribute to this indispensable exchange of ideas.
Prof Humberto José Alves explained how the cooperation between the Post Graduate Program in Science Speech-Language Pathologists and Laboratoire de Biophysique Neurosensorielle in France had allowed the exchange of students, teachers and researchers and reported that the cooperation between the two universities has now been signed by their respective presidents.
Representing the president of the Brazilian Academy of audiology, Professor Luciana Macedo said that this event guarantees the continuous training of new graduates, doctors, speech therapists and audiologists. Mr. Raimundo Oliveira Neto also commented about how the event contributes to the construction of practices based on health care integrality.
Finally, Prof. Sirley Carvalho emphasized that the event's outreach had been made possible because many honored speakers from the USA, France and different States of Brazil, accepted to share their knowledge and experience with the public. And also the audience of over 200 people provided an ideal floor for this fruitful exchange of ideas.

Conferences

An urgent need for new objective tests of auditory disorders: how to take up the challenge?

Prof. Paul AVAN – Clermont Auvergne University (UCA), France

The most frequent supplier of sensorineural hearing loss (SNHL) is presbycusis, which affects 10% of the population worldwide. One the one hand, exposure to ototoxic factors including noise increases and according to the WHO, will soon affect more than 1 billion individuals, thereby exposed to accelerated presbycusis. On the other hand, the advances in molecular biology suggest that protective and therapeutic strategies of presbycusis are no longer a remote prospect. Yet the causes of SNHL are so diverse that an accurate diagnosis is required for any therapy to be properly targeted. The combination of subjective audiological techniques, otoacoustic emissions and ABRs already allows micromechanical, metabolic and neuropathic SNHLs to be separated. However, the recent description of 'hidden' hearing impairments, following that of hardly detectable 'dead' cochlear zones, acutely raises the issue of how accurate the diagnosis of a presbycusis can be: obviously, subjects who complain of poor hearing abilities in noisy situations are underdiagnosed, thus, underprotected. The goal of this talk will be to emphasize new explorations, developed in animal models with well-documented subtypes of SNHL.

Acknowledgements: CAPES COFECUB DANPE 861/15; ANR Light-4-Deaf; ANR Hear-in-Noise

Paradigm Shift in Evoked Response Audiometry (ERA) Where It All Started--In the Cortex--And for All?

Prof John D. DURRANT - University of Pittsburgh, USA

This will heavily feature our work to bring steady-state response technology to relatively long-latency response testing, but also our push to have both time- and frequency-domain information automatically and fully bilaterally, much as with T/CEOAEs, as well as more pervasive use of computer scoring of responses for fully objective methods. This we believe to be critical, to "level the playing field" across clinics and/or examiners independent of level of expertise, and per any given equivalent latency range of response. For example, empowering clinicians whose lives are spent mostly in the brainstem, to have no trepidation to test LLRs, as needed clinically. Also relevant (we submit) to uniform/world-wide health-care standards of practice.

Aging, cognition and hearing loss

Prof Erica de Araújo Brandão COUTO – UFMG- Brazi

Photo: http://lattes.cnpq.br/3831914709560792

Recent advances in research and clinical practice regarding aging and communication have directed their questions about the relationship between aging, peripheral hearing, central auditory process and cognitive process. Many aspects of the daily life of the elderly have been associated with hearing skills, showing that hearing loss affects quality of life, social relationships, motor skills, psychological aspects, function and morphology in specific brain areas. It would be the hearing loss that, in the long term, decrease the quality of communication and cognitive performance, leading to social isolation, depression and facilitating the onset of cognitive disability or on the oposite, would be the limited cognitive skills that would reduce the cognitive resources available for hearing perception, increasing the effects of hearing loss?. Some hypotheses and possible explanations for the powerful intrasystem connections between perception and cognition in aging are presented as well as the functional architecture of cognitive processes essential for understanding this relationship. The clinical potential of the combination of hearing training and cognitive training to improve the cognition of adults with hearing loss is a topic under discussion. Although there are positive clinical experiences, scientific studies are not enought. The literature recommends a longitudinal approach to determine whether a combination of auditory-cognitive intervention would be most effective in improving cognitive function in hearing loss adults.

How progressive sensorineural hearing loss affects cognitive and emotional skills?

Prof. Séverine SAMSON - University of Lille, France

Human communication requires the ability to perceive and interpret others' feelings, intentions, and states of mind on the basis of subtle sensory cue, involving different cognitive and emotional skills. In this respect, the communicative value of facial expressions is thus considered key in human communication. Whereas visual processing of verbal information is commonly explored in deaf subjects through the assessment of specific abilities in speech reading and sign language, little is known about visual emotional processing in adult progressive deafness, and after cochlear implantation. In this presentation, I will first review the impact of sensorineural hearing loss on cognitive functions including lip reading and attention. Then I will discuss the effect of auditory deprivation on emotional processing in adults with progressive deafness, and after cochlear implantation. For this purpose, I will present studies investigating the influence of acquired post-lingual hearing loss on the recognition of dynamic facial emotions, and on the rating of their emotional valence (unpleasant-pleasant) and arousal potential (relaxing-stimulating). The reduction of emotional sensitivity to visual stimuli observed in these studies is intriguing and contrasts with the proficiency of deaf subjects in processing visual speech cues. These results, as well as recent findings on brain plasticity, will be discussed in relation to compensatory strategy toward verbal cues developed in the context of acquired deafness. Finally, I will emphasize the importance of training non-verbal emotional processing during the auditory rehabilitation phase with hearing aids or cochlear implants, and the relevance of proposing preventive actions to slow down the age-related deterioration of communication skills.

Brain neuro-development and hearing devices outcomes: fitting strategies and neuro-imaging evidences of hearing rehabilitation benefits

Arnaud Coez - French Society of Audiology (SFA)- Paris, Vice-President, UNSAF-France)

Hearing loss has a strong impact on human auditory brain development from birth to elderly and it has dramatic medical and social consequences on human being. An unknown deafness in childhood will induce some major oral communication disabilities and it will require special education programs to allow in infants the development of multi modal ways of communication. An uncorrected acquired deafness will lead adults in a social isolation with increasing risks of early personal autonomy lost (neurological diseases, falls,…).

An early screening of deafness at several stages of age appears essential because the lack of auditory inputs will impact the cortical map organisation of the considered subject.

More over, the different aetiologies of deafness have different effects on the development of the auditory brain. Also, the choice of hearing rehabilitation by hearing devices and their fittings will be different among aetiologies. The benefits will be also different. The palliative strategies of treatment will go from amplification of sounds through hearing aids to electrical stimulation through auditory brainstem implant and cochlear implant(s).

During these 10 last years, many neuro-imaging studies lead new point of view on benefits of hearing rehabilitations in childhood and in adults, either using two hearing aids or one cochlear implant or one cochlear implant and a hearing aid or two cochlear implants or a electro acoustic implant or an auditory brainstem implant and so on …

The therapeutic choice is linked to a waiting benefit and so to the ability of the brain to dwell with this new kind of sensory informations rather than to give back the hearing of a ‘normal’ hearing person if existing

Genetic Architecture of Cochlear Synaptic Function in Common and Complex Forms of Neurosensory Deafness

Dr. Joel LAVINSKY – Federal University of Rio Grande do Sul

Photo: http://lattes.cnpq.br/5329081726918975

Our research is focused on the genetic architecture of the auditory synapses related to noise-induced hearing loss and age-related hearing loss. In order to elucidate the genetic architecture of the auditory hair cell synapse and the susceptibility to noise-induced cochlear synaptopathy, we are providing the first genome-wide association study with 102 strains (n=635) of the Hybrid Mouse Diversity Panel based upon the strain variation of the wave 1 P1-N1 amplitude of the auditory brainstem responses both before and after noise exposure. Based on this association analysis and our cochlear gene expression data, we identified several novel loci and prioritized positional candidate genes related to cochlear synaptopathy, especially after exposure to noise. Regarding age-related hearing loss, our data suggest that conditional loss of *Nrp1* in the inner ear leads to progressive hearing loss in mice. We also demonstrated that mice with a truncated variant of *Nrp1* show cochlear axon guidance defects and that exogenous semaphorin-3A, a known neuropilin-1 receptor agonist, repels SGN axons in vitro. These data suggest that Neuropilin-1/Semaphorin-3A signaling may also serve a role in neuronal pathfinding in the developing cochlea and support a model whereby Neuropilin-1/Semaphorin-3A signaling is critical for the functional and morphological integrity of the cochlea and that *Nrp1* may play a role in ARHL.

Understanding hearing and balance impairments through the lens of deafness genes

Dr Aziz El AMRAOUI – Institut Pasteur – Paris-France

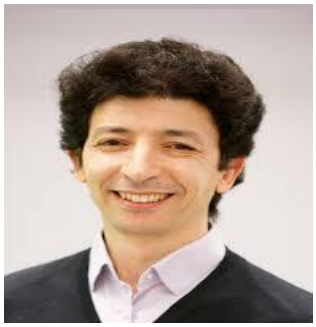

Photo: ©Institut Pasteur, F Gardy

Deafness is the most frequent sensory deficit in humans, impairing communication, health, and quality of life. The hearing loss, with or without balance deficits, can affect people of any age and manifest in various forms that range from mild hearing impairment to severe and profound deafness. According to World Health Organization estimates, approximately 360 million people — 5% of the world's population — have a disabling hearing impairment, and this number will have increased to more than one billion by 2050. Causes of hearing loss are multiple, with genetic factors being estimated to account for about 50–60% of all cases, with percentage higher in the developed countries. Today, about 130 genes have been identified as responsible for deafness in humans, and many more are yet to be discovered. Multidisciplinary approaches owing to the properties of the deafness genes' encoded proteins and animal modelling of the disease have provided major clues for understanding how the inner ear sensory organs develop and function. Studies of the properties of the identified genes-predicted proteins, and multidisciplinary analysis of related animal models had led to the classification of the deafness genes into distinct specific functional subcategories: i) hair bundle development and functioning, ii) synaptic transmission, iii) cell-cell adhesion, iv) ion homeostasis, v) extracellular matrix, vi) oxidative stress and mitochondrial defects, & vii) transcriptional regulation. This extensive basic research constitutes a ground work serving as the foundation for treatment solutions to prevent and/or cure a variety of causes of hearing and balance deficits.

Prevention of cognitive decline and dementia: evidences and perspectives

Prof. Paulo CARAMELLI - UFMG, Brazil

Cognitive impairment and dementia are major health problems worldwide, particularly among the elderly population. Dementia occurs in about 8.5% of individuals aged 60+ years in Latin America and this prevalence rate is the highest when compared to other regions of the world. Alzheimer's disease is the leading cause of dementia, followed by vascular dementia. These two conditions, in isolation or in combination, are responsible for about 75% of all dementia cases. However, current pharmacological approaches to treat dementia are only symptomatic and effective disease-specific therapies are not expected to be available soon. In this sense, preventive measures are of utmost importance in this area. Several studies have pointed out that specific prevention strategies directed to potentially modifiable factors could reduce the number of new dementia cases by 35%; in Latin America these figures are even higher, reaching 56% of potential reduction. Modifiable factors may be present in early life (e.g., low education), middle-life (e.g., arterial hypertension, obesity, hearing impairment) and late-life (e.g., diabetes, smoking, physical inactivity, depression). With regard to hearing impairment, one recent metanalysis (Ford et al., 2018) has shown a positive association between hearing impairment and dementia (odds ratio - OR = 1.49; 95% CI 1.30, 1.67). When considering only studies with robust measures (n=4) of hearing and cognitive functions the OR rises to 3.1 (95% CI 1.28, 4.91). On the other hand, fewer studies have investigated the effects of hearing intervention or hearing aids on dementia prevention. The available data suggest a positive effect of these interventions on cognitive impairment, although larger studies with longer follow-up periods are necessary

New views on auditory ageing in normal subjects and patients with comorbidities

Dr Fabrice GIRAUDET - University Clermont Auvergne (UCA) France

The most common forms of acquired sensorineural hearing loss are noise-induced (NIHL) and age-related hearing loss (ARHL). A progressive high-tone hearing loss are hallmarks of ARHL or Presbycusis. These elevated hearing thresholds are classically described to be associated with outer hair cells (OHCs) alterations, and OHC damage usually affects frequency selectivity. Pure-tone audiometry is the routine clinical audiological test used for measuring hearing sensitivity, and the audiometric classification of hearing impairments is the main basis upon which audiologists determine their rehabilitation choice.

In this presentation we want first to focused on a sort of off-frequency listening to occur. The “discordant” audiological profile is associated with a tonotopic disorder, revealed by a large shift of the high frequencies perception in the low frequencies region, with normal audiometric thresholds. In the second part of this paper, we want to introduce the concept of a new pathological entity called “hidden hearing loss”. Recents studies illustrated that, in ARH or NIHL, degeneration of cochlear synapses precedes both hair cell loss and threshold elevation. Furthermore , in diabetes mellitus, commonly considered as disease of elderly populations, preliminary clinical results indicate that probable auditory neuropathy and cochlear pathology may coexist in this population

Cochlear Implants - New frontiers

Prof. Ricardo FERREIRA BENTO – USP - Brazil

With almost 50 years of clinical use, the cochlear implants was the first and most successful sensory prosthesis. Its evolution went from the perception of sounds without discrimination in the first monochannel models for the discrimination of words and the development of language. In that period, with the improvement of the software and the hardware of the implants their indications were widening to the bilateral use, for cases of moderate deafness, and of unilateral deafness. In 1935 Aldous Huxley in his book "Point Counter Point" wrote "The vibrant air shook the tympanic membrane of Lord Edward. The interconnected malleus, incus and stapes were set in motion to shake the oval window membrane and cause an infinitesimal storm in the labirintine liquids. The ciliated endings of the auditory nerve danced like algae in a brave sea: a vast number of obscure miracles occurred in the brain and Lord Edward whispered in ecstasy: "! BACH! "
After more than 80 years the obscure brain miracles mentioned by Sir Huxley remain unknown and are the next frontier of deafness treatment. Perhaps the answer lies in the full care of the Auditory component of the human brain's connectome.

Hearing Loss and the Health Care System: Using Epidemiologic Evidence to Address a Public Health Issue

Dr Nicholas S. REED – Johns Hopkins University, USA (Dr Frank Lin's group)

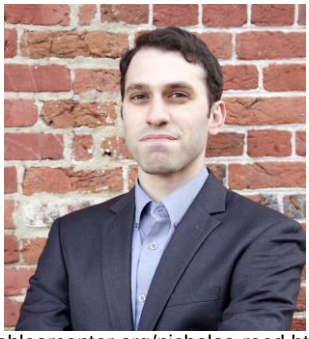

Photo: https://www.jhucochlearcenter.org/nicholas-reed.html

Once considered a relatively inconsequential aspect of the aging process, a growing body of epidemiologic evidence suggests broader health-related implications of age-related hearing loss, including independent associations with cognitive decline, incident dementia, and physical functioning. Concurrent epidemiologic research suggests hearing loss plays a central role in health care system interactions. Specifically, hearing loss has a known negative impact on communication. However, few studies of patient-provider communication have taken hearing loss into account; those that have included hearing have found patient-provider communication is associated with hearing loss. It is likely hearing loss' negative impact on patient-provider communication mediates recently research that suggests hearing is independently associated with health-seeking behavior and health care utilization. This session will review epidemiologic data on the association of hearing loss and important health care outcomes including utilization, cost, and satisfaction with care. In addition, this session will cover translational implementation initiatives to address hearing loss in the inpatient setting.

Round Tables

I Cognition, and hearing loss in aging population.

Photo: http://lattes.cnpq.br/7165309884613944

Helena BECKER – UFMG – coordinator UFMG – Brazil,

The purpose of this Round Table, coordinated by Prof Helena BECKER, was to discuss the impact of the hearing loss on the cognition of the elderly population. Professor Maria Aparecida C. BICALHO presented recent researches about how the hearing loss can contribute to the reduction in the cognitive performance in the long term, calling attention to the already proved relationship between not-treated hearing loss in this population and the higher risk of degeneration of the cognition. Professor Leonor BEZERRA GUERRA presented issues related to the public health education regarding how prevention programs can improve both the hearing abilities as well as the cognition. Professor Denise UTSCH GONÇALVES emphasized the value of being concerned about good nutrition, regular physical exercises and positive thoughts in the maintenance of a physical and psychological health, what influences to keep a good hearing and cognition during the aging process. Finally, it was emphased the risk of polypharmacy in the elderly population, including the use of ototoxic drugs that can favor the presbyacusis development.

Prof. Maria Aparecida C. BICALHO – UFMG, Brazil

Prof Leonor BEZERRA GUERRA – UFMG, Brazil

Prof. Denise UTSCH GONÇALVES – coordinator - UFMG – Brazil

Photo: http://lattes.cnpq.br/2330509846581060

II Engineering and audiology

Dr Thamara Dos Santos – UCA, France

The Round table brought two examples of innovation resulting from the interaction of these two areas. Professor Pedro introduced an application for deeper analysis of the auditory evoked potentials that also aims to facilitate the Teaching of the technique for undergraduates and postgraduates. In electrophysiology, superficial analyses of the electrophysiological potentials are still employed. The application is an excellent alternative for understanding the theory as well as for research projects which aim to improve the methods of analysis of auditory evoked potentials

Professor Eduardo has mentioned the stigma that hearing aid users carry. He also discussed how it would be possible to create a new paradigm for hearing aid design. Not least, it is the fact that the project aims to develop low-cost technology. Thus the project intends a new Centered Design Approach in a low cost hearing aid development and provides for the first tests on users in the waiting list of SUS accredited hearing care services.

Pedro Lemos – UNCISAL, Brazil
Photo: http://lattes.cnpq.br/4636070134736820

Prof. Eduardo Romeiro Filho – UFMG, Brazil
Photo http://lattes.cnpq.br/2025674118600907

III Cochlear implant and Balance

Anna Paula Batista de Ávila Pires - UFMG, Brazil

The purpose of this Round Table, coordinated by Dr. Anna Paula Batista de Ávila Pires, was to discuss how to minimize the possibility of vestibular alterations after cochlear Implant (CI). The table was unanimous in stating that the pre-implant evaluation should include the balance evaluation. This information is of paramount importance, especially for decision making in cases of simultaneous bilateral implantation.

Although there is no consensus on the prevalence of these changes in the balance after CI, patients who present vestibular symptoms (after CI) report worsening in quality of life and report that these changes influence the perception of the benefits of CI.

Dr. Mariana DENARO - UFMG, Brazil

Dr Celso BECKER, UFMG- Brazil

Dr. Arnaud Coez- French Society of Audiology (SFA, Paris, France)

Prof Patrícia Cotta MANCINI, UFMG, Brazil

Sponsors Lectures

The sponsors spoke about their products and the relationship with intervention clinical.

Workshop HGC / Cochlear - Problemas auditivos no processo de envelhecimento: descobrindo novos caminhos

Speaker: Byanka Cagnacci and Fábio Heleno Lopes


Workshop Audiomarca / AB - Tecnologia Advanced Bionics e Adaptação Bimodal

Speaker: Marcela Rosolen Stefanini Placa

Workshop Telex / Oticon Medical - Programação de implante coclear guiada por exames de imagem

Speaker: Fabiana Danieli

Workshop Med-El / Audiocenter - Uma solução para cada perda auditiva

Speaker: Renata Beatriz Fernandes Santos

Workshop GN Resound – Revolucionando a satisfação do deficiente auditivo

Speaker: Valéria Cristina Bonichelli Ferreira

Workshop OUVIR - Conectividade, atualização e diferenciais na prática clínica

Speaker: Talita Sunaitis Donini

Award winning posters

P-01
QUESTIONNAIRE TO SCREENING HEARING LOSS IN CHILDREN

Lorena G. Ribeiro Bicalho de Castro, Sirley Alves da Silva Carvalho, Ana Cristina Cortes Gama, Marden Hott, Denise Utsch Gonçalves, Erika Parlato-Oliveira, Luciana Macedo Resende , Amélia Augusta Friche , Fabrice Giraudet, Paul Avan.

Federal University of Minas Gerais

Background: Despite well-defined neonatal hearing screening programs, hearing monitoring is necessary due to possible hearing disorders in early childhood. Material and methods: The present study is part of an international cooperation between the Federal University of Minas Gerais (UFMG) and the Laboratory of Neurosensory Biophysics of Auvergne University, project, Capes-Cofecub nº 861/15. The purpose of the project was to validate questionnaires for hearing screening of children aged 12 to 48 months, enrolled in day care centers in the city of Belo Horizonte / MG. The questionnaires contain binary questions (yes or no) about hearing and language child development in the following ages: 12 to 18 months – Form 1 (F1), 19 to 36 months – Form 2 (F2), and 37 to 48 months – Form 3 (F3). The questionnaires had nine questions divided in two: Axis I that was composed of three questions related to previous newborn hearing screening and the Axis II composed of six questions about the development of auditory and language landmarks in each age group that defined the risk factors for hearing loss. The Axis I was the same for all the three forms and the Axis II varied according to the landmarks of each age group. To validate sensitivity and specificity, 201 children aged 12 to 48 months were evaluated. The children were submitted to tests considered gold standard by the literature (Impedanciometry, audiometry and otoacoustic emissions). Results: The factorial analyses shown that to consider a child with risk to hearing loss the questionnaire should contain at least one question marked not on Axis II. After the audiological exams the instrument showed a sensitivity of 50.00% and specificity of 81.02% in the identification of children with bilateral conductive hearing loss. And in the identification of hearing loss of the type Neurosensorial found a sensitivity of 100.00% and specificity of 73.15%. Conclusion: Through the instrument it was possible to identify 100% of hearing loss of the sensorineural. This study concludes that the forms validated in this research can be usefully used at the Primary Health Care level to detect hearing disorders in the preschool phase.
Text

P-02

NOISE NUISANCE, SOCIODEMOGRAPHIC ASPECTS AND NEIGHBORHOOD PERCEPTION IN AN URBAN CENTER: THE BH HEALTH STUDY

Fernanda Abalen Martins Dias, Waleska Teixeira Caiaffa, César Coelho Xavier, Fernando Augusto Proietti , Dário Alves da Silva Costa, Amélia Augusta de Lima Friche

Federal University of Minas Gerais

Introduction: Due to the technological advances, population growth and increased traffic typical of the urban environment, noise exposure has become a threat to the health and well-being of urban populations. Objective: To verify the self-perception of noise in an urban center and its relationship with sociodemographic characteristics, self-perception of the neighborhood, self-perception of health and self-reported morbidity. Methods: Population-based cross-sectional study conducted in two of the nine health districts of Belo Horizonte, Minas Gerais. The study included 4.048 individuals, of both sexes, aged 18 years and over. The response variable was the self-perception of noise, investigated by the question: “Thinking about your neighborhood, does noise bother you?”. The explanatory variables were divided into the following domains: sociodemographic, social determinants, self-perception of health conditions, self-reported diseases and Health Vulnerability Index. For data analysis, a descriptive analysis was initially performed. Then the univariate analysis was performed by simple logistic regression. From the univariate analysis, variables whose p-values were less than or equal to 0.20 were included in the Multiple Logistic Regression. The magnitude of the associations was estimated by odds ratios (OR) and their respective 95% confidence intervals. Statistical analyzes were performed using the Stata version 12 software. The study was approved by the Research Ethics Committee of the Federal University of Minas Gerais (case ETIC 253/06). Results: The prevalence of noise nuisance was 43.9%. For both sexes, noise nuisance was independently associated with poor traffic and presence of loud music, discussions and parties until late . Gender differences were observed for association between noise nuisance and sociodemographic characteristics and self-reported morbidity. Conclusion: Traffic and social customs were the main source of noise in the studied regions. Urban noise affects women and men differently.

P-03

FM USERS' PROFILE AND DIFFICULTIES' INVESTIGATION THAT MAKE THE EFFECTIVE USE UNVIABLE

Cristiane Bueno Sales, Ellen Mara de Souza Almeida, Francielly Alves Xavier, Guilherme Kretli Silva, Josiane Aparecida Silva Dias, Luciana Mendonça Alves

Methodist University Center Izabela Hendrix

Introduction: The National Brazilian Policy on Hearing Health Care provides technological resources to hearing impaired children. The Frequency Modulated System decreases the masking effect of noise and reverberation on the speech signal. It should be used primarily in the school environment, however, providing this device does not guarantee its effective use. Objective: To know the profile of users benefiting from the Frequency Modulated System of the Unified Health System and to elaborate a quantitative overview of the problems pointed out by parents and guardians in the use of the device. Methods: Ethics Committee approval number: 33723414.7.0000.5096. 309 medical records were analyzed. The variables considered were: age group; gender; type and degree of the hearing loss; electronic device used; established or developing oral language; and if the patients undergo through speech therapy. Telephone calls were made to the parents or guardians of these patients in order to collect data and identify cases that required further attention or technical assistance. Results: The sample consisted of participants aged between five and 17 years, with an average age of 11.7 years and male prevalence. The most frequent type of hearing loss was sensorineural and the prevalent degree was moderate. About the used electronic device, there was a larger number of hearing aid users. The largest percentage of patients in the analyzed group is oralized and undergoes through speech therapy. There were 260 successfully completed calls. It was found that 68.8% of the individuals who use the Frequency Modulated System efficiently had no complaints of any kind and 31.2% do not use it. Among the problems encountered for not using the device, the following stand out: technical problems, psychological interference, external interference, patients who believe that the use of the device is unnecessary and loss or theft. Conclusion: The guaranteed access to the FM System is now ensured by legislation, however, there is an emerging need for greater care projects directed to this group, so that such benefit is definitively assured and, above all, with efficient results in the process of socialization, learning and full inclusion of the hearing impaired.

Abstracts symposium

P-01

NEAR-INFRARED SPECTROSCOPY USED TO ASSESS CORTICAL PLASTICITY FOR DEAF CHILDREN: CASE REPORT

Dayanna Apolinário Diniz, Ana Lívia Libardi Bertachini, Débora Marques de Miranda, Sirley Alves da Silva Carvalho, Patrícia Cotta Mancini, Luciana Macedo de Resende
Federal University of Minas Gerais

Federal University of Minas Gerais

Cochlear implants and hearing aids constitute the base for treating hearing loss. Early auditory rehabilitation associated with electrical and acoustical stimulation technologies may determine the prognosis of treatment outcomes. Near-infrared spectroscopy (NIRS) is an auxiliary neuroimage tool that may facilitate longitudinal studies which aim to observe cortical reorganization and neuronal plasticity in hearing aids and cochlear implant users. Objectives: observe and report the auditory performance from a one year and 5 months old patient with congenital neurossensory hearing loss after hearing aids fitting and cochlear implant activation and describe dinamics from cortical areas verifying the correspondence between auditory perception performance and speech processing with NIRS. Methods: case report, approved by the ethical committee from the research institution. To evaluate quantitative and qualitative aspects of auditory and language development after cochlear implant activation and hearing aids fitting, the following instruments were used: visual reinforcement audiometry, behavioral observation audiometry, MUSS - Meaningful Use of Speech Scale, Ling sounds presentation, voice perception, IT-MAIS - Meaningful Auditory Integration Scale and LittleEars questionnaire. To observe and research cortical hemodynamics, NIRS was used. Results: observed responses demonstrate that the child improved in auditory and language performance, after the introduction of auditory stimulation through cochlear implant and hearing aids. Resulting responses from cortical activity related to blood oxygen changes include mainly auditory responses when called by her name and listening to familiar voices (mother's voice). It was observed that the temporal and parietal regions were the most activated cortical areas, occurring integration between the visual and auditory fields by the effect of neuronal plasticity. Conclusion: This case report described auditory responses evolution and molecular imaging highlighting cortical maturation after cochlear implant and hearing aid use. NIRS seems to be a promising tool to detect and follow-up neuronal plasticity following hearing rehabilitation.
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P-02

NEONATAL INTENSIVE/INTERMEDIATE CARE UNIT NOISE LEVELS IN A PUBLIC HOSPITAL IN THE FEDERAL DISTRICT

Bruna De Sousa Santos, Alexandre De Oliveira Moura, Sara Ribeiro Dos Santos, Paloma Gomes De Melo Bezerra(apresentadora), Mariana De Melo Rodrigues, Sergio Luiz Garavelli, Alleluia Lima Losno Ledesma, Andreza Monforte Miranda e Isabella Monteiro De Castro Silva.

Brasília University (UnB)

Summary The introduction of technologies for the care of newborns corroborates the increased survival, but transforms neonatal units in very noisy environments. It has been observed that there is a concern of professionals in calibrating and monitoring NICU equipment, on the other hand this concern is not seen in relation to the maintenance of the environment as a quiet place. Objective: The objective of this study was to evaluate the noise level in the neonatal unit at different times of the duty and to evaluate the noise level in the heated incubator. Materials and Methods: This is a prospective, longitudinal, qualitative and qualitative study. Noise was measured in SPL at the Intensive Care Unit(NICU), at the Neonatal Intermediate Care Unit(NICU) and inside the heated incubator during its normal operation and in experimental management situations. Results: The average noise found in the unit was 59.1 dBA in the NICU and 53.9 dBA in the NICU, values above the recommended by national and international standards. The incubator model of the service analyzed presents a basal noise level appropriate to national and international standards of 43.1 dBA .Conclusion: The implementation of measures to reduce and control noise is necessary. Número do Parecer: 2.898.023

P-03

ANXIETY LEVELS BETWEEN DEAF AND HEARING MOTHERS: IS THERE A DIFFERENCE?

Mayane Sarah Soares Miranda, Érika de Resende Rodrigues, Larissa Carcavalli Santos, Raquel Fabiane Nogueira, Saul Martins de Paiva and Júnia Maria Cheib Serra-Negra.

Federal University of Minas Gerais

Introduction: The responsibility of the deaf mother as caregiver of child health, in face of the limited communication with the health professional, can generate anxiety. Objective To measure anxiety levels among deaf and hearing mothers and the influence of psychosocial factors between the two groups. Method Cross-sectional comparative study of 116 mothers and their children aged 2-5 years. The study was approved by the Human Research Ethics Committee of the UFMG (CAAE/49803115.4.0000.5149). The sample consisted of two groups: group 1 (G1), consisting of deaf mothers (n = 29) contacted at a deaf care referral center, and group 2 (G2), consisting of hearing mothers (n = 87 mothers) selected in two public day care centers in Belo Horizonte. Data were collected at home through a questionnaire applied as an interview. Along with the questionnaire, the Brazilian version of the Beck Anxiety Inventory was applied to assess the intensity of the anxiety symptoms of mothers, in a version for deafs and in a version for listeners. For statistical evaluation of the data, univariate analysis was used. Results Most hearing mothers had minimal anxiety and most deaf mothers had moderate anxiety (p = 0.010). Deaf mothers reported more cesarean sections (p = 0.016) and returned to work within a period earlier than six months (p = 0.007). Conclusion There were differences between the levels of anxiety in the studied groups. Besides having higher anxiety, deaf mothers had more caesarean sections and returned to work earlier than six months. Inclusive policies should be encouraged.

P-04

EFFECT OF TINNITUS HABITUATION THERAPY ON AUDITORY ABILITIES

Najlla Lopes de Oliveira Burle, Luciana Macedo de Resende, Luciana Mendonça Alves, Vinícius Soares Garcia, Patricia Cotta Mancini

Federal University of Minas Gerais

Introduction: Research on patients exhibiting hearing loss and individuals with normal hearing have verified that tinnitus interferes with auditory processing. One treatment option for this symptom consists of Tinnitus Habituation Therapy. The objective of the present study was to determine the influence of tinnitus habituation therapy on auditory abilities, on the self-perception of tinnitus regarding intensity and discomfort, and its impact on the quality of life of the patient. Objective: To determine the influence of tinnitus habituation therapy on auditory abilities, on the self-perception of tinnitus loudness and discomfort, and its impact on the quality of life of the patient. Methods: The present research comprised a quasi-experimental study that was conducted at a Research Laboratory at Federal University of Minas Gerais, in the city of Belo Horizonte, Brazil. The study was previously approved by the Ethics Committee of the University under number 48473215.9.0000.5149. The study was conducted with 19 individuals with tinnitus. Audiological tinnitus evaluations and auditory processing assessments were performed. Subsequently the volunteers underwent tinnitus habituation therapy for six months. Ultimately, all of the individuals were reevaluated. Results: The study sample consisted of 19 individuals, of which eleven were female, and eight were male. The mean age was 59 years (± 9.6), ranging from 40 to 74 years. In the sample, 57.9% of the subjects stated that they were uncomfortable regarding intense sounds, and 42.1% were not bothered with it. Concerning dizziness, 42.1% reported the presence of the symptom, while 57.9% reported it had never occurred. A statistically significant reduction in tinnitus self-perception was observed in relation to loudness, discomfort, and its impact on the quality of life ($p = 0.001, 0.001, 0.023$, respectively). However, the influence of tinnitus habituation therapy on auditory abilities was not verified. Conclusion: Tinnitus habituation therapy was effective in reducing the self-perception of tinnitus loudness and discomfort, as well as the impact of the symptom on the quality of life. However, the influence of these factors was not observed on the improvement of auditory processing skills.

P-05

ACOUSTIC REFLEX AND AUDITORY CLOSURE IN YOUNG ADULTS: EXPLORING AN ASSOCIATION

Thaís Cunha Arantes Braga, Luciana Macedo de Resende.

Federal University of Minas Gerais

Introduction: In clinical practice, auditory findings indicating alteration or absence of stapedial reflexes without any alteration of middle ear or hearing thresholds are common. Considering that the stapedial reflex arc encompasses auditory nuclei of the superior olivary complex, it has already been verified that there is a relationship between altered stapedial reflexes and alterations in auditory processing abilities. Objective: To verify if there is a relation between the alteration of stapedian acoustic reflexes and the alteration of the auditory closure ability detected in the Speech in Noise test in undergraduate students of a higher education institution. Method: This study has been approved by the Ethics Committee under the registration number 913 626. 118 students, aged between 18 and 35 years old, underwent a basic audiological evaluation, acoustic reflex research and Speech in Noise test. For reflex research, any result of absent reflex or increased reflex (difference between hearing threshold and reflex above 90dB) in at least one ear was considered altered. For the Speech in Noise test, any test with a percentage of correct answers lower than or equal to 72% or a difference greater than 20 percentage points between the lists recorded with and without competitive noise was considered altered. Results: In the Speech in Noise test, 37 of the 118 students had altered results. In the reflex research, 88 of the 118 students presented alterations in at least one acoustic reflex in at least one ear, so no statistical association was found between the results of the two tests. Conclusion: No statistically significant association was found between the alteration in stapedian acoustic reflexes and the alteration in the Speech in Noise test.

P-06

PERCEPTION OF PARENTS AND PROFESSIONALS ABOUT NOISE IN A NEONATAL UNIT IN THE FEDERAL DISTRICT

Sara Ribeiro Dos santos, Bruna De Sousa Santos, Alexandre De Oliveira Moura, Paloma Gomes De Melo Bezerra(apresentadora), Mariana De Melo Rodrigues, Sergio Luiz Garavelli, Alleluia Lima Losno Ledesma, Andreza Monforte Miranda e Isabella Monteiro De Castro Silva.

Brasília University (UnB)

Introduction: Technological advances in the area of neonatology over the years has brought a higher survival rate for newborns who need care of the neonatal intensive care units (NICU), the technological tools were implanted in these units with the aim of provide newborns with the best therapy with a short recovery period. However, these technological apparatuses may be responsible for making the therapy environment noisy. Newborns in intensive care units need intensive care and a quiet environment for recovery to occur. When exposed to noise, the newborn presents manifestations of discomfort that may cause clinical behavioral changes or physical damage to his hearing system. Objective: The aim of this study was to evaluate the perception of parents and professionals about the noise in the unit and the impact of noise on the health of the newborn and the health of professionals and parents. Methodology: This is a qualitative study conducted at the Neonatal Intensive Care Unit of the Sobradinho Regional Hospital (HRS) of the Federal District. Questionnaires were applied to parents and professionals who attended the unit during the research period to analyze the perception of the child. noise in the unit, the main sources of noise, possible changes caused by professionals, parents and newborns and their opinion on the possibility of reducing noise in this environment through behavioral changes. Results: Parents and professionals considered that the noise in the unit is of moderate intensity. The noise in the unit was attributed by the research participants as responsible for possible behavioral and physiological changes in the babies. Parents and professionals reported that noise is capable of causing behavioral and psychological changes in professionals, which can be harmful in the service and emotional changes in parents. Conclusion: Based on this study it can be concluded that in the opinion of professionals and parents the perception of moderate noise in the NICU predominated. Both groups believe that newborns, professionals and parents who are exposed to the noise of the unit can be affected, causing physiological and behavioral changes.

P-07

EVIDENCES CONCERNING THE RELATIONSHIP BETWEEN VESTIBULAR SYSTEM AND COGNITIVE FUNCTIONS BY USING BALANCE TRAINING EXERCISES

Fernanda Santos Fernandes, Carlos Eduardo Batista de Sousa
North Fluminense State University Darcy Ribeiro

INTRODUCTION: Dizziness affects about 15 to 20% of the adult population. The prevalence is high in the elderly. Vertigo caused by vestibular changes occurs among a quarter of complaints related to body imbalance. Cognitive deficits can be associated with any age group and impact negatively on individual's life. Recent studies in the last two decades show a direct relationship between the vestibular system and cognitive functions. OBJECTIVES: To identify the association between the vestibular system and cognition, in particular, whether the application of balance training exercises can be effective in vertigo treatment. METHODOLOGY: The CAPES Journal Portal was the source for a systematic review. The criterion for research was articles in English published in major health and neuroscience journals in the last two decades. Keywords for the search were “Vestibular System”, “Cognitive Functions” and “Balance Training”. RESULTS: The vestibular system plays a central role in human balance. Recent studies suggest a causal interrelation between the vestibular system and cognitive functions e.g., attention, perception, memory, executive functions. Empirical evidence shows that cognitive deficits are present in people suffering from chronic vestibular disorders. The correlation seems to be strong enough to set interconnectivity between vestibular changes and cognitive systems. Alongside, there are additional symptoms such as depression and anxiety. Preliminary results point that balance training exercises have a direct association with improvement in body balance and cognitive enhancements. Furthermore, the benefits can be verified even in subjects with no vestibular disorders. Balance training exercises can also induce neuroplasticity in areas involved in cognitive processes and regions related to body balance. CONCLUSION: The study sheds light on the relation between vestibular system and cognitive functions by mean of balance training-exercises. This discovery can support the development of therapies in several areas, such as speech therapy, psychology, education, gerontology, etc. It can be applied in any age group. Balance training exercises can benefit not only patients with cognitive and balance disorders but also it can help to prevent and maintain these functions over time.

P-08

HEARING ALTERATIONS AND BIOTINIDASE DEFICIENCY: A LITERATURE REVIEW

Valeska Letícia Gonçalves Rodrigues, Elaine Alvarenga de Almeida Carvalho, Ana Lúcia Pimenta Starling, Tamara Miranda de Azevedo, Rodrigo Rezende Arantes, Vinícius Soares Garcia, and Patrícia Cotta Mancini

Federal University of Minas Gerais

Introduction: Biotinidase deficiency (BD) is an autosomal recessive metabolic disorder in which biotin is not released from proteins in the diet during digestion or from normal protein turnover in the cell. Biotin, also called vitamin B7, is an important water-soluble nutrient that aids in the metabolism of fats, carbohydrates, and proteins. Individuals with BD are born asymptomatic and may present with neurological, ocular, infectious, and auditory changes if they are not treated in a timely manner. Objective: To review the scientific literature that had Biotinidase Deficiency as a guideline and its relation with hearing loss. Methods: Systematic review of literature conducted in the databases CAPES, PubMed, BVS-LILACS, SciELO, MEDLINE, NPG (International Science and Nature Journal) and Science Direct (ELSEVIER). This review included articles published between 1983 and 2019 that answered the research question, studies performed with individuals at any age diagnosed with DB, and clinical studies that performed hearing assessment in patients with DB. We excluded experimental studies and articles that did not report the audiologic alterations. Results: 39 studies were selected but only 18 met the inclusion criteria. From these, 9 studies were case reports. Only one article presented the complete audiological test results. All 18 studies were conducted with non treated patients, and severe to profound sensorineural hearing loss was found in DB patients if there was no treatment within three to five months of age. Conclusion: Patients with non treated BD may present with auditory disorders, especially with severe to profound sensorineural hearing loss. More studies with early treated BD patients are necessary to elucidate the damage to the auditory pathways caused by this metabolic disorder.

P-09

BEHAVIORAL HEARING ASSESSMENT IN INFANTS WITH BIOTINIDASE DEFICIENCY

Luiz Cláudio Ferreira de Oliveira, Elaine Alvarenga de Almeida Carvalho, Ana Lúcia Pimenta Starling, Rodrigo Rezende Arantes, Vinícius Soares Garcia e Patrícia Cotta Mancini

Federal University of Minas Gerais

Introduction: Biotinidase deficiency (BD) is an autosomic recessive metabolic disorder that causes biotin deficiency. Biotin is an important nutrient that aids in the metabolism of fats, carbohydrates, and proteins. Individuals with BD are born asymptomatic and may present with neurological, ocular, infectious, and auditory changes if they are not treated. The clinical manifestations usually occur between 2 and 6 months of age. Objective: To evaluate the auditory behavior in children under two years of age, diagnosed with biotinidase deficiency, who are undergoing treatment. Methodology: This is a cross-sectional descriptive study conducted with 15 infants with early treated BD aged between 2 months and 2 years old. Audiological anamnesis was applied and participants underwent behavioral auditory assessment using rhythm band instruments, whose acoustic characteristics ranged from 315Hz to 5000Hz and intensities ranged from 55 to 100 dBNPS. In addition, the pediatric audiometer was used to ascertain the minimum response level at frequencies of 500, 1000, 2000 and 4000 Hz bilaterally. Results: All participating infants are undergoing treatment and use Biotin. During the anamnesis no parent or guardian reported any hearing complaint and only two children had a history of hearing loss in the family. On the behavioral hearing assessment all children had age-appropriate auditory behavior and blink reflex present. The minimum response level was 20 dB at all frequencies in both ears. It was observed that children older than one year required longer conditioning time, showed agitation and reduced attention span and had more interruptions in the examination. Conclusions: In this preliminary study, children with BD who are being treated with biotin exhibited age-appropriate hearing behavior.

P-10

USE OF AFFORDABLE TECHNOLOGY FOR MOTION SICKNESS TREATMENT

Marcia Cristina de Paula Rosa, Antônio Eustáquio Pertence, Lidiane Menezes Bento, Micaela Geane Santos Lima, and Patricia Cotta Mancini

Federal University of Minas Gerais

Introduction: The prevalence of motion sickness has increased with modern life due to the use of various modes of transportation and the spread of video games, 3D movies and virtual simulators. Vestibular rehabilitation uses an exercise program with oculomotor and head movements to treat individuals with motion sickness. Objective: To develop and test the effectiveness of moving digital imaging technology as a tool for vestibular rehabilitation in individuals with motion sickness. Methodology: This study was approved by the Research Ethics Committee under number CAAE 17853713.0.0000.5149. A DVD was produced with GIF images extracted from the Google image bank promoting optokinetic, saccadic and tracking eye movements. This DVD was tested in a quasi-experimental pilot study with a group of 9 adult patients with exclusive motion sickness complaint who only used the DVD as a treatment. This group underwent pre and post treatment comparison of the following evaluations: Visual Analog Scale - VAS for motion sickness complaint and Handicap Questionnaire for Dizziness - QHT. Proportion, central tendency and dispersion measurements were performed for descriptive data analysis. For continuous variables, means comparison tests were used, according to the distribution of variables and for numerical variables analysis, the Wilcoxon test was applied. A significance level of less than 5% was considered in all analyzes. Results: There was an improvement in motion sickness symptoms in all individuals, with a statistically significant difference in the comparison before and after treatment for motion sickness with the use of DVD. Conclusions: The treatment of motion sickness through the use of DVD with digital visual stimulating images was effective to remedy and / or reduce symptoms and improve the impact on participants' quality of life. It is an affordable tool, low cost and easy handling, which favors its use in clinical practice.

P-11

AFFORDABLE TECHNOLOGY APPLIED TO VESTIBULAR REHABILITATION

Marcia Cristina de Paula Rosa, Antônio Eustáquio Pertence, Lidiane Menezes Bento, Micaela Geane Santos Lima, and Patricia Cotta Mancini

Federal University of Minas Gerais

Introduction: The use of digital imaging technology to stimulate eye reflexes has been added to vestibular rehabilitation, a method known to be effective in treating balance disorders and preventing falls. Objective: To develop and evaluate the benefits of using accessible and affordable technology for rehabilitation of balance disorders. Methodology: This study was approved by the Research Ethics Committee under number CAAE 17853713.0.0000.5149. A DVD was produced with GIF images extracted from the Google image bank promoting optokinetic, saccadic and tracking eye movements. This DVD was tested in a quasi-experimental pilot study of 21 adult patients complaining of dizziness or imbalance who were referred for vestibular rehabilitation. They were distributed in a control group (A) with 10 subjects and an experimental group (B) with 11 participants. The individuals in groups A and B were matched according to gender, age group, so that the groups had similar demographic characteristics. Participants in both groups underwent conventional vestibular rehabilitation and group B was added to DVD. The results of group A and B evaluations were compared with each other. The following evaluations were performed: Visual Analog Scale - VAS for dizziness complaint, Berg Balance Scale - BSE and Handicap Questionnaire for Dizziness - QHT. Proportion, central tendency and dispersion measures were used for descriptive analysis of the data. Continuous variables were analyzed with mean comparison tests. Fisher's exact test was used for categorical variables in the comparison between groups A and B. T-Test and Paired T-Test analyzed numerical variables for comparison of groups. It was considered a significance level lower than 5%. Results: there was improvement of dizziness and imbalance symptoms in both groups, and no statistically significant difference was found in the comparison between groups A and B regarding the use of the DVD. Conclusion: This study contributed to the development of new low cost technology and easy access in clinical practice, contributing to a greater diversity of complementary exercises for use in vestibular rehabilitation

P-12

CORTICAL HEMODYNAMICS FROM A BABY OF TWO MONTHS AFTER VOCAL STIMULATION FROM HIS DEAF MOTHER: CASE REPORT

Ana Lívia Libardi Bertachini, Luciana Macedo de Resende, Gabriela Cintra Januário, Gláucia Manzan Queiroz de Andrade , Jonas Jardim de Paula, Débora Marques de Miranda

Federal University of Minas Gerais

Hemodynamic responses from a child with congenital toxoplasmosis, elicited through maternal voice stimulation from a hearing impaired mother, are described and compared to six children diagnosed with congenital toxoplasmosis, but with normal hearing mothers. All mothers were asked to talk spontaneously with their babies, in a sequence of 10 seconds of conversation and 10 seconds of pause (silence). When we analyzed the size of the effect we noticed a greater prominence in the frontal region (right and left) and the left temporal region and when it comes to the stimulus performed with the maternal voice a greater activation was noticed in the frontotemporal and temporoparietal regions. It was possible to identify that even in the presence of evident oral communication difficulty from the deaf mother with her baby, the activated hemodynamic areas are the expected ones and the same observed regions in the comparison group.

P-13

THE INCLUSION OF PEOPLE WITH HEARING LOSS IN THE LABOR MARKET

Martins-Costa, Eduardo Mendes; Carvalho-Freitas, Maria Nivalda
Federal University of São João del-Rey

Nowadays, people with hearing loss represent around 5% of the world population and they are among the favorite ones to fill the vacancies reserved by the Quotas Law (Law number 8213/1991), because according to the managers these people require less adaptation to the work environment and better social acceptance. Regardless, these people face varied difficulties to be included in this environment, facing accessibility problems concerning communication, prejudice and stigmatization. This paper intends to identify which are the main difficulties faced by workers with hearing loss and the main strategies used by these people to overcome the accessibility problems they face and to insure their inclusion in the labor environment. Simultaneously, this paper tries to understand how these difficulties affect the self-perception and the social identity of these people. For this, twelve people between the ages of 21 and 54 were interviewed. This research sample was equal in relation to gender (50%) and all people have bilateral hearing loss. The semi-structured interview was applied and the theme/category-based content analysis proposed by Bardin was used. As partial results, all people complained about their coworker's way of speaking, concerning intonation, physical obstacles that obstruct lip-reading, distance, speed and mouth articulation. Other circumstances are also obstacles to these people, such as, noise, telephone communication and group conversation. As strategies to overcome these barriers, they can act in an integrative or non-integrative way, that is, becoming part of the situation or keeping distance from it, respectively. The integrative way consists in asking people to repeat what they said, letting people in the company know about their hearing loss, asking for a coworker support when they have difficulties to hear a conversation or wearing hearing aids. However, in other situations, they pretend to have understood what was said, refrain from taking part in group conversations or meetings and avoid communication via telephone. So, it is noticeable that the inclusion of people with hearing loss in the labor market might be ineffective, requiring more social and organizational support. Keywords: inclusion; hearing loss; deaf; work

This project is part of a Researching Program from the Accessibility, Diversity and Work Center of Research (NACE), named "Exclusion-inclusion of people with functional difference (disability)", approved by the Institution Ethical Committee (CAAE – Brazilian Base: 94280318.5.0000.5151) in October, 2018. Promotion Agency: CAPES - Coordination for higher Education Staff Development

P-14

RELATIONSHIP BETWEEN THE HEARING LOSS DEGREE AND QUALITY OF LIFE OF POST-LINGUAL HEARING-IMPAIRED ADULTS

Érika da Silva Ramos, Michella Bongiovanni Vargas and Tiago Costa Pereira
Vila Velha University

Introduction: According to data from the Brazilian Institute of Geography and Statistics (IBGE), at the year of 2000, 3.37% of the brazilians already had some degree of hearing loss. Individuals with ages between 15 and 64 years old (2.95%) presented hearing impairment, while those over 65 years old represented 21%. According to the World Health Organization (WHO) in 2012 it is estimated that around 350 million people worldwide have hearing loss, the most frequent is sensorial type. At the ages of 18 and 65 years old the individual experiences the phase of greater social fulfillment, being more productive, forming a family, advancing in the educational and professional field. Studies indicate that the presence or occurrence of hearing impairment at this stage can alter their life. Objective: to investigate the relation between hearing loss and quality of life of post-lingual hearing-impaired individuals, seeking to understand which aspects and domains of life are most affected. Methods: This study was approved by Ethical Committee number 3.205.989. This is a descriptive analytical cross-sectional study conducted with 30 post-lingual hearing-impaired adults. Ages ranged from 29 to 88 years (mean 59:57). For data collection, a semi-structured interview consisting of a questionnaire prepared by the researchers was conducted. The questionnaire investigated the characteristics of hearing loss, the most recent audiological exams were transcribed. Regarding quality of life, the Whoqol-Bref Protocol was used. Statistical analyzes between the variables hearing loss, gender, age, education and quality of life were verified by t-test and ANOVA. The significance level was 5%. Results: A statistically significant difference was found only between the Whoqol Bref Protocol's “Social Relations” domain for the degree of mild / moderate hearing loss in the left ear. Conclusion: For this sample, hearing loss in mild and moderate degrees in the left ear has negative impacts on the individual's quality of life, specifically for the social relationship domain. These findings raise the need to consider quality of life impacts specifically in individuals with left unilateral hearing loss.
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P-15

CHARACTERISTICS OF TINNITUS OF INDIVIDUALS ATTENDED BY THE HEARING HEALTH PROGRAM IN A SCHOOL CLINIC.

Cíntia Santos Silva Machado, Lara Evelin Alves de Assis e Lorena Rodrigues Toledo.

Pontifical Catholic University of Minas Gerais

Introduction: Tinnitus is defined by a conscious perception of a sound that can originate in the ears or head, without the presence of an external source that generates this sound. It can be characterized as noise similar to the noise of rain, sea, running water, bells, insects, whistles, wheezing, buzzing, pulsating, and can be continuous or intermittent, intense or soft and have different tonal characteristics. Purpose: to characterize hearing and tinnitus as well as its impact on the quality of life of patients. Methods: the study was conducted in a school clinic with 14 individuals from the Hearing Health Care Service. It was approved by the Ethics and Research Committee of the Pontifical Catholic University of Minas Gerais under the number CAAE 83640018.9.0000.5137. Each participant was submitted to the following procedures: Acoustic Impedance Tests, Tonal Audiometry, Speech Audiometry, High-Frequency Audiometry, Acufenometry, Tinnitus Protocol and Hyperacusis, Visual Analogue Scale, Tinnitus Handicap Inventory Translated and WHOQoL-BREF Questionnaire. Results: It was possible to verify that the most common type of hearing loss was moderate sensorineural hearing loss and an irregular audiometric configuration. Tinnitus, in the morning and/or at night, are equally distributed, being of a single sound, acute pitch, with volume variation, bilateral location, of the intermittent type and with the most observed time of more than 10 years. The same, regardless of type and volume variation, is low intensity and easily masked, thus not interfering in the quality of life of the patients in question. Conclusion: We found that in the sample studied, hearing loss and tinnitus are similar to those already defined as in presbycusis. For tinnitus, the intensity is low and easily masked with approximately 2 decibels not impacting on the quality of life, Visual Analogue Scale, Tinnitus Handicap Inventory. We conclude that the annoyance of tinnitus depends not only on its specific characteristics but also on the affective, emotional and mental state of the individual who presents it.

P-16

A REFLECTION ON ACCESS TO HEALTH SERVICES BY BRAZILIAN DEAF

Lucas Rodrigues Teles - Natália Cristina Bocato Celestino - Sirley Alves da Silva Carvalho

Federal University of Minas Gerais

Introduction: The Brazilian Sign Language is the natural language of the Brazilian deaf community and enables people with hearing loss to communicate. The Constitution of 1988 has established health as a right of all and a duty of the state, but one of the prevalent difficulties in access to health by the deaf is communication with professionals.
Methodology: A narrative review was conducted to promote a reflection on accessibility for the deaf in relation to health services. Results: The language barrier between deaf and health professionals still compromises access, as well as their ability to develop autonomy in care. Even with measures such as Bill 535/2015 that is pending and intended to ensure that people with hearing impairment translate into Libras in public administration bodies and entities and companies related to public services, the deaf are not fully assisted. Awareness raising and capacity building of professionals, as well as the transposition of content related to health promotion, protection and recovery for Libras can be effective tools to promote the real accessibility to health services by the deaf community. Conclusion: It is necessary the complete processing of the Bill 535/2015 that makes more accessible the care of deaf in health services, the continuous development in research in Brazilian universities, training of health professionals and use of technologies capable of translating for Libras health promotion, protection and recovery information already provided by the Ministry of Health.
KEYWORDS: Hearing. Deafness. Sign language. Access to health services. Hearing.

P-17

ACCESSIBILITY AND INNOVATION IN DENTAL GUIDELINES ON SLEEP DISORDERS

Lucas Rodrigues Teles, Raquel Fabiane Nogueira de Jesus dos Santos, Mayane Sarah Soares Miranda, Érika de Resende Rodrigues, Larissa Carcavalli Santos and Junia Maria Cheib Serra-Negra

Faculty of Dentistry, Federal University of Minas Gerais

Introduction: Brazilian deaf people have as a communicative possibility the “Brazilian Sign Language” officialized by Law No. 10.436 sanctioned on April 24, 2002, which recognizes it as a language. The members of the project “Dental Care for Children and Adolescents with Sleep Disorders” of the School of Dentistry of the Federal University of Minas Gerais, in addition to assisting the children with regard to sleep disorders in a multidisciplinary way, prepare informational materials on hygiene. sleep and spread through social media. Methodology: Photographic devices such as tripod, camera and handheld device were used with editing applications to record and prepare videos with informative content on the topics “tips on proper sleep health, chronotype profile and diseases associated with sleep disorders” accessible in Libras. Results: The initiative of transposing the contents into the language used by the deaf community was approved by students and teachers of the institution, especially because it is a widespread means of dissemination, which is social media. Family members of project members who are profoundly deaf and who received the content to appreciate and
express reported easy understanding. Patients and their hearing family members of the project also expressed satisfaction with the initiative using the “comments” and “likes” resources provided by social media to explain their perceptions. Conclusion: Since deaf and health professional communication is a great challenge according to the literature and the wide access to social media, it is important to look for alternatives such as the interpretation to Libras of the orientations made in the university health projects, allowing accessibility and autonomy of the deaf with regard to decisions about their own health. KEYWORDS: Access to health services. Dentists. Hearing. Sign language.
Sleep Wake Disorders. Social media. Deafness.

P-18

HEARING LOSS ASSOCIATED WITH OBSTRUCTIVE SLEEP APNEA: A REVIEW

Mayane Sarah Soares Miranda, Érika de Resende Rodrigues, Lucas Teles and Patrícia Cotta Mancini.

Federal University of Minas Gerais

Introduction: Obstructive Sleep Apnea Syndrome (OSAS) can influence the functioning of the auditory system in several ways. The hypopnea or apnea moments caused by the syndrome may damage the peripheral auditory system. Additionally, the decreased attention, memory and concentration, that are characteristic of the syndrome, may influence the correct functioning of the central auditory system. Objective To review the existing literature and analyze the relation between obstructive sleep apnea syndrome and changes in the auditory system. Method The bibliographic survey was performed in the following databases: SciELO, Google Scholar and Portal Capes, with the following descriptors: “hearing loss, obstructive sleep apnea and sleep disturbance”, through crosses and different combinations. Papers selected for analysis should meet the following requirements: (1) Be an article, thesis or literature review; (2) Cover in its text obstructive sleep apnea and correlate it in some way with hearing function; (3) Be published in Portuguese or English. The following were excluded from the sample: (1) duplicate works; (2) papers with full version unavailable (3) papers addressing cases whose hearing loss is caused by other diseases, syndromes or conditions else than obstructive sleep apnea syndrome. The stipulated search period was the last 10 years. We found 183 articles, 7 of which were selected because they fit the criteria. Results OSAS patients presented wave V latency on the Auditory Evoked Potentials test, progressive increase of P3 component latency in speech stimulation in LLR, findings suggestive of decreased acoustic information processing speed, alterations in auditory processing skills and significant reduction in amplitude of p300 compared to p300 generation in normal individuals. Conclusion Existing research indicates that there is a correlation between moderate and severe OSAS and changes mainly in auditory processing. Cochlear lesions appear to be more related to more severe cases or chronic conditions.

P-19

QUALITY OF LIFE IN THE ELDERLY BEFORE AND AFTER ADAPTATION OF HEARING AIDS

Cíntia Santos Silva Machado, Fernanda Souza Barreto, Thaline Moura de Oliveira
Pontifical Catholic University of Minas Gerais

INTRODUCTION: The term quality of life encompasses individual values and relates to the environment in which an individual lives, including physical and psychological aspects, level of independence, social relationships and personal beliefs. Presbycusis is the hearing loss that occurs with aging, a factor that can significantly affect an individual's quality of life. The rehabilitation, through the selection and adaptation of the hearing aids can contribute greatly to the improvement of the quality of life, as it provides the reintegration of the user to communicative situations and social life, resuming their autonomy. OBJECTIVE: To verify the impact of the use of hearing aids for a short period of time on the quality of life of the elderly before and after adaptation. METHODOLOGY: The research was approved by the Ethics and Research Committee of the Pontifical Catholic University of Minas Gerais, (CAAE 83351318.4.0000.5137). This is an analytical, observational, cross-sectional study performed with 15 elderly of both sexes attended at a Hearing Health Care Service, with hearing loss diagnosed and with indication for use of the hearing aids. Initially, the elderly responded to the WHOQOL-Bref quality of life questionnaire and, after 30 days of the hearing aids adaptation, the same questionnaire was reapplied. This protocol consists of questions related to self-perception of quality of life and satisfaction with health, and questions related to physical, psychological, social relations and environment domains. RESULTS: There was an improvement in response in all WHOQOL-Bref domains after hearing aids adaptation. It was found that the use of hearing aids favored cognition, as it positively influenced factors such as concentration and memory, in addition to reducing isolation and depressive symptoms and increasing the autonomy, communication and socialization of elderly individuals with hearing loss. CONCLUSION: The use of hearing aids provided positive impacts on the quality of life of the elderly with hearing loss, enabling improvement in the physical, psychological, social relationships and environment domains, favoring communication, autonomy, self-esteem, sustained attention and understanding of information, aspects that are extremely important and relevant in social interaction, contributing to a healthy aging.

P-20

COMPARATIVE CASE REPORT: DOWN'S SYNDROME AND ITS IMPLICATION ON AUDITORY DIAGNOSIS

Caroline de Lima; Moisés do Carmo Alves; Yasmim Carvalho Telson; Luciana Macedo de Resende

Federal University of Minas Gerais

Introduction: Down's syndrome (DS) is a prevalent cromossomical mutation (21 trissomy) that may be associated to cognitive, sensory and motor impairment. Hearing loss is a sensory abnormality common to DS and its early intervention contributes to achieve normal language development. Conductive hearing loss is among the most frequent audiological profiles associated to DS. Although with lesser incidence, sensoryneural hearing loss may also be found in people born with DS Objective: to present a comparative audiological profile from two children Born with Down's Syndrome. Methods: This was a qualitative, comparative case report. Complete hearing assessment was performed, as well as language and auditory development evaluation. Both children are followed up since neonatal hearing screening. Clinical and medical data were withdrawn from the health service medical records. Results: First child, 13-month-old, presented recurrent conductive hearing loss. Her last exam showed type As tympanometric curve, absent transiently evoked otoacoustic emissions bilaterally. Normal thresholds were observed in auditory brainstem responses, with absolute latency and normal interpeak intervals. Otolaryngologist reported narrow auditory canal in his physical examination. The second child, five years and three months old, has bilateral profound sensoryneural hearing loss, diagnosed at two years of age, though in some periods also presented recurrent conductive component in the tympanometry results. This child, after a hearing loss trial period, was submitted to cochlear implantation at the age of february of 2018. First child is under otolaryngologic follow up and her parents received counselling regarding infant language and hearing development. The second child is under auditory habilitation and language stimulation with a specialized speech-language therapist. Conclusions: Conductive hearing impairment may be associated to anatomical malformations found in DS and its presence may be the cause of auditory and language development delay. The conductive component makes it difficult to establish auditory diagnosis when a neurossensory lesion is present. When evaluating DS children, audiologists may not exclude the possibility of neurossensory hearing loss. It's also important to follow up language and auditory development aiming to achieve early intervention, when necessary.

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P-21

EFFERENT AUDITORY SYSTEM STUDY WITH YOUNG SUBJECTS EXPOSED TO VARIED AND NON OCCUPATIONAL SOUND PRESSURE

Larissa Resende Assumpção, Ana Carolina dos Santos, Ludimila Labanca, Luciana Macedo de Resende

Federal University of Minas Gerais

Introduction: The efferent auditory pathway plays an important role in sound localization, auditory attention, acoustic signal detection and protection in noisy situations. Frequent exposition to elevated sound pressure levels through amplified music for long periods of time is one of the factors that may harm efferent system integrity, driving to mechanical and metabolical disturbances. Lesions are irreversible and may result in communication problems and hearing loss in the long term. Efferent pathway may be evaluated with distortion product otoacoustic emissions recording with the introduction of a suppressor noised simultaneously to the tones. Objectives: check for complaints regarding communication in silent and noisy environments and correlate the findings with the inhibitory effect of the efferent pathway in young individuals. Methods: Cross-sectional study performed with 48 individuals between 18 and 30 years of age. All individuals answered a questionnaire regarding hearing health and were assessed with pure tone audiometry, immitance measures, DPOAE with and without suppression. Mann-Whitney test was applied to compare inhibitory effect and hearing complaints in silent and noisy environments. Study had ethical approval from the study institution (1.918.514). Results: From the 48 individuals in the study, 6,3% reported difficulties communicating in silent and 35,4% in noisy situations, 62% reported to listen to loud music, 91% wear earphones and 70% with increased volume. Mean time spent listening to loud music in a daily basis was 2 hours. Comparative analysis between hearing complaints and the presence or absence of the inhibitory effect of the efferent pathway showed no significant correlation. Conclusion: this is the second step of this study. In the first moment DPOAE with suppression test-retest reliability was stablished. The next step is to increase sample including wave I analysis from the ABR. From this initial data, mean time of 2 hours of exposition to loud music did not seem to harm auditory system from healthy youngsters, when tested with DPOAE and DPOAE suppression.

P-22

COGNITIVE IMPAIRMENT RELATED TO HTLV-1 INFECTION IS EARLY DETECTED BY AUDITORY EVOKED P300

Aline Rejane Rosa de Castro; Ludimila Labanca; Luciana Macedo de Resende; Denise Utsch Gonçalves

Federal University of Minas Gerais

Introduction: Individuals infected by human t-cell lymphotropic virus type 1 (HTLV-1) are generally classified in the spectrum of HTLV-1 associated myelopathy (HAM) according to their neurological and mobility function. However, subclinical neurological changes and cognitive impairment (CI) may be underdiagnosed infected individuals that do not meet the criteria of HAM, on those who are considered asymptomatic and also on those with confirmed HAM. Aim: We aimed at comparing auditory event-related potential (P300) and CI self-perception between HTLV-1-infected individuals and healthy controls. Methods: The participants were 15(15.8%) individuals with HAM, 25(26.3%) probable-HAM (p-HAM), 20(21.1%) HTLV-1-asymptomatic carriers (AS) and 35(36.8%) seronegative controls. The mean age of 56,4±10,47 years was similar among the groups. All 95 participants were submitted to P300. The CI was defined by grading self-perception of everyday memory function from zero-to-10 with support of a visual analog scale. The study was approved by the Ethics Committee of the Universidade Federal de Minas Gerais (UFMG - nº 92928518.3.0000.5149) and was conducted according to the Code of Ethics of the World Medical Association (Declaration of Helsinki). Results: The compared variables were the amplitude and the latency of the electrophysiological wave. P300 amplitude ($p=0.001$) and latency ($p<0.001$) values were significantly better in controls when compared to HTLV-1-infected groups. There was a progressive delay in P300 latency from AS to HAM ($p<0.001$). The longer the P300 latency, the worse the CI self-perception ($p<0.001$) and the worse the patient's neurological status ($p<0.001$). Considering the self-perception of memory function as a gold standard, the ROC curve showed that P300 latency at the cut-off point of 354ms (±2 standard deviation) had 87%-sensitivity and 75%-specificity for the identification of CI. Conclusion: Even the individuals considered asymptomatic showed a significant delay in P300 latency. The electrophysiological evaluation using P300 disclosed neurological changes different from the classical spinal cord manifestations of HAM. These results confirm that HTLV-1-neurological disease is much broader than the classical medullar manifestation. Funding: Coordenação de Aperfeiçoamento de Pessoal em Nível Superior (CAPES – Brazil)

P-23

ELECTRIC PHYSIOLOGICAL PARAMETERS OF AUTOMATIC ABR BY CLICK AND CHIRP STIMULATION IN BABIES

Ana Luiza de Freitas Rezende, Ana Carolina Andrade Valadares, Daniella Bregunce Fernandes Ferreira, Sirley Alves da Silva Carvalho, Luciana Macedo de Rezende, Fabrice Giraudet, Paul Avan

Federal University of Minas Gerais

INTRODUCTION: The most commonly used stimulus to perform the ABR is click, however recent studies report better results with the chirp stimulus assuming that it better synchronizes the auditory pathways in the general population. Automatic ABR is widely used in neonatal hearing screening in infants with risk indicators for hearing impairment, however there are few studies evaluating chirp stimulus in this population.
OBJECTIVE: To verify AABR wave V parameters by click and chirp stimuli of neonates and infants with risk indicators who underwent neonatal hearing screening.
METHODS: This study was approved by the UFMG Research Ethics Committee (reference: 934,475). Data collection was performed at HC-UFMG, with neonates and infants from the Neonatal ICU, consisting in: Anamnesis, Transient Otoacoustic Emissions and AABR by click and chirp stimulus. Twenty-three participants were evaluated from December 2018 to July 2019 using ECHODIA ELIOS equipment. The first procedure performed was the anamnesis that aimed to verify the presence of risk indicators. After, the TEOAE was performed and then the AABR in the individuals that presented some risk indicators.
RESULTS: There was statistical significance regarding AABR wave V latency, which was lower in the left ear chirp stimulus. Participants who had mechanical ventilation as risk indicator achieved significantly higher V-wave latency values and significantly lower amplitude values than other participants when evaluated by click stimulus. Latency values were higher when evaluated by chirp stimulus in participants who used ototoxic agents. Examination time was statistically longer in underweight participants when evaluated by click stimulus and peri-intraventricular hemorrhage when evaluated by chirp stimulus.
Participants aged 40 weeks or older on the day of the examination had significantly lower latency compared to participants younger than 40 weeks on both stimulus.
CONCLUSION: The parameters evaluated in both stimuli varied according to the risk indicator for hearing loss presented. The results were better in the chirp stimulus evaluation in relation to the click on mechanical ventilation and low weight, however the opposite occurred in the use of ototoxic and peri intraventricular hemorrhage.

P-24

NOISE EXPOSURE AND HEARING OF CONSTRUCTION WORKERS OF THE UFMG SCHOOL OF MEDICINE

Raiane Alves de Matos, Tenoch Cruz Fontes e Patrícia Cotta Mancini
Federal University of Minas Gerais

INTRODUCTION: The noise level in construction environments is high and has increased because of heavier reliance on machines and power tools, and faster completion of projects. Tighter time schedules demand that several tasks are performed simultaneously, exposing the workers to more sources of noise at a time. Therefore, these environments can cause hearing damage in construction workers. OBJECTIVES: To analyze the noise exposure and the hearing of construction workers. METHODOLOGY: This is a cross-sectional analytical observational study with a non-probabilistic sample, approved by the Research Ethics Committee at number 0541.0.203.000-11. Data collection consists of interviewing the construction workers of Medical School of the Universidade Federal de Minas Gerais to collect data related to age, length of service, occupation, machines used during working hours and the use of hearing protective equipment, as well as data related to past history of hearing impairments and extra work auditory habits. Audiometry was performed to determine air hearing thresholds at frequencies from 250 to 8,000 Hz and bone thresholds from 500 to 4,000 Hz in both ears. Measurement of the noise level produced by the machines used by the construction workers at the workplace was performed with a digital decibel meter. RESULTS: The sample consisted of 26 workers, all males, with an average age of 42.46 years and average length of service in the construction industry of 14.12 years. The audiometric results showed that 30% of the sample showed noise induced hearing loss. It was observed that the noise level produced by all machines exceeded 85dB(A) and the hammer drill was the most noisy machine. CONCLUSION: The construction workers at UFMG presented noise induced hearing loss and are exposed to high sound pressure levels on their work environment. There is a need for consistent and conscientious use of hearing protection in this population.

P-25

CROS E BICROS SYSTEMS USERS' SATISFACTION

Cristiane Bueno Sales, Camila Rosse Barbosa da Silva, Marina Diniz Pinheiro Machado

Methodist University Center Izabela Hendrix

Introduction: Hearing loss can cause great difficulties in one's life. Sound amplification devices are one of the treatment forms and they are indicated accordingly to the type and degree of the hearing loss. There is also the Contralateral Routing of Signal System and the Bilateral Routing of Signal System, indicated for the individual who presents anacusis in one ear and normal hearing in the other or anacusis in one ear and some type of hearing loss on the contralateral side. Objective: To know the level of satisfaction of users of the Contralateral Routing Of Signal System and the Bilateral Routing Of Sinal indicated for individuals with anacusis. Methodology: Ethics and Research Committee approval number: 2,141,881. The sample consisted of all patients admitted to the Izabela Hendrix Hearing Health Care Service of the Unified Health System in Brazil that have been adapted with the Contralateral Routing Of Signal and the Bilateral Routing Of Signal System from January 2010 (when the service started) until June 2017. The assessment instrument used was the Satisfaction With Amplification in Daily Life (SADL) questionnaire. Results: The study included 14 patients using the CROS or BICROS System, seven male (50%) and seven female (50%). The average age was 51 years, minimum 25 years, maximum 73 years and 15.70 years of standard deviation. The adaptation time was variable, with a minimum of 10 months and a maximum of 5 years. The global score results showed that the subjects, on average, are satisfied with their devices. The same occurred for all subscales of the questionnaire and the Services and Costs subscale had the highest number of very satisfied people (93%). The lowest value found was related to image satisfaction (78%) and the individuals were very satisfied with the Negative Factors and the General Aspect (85%), which emphasizes an imminent degree of satisfaction with the hearing aids' daily use. Conclusion: There was a high satisfaction level among the individuals adapted with the CROS and BICROS device.

P-26
PROFILE OF CHILDREN ASSISTED BY THE MINAS GERAIS DEAF ASSOCIATION IN BELO HORIZONTE

Erika Clark, Ludimila Labanca, Denise Utsch Gonçalves.

Federal University of Minas Gerais

Introduction: The 2010 census carried out by Brazilian Institute of Geography and Statistics (IBGE) estimated that around 9.8 million people have hearing loss and among these around 2.6 million are deaf. In Minas Gerais State the Department of Education assists 1.530 deaf students and in Belo Horizonte city, the Municipal Department of Education assists at about 160 students enrolled in 82 public schools. Objective: To present socio-demographic characteristics, hearing profile, and communicative profile of children assisted by Minas Gerais Deaf Association in Belo Horizonte (ASMG). Methodology: This study was approved by ASMG and this is a descriptive cross-sectional study was carried out with secondary database provided by ASMG. These data have been obtained by an interview with interpreter of ASMG that answered a questionnaire about socio-demographic characteristics, hearing profile, and communicative profile of children assisted by the institution. Results: We included responses from 83 children, 58% girls, mean age of 14 years (minimum 6 and maximum 16 years old). The most prevalent type of hearing loss was the neurosensorial type, being 47% profound hearing loss, 24% severe and 8% mild hearing loss. Hearing impairment associated with other disabilities was found in 25% of children. Regarding the electronic device, 27% use bilateral hearing aids, 3% unilateral hearing aids, 16% unilateral cochlear implant (IC), 1% bilateral CI and 53% do not use hearing aids or CI. Regarding communication, 41% use Brazilian sign language (Libras), 13% oral communication, 41% oral communication and Libras, and 5% do not use oral communication or Libras. Regarding fluency in Libras, 18% are very fluent, 70% moderately fluent and 12% have no fluency in Libras. Conclusion: These data indicate the importance of knowing the profile of children with hearing loss in order to provide a better quality of life for this population. There was a high prevalence of children who use Libras to communicate, either independently or together oral communication. A lot of children are fluent in Libras. The findings highlight the need for public policies and educational measures that use Libras as a language of instruction.

P-27

GALVANIC VESTIBULAR STIMULATION: A THERAPEUTIC TOOL FOR PATIENTS WITH POSTURAL INSTABILITY

Ludimila Labanca, Tatiana Rocha Silva, Nathália Castro Botini Rausse, Rafael Teixeira Scoralick Dias, Júlia Fonseca de Morais Caporali, Ana Lúcia Borges Starling, Denise Utsch-Gonçalves

Federal University of Minas Gerais

INTRODUCTION: Recent studies have shown galvanic vestibular stimulation

(GVS) as a useful tool for postural instability rehabilitation. The GVS is an electrical stimulus that creates new neuronal links which enable partial or total recovery of that function which has been lost due to neurological disorder. The disease under this study was HTLV-1-associated myelopathy (HAM) that is characterized by medullary inflammatory alterations and causes postural instability in 30% of the infected subjects. There is no effective treatment for HAM so far. OBJECTIVE: This study aimed at evaluating if GVS can bring therapeutic improvement to balance disorders of patients with HAM. METHODOLOGY: Fifteen patients with HAM were submitted to five series of GVS applied on the mastoid processes from which the electrical current goes to the spinal cord tracts involved in postural balance. The procedure was applied once a week, during a six-week period. All patients were evaluated before and after the GVS treatment by posturography, Romberg test, Berg Balance Scale, Visual Analog Scale, and Time up and go test. To test electrophysiological changes, patients were evaluated before and after GVS by Vestibular Evoked Myogenic Potential (VEMP) from the oculomotor, sternocleidomastoid and soleus muscles. The data analysis compared the results before and after GVS. This Research was approved by UFMG Ethics Committee (CAAE 92928518.3.0000.5149). RESULTS: After GVS sessions, all patients presented instability improvement. We verified a higher stability in posturography tests and Romberg test, improvement in Berg Balance Scale values (p=0.034), a decrease in instability impact on daily activities (Visual Analog Scale) (p=0.046) and better performance during the walking test with increase on the length of the walking at Time up and go test (p=0.021). The VEMP of all the tested muscles showed no significant difference before and after GVS. CONCLUSION: This pilot study indicates GVS as a possible new therapeutic tool that is particularly simple and with few side effects. No change in the electrophysiological status of the spinal cord was detected after the procedure and perhaps the improvement may be due to a temporary increase in the release of neurotransmissions. More research is necessary to assess motor gain in patients' long-term performance.

P-28

RELATIONSHIP BETWEEN ELECTROPHYSIOLOGICAL THRESHOLD AND GESTATIONAL AGE

Josiana Rocha, Luciana Macedo de Resende, Ana Luiza de Freitas Rezende, Sirley Alves da Silva Carvalho

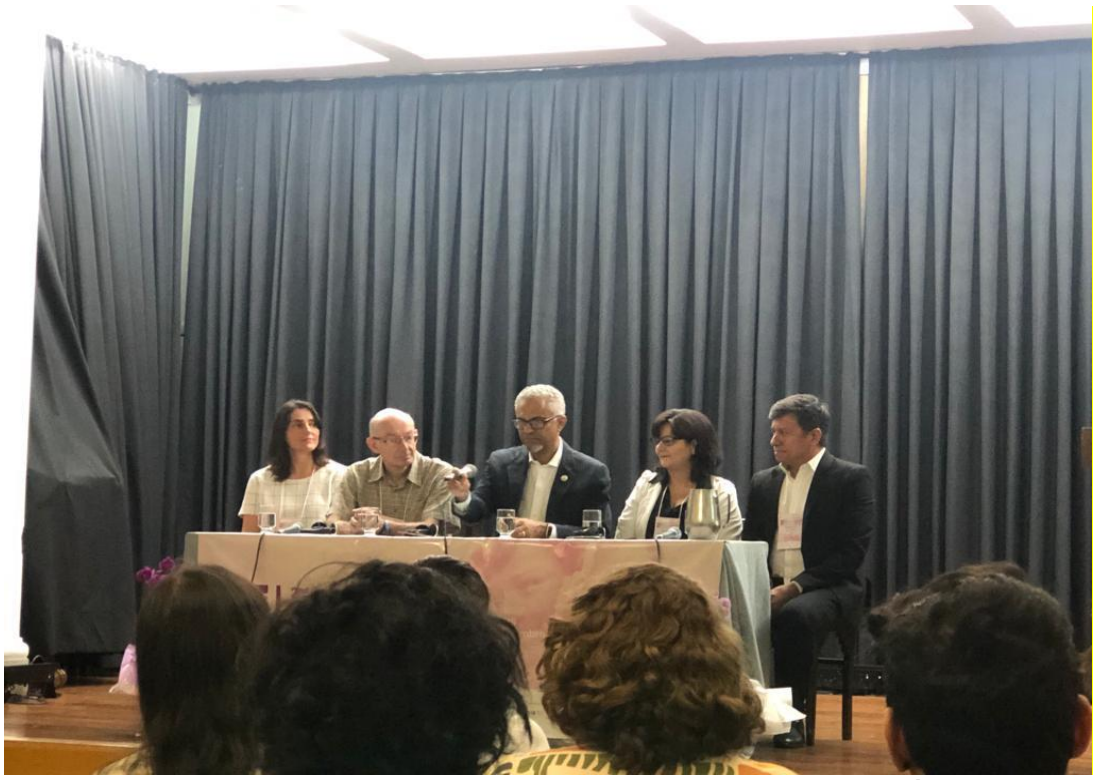
Federal University of Minas Gerais

Introduction: Brainstem Auditory Evoked Potential (ABR) is an extremely important test in Neonatal Hearing Screening because it evaluates the integrity and monitors the maturation of the auditory pathway. However, it is necessary to verify the electrophysiological threshold in different populations,

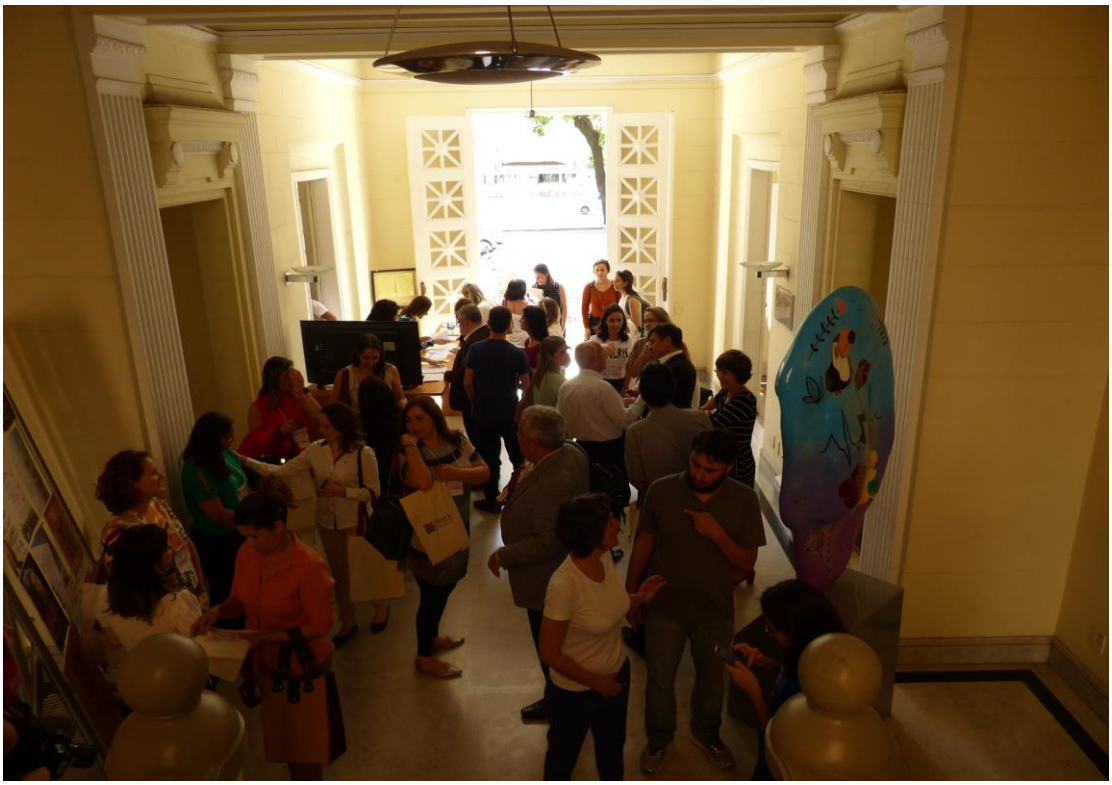
premature and term babies. Goal: To verify the electrophysiological threshold values in babies according to gestational age in the population from a University Hospital, reference in high risk pregnancy. Methods: This is a cross-sectional study with 25 babies. Inclusion criteria were babies with “pass” results in the neonatal screening. We excluded the babies with middle ear alteration, malformation of the pavilion or external acoustic canal and with altered result in any of the screening tests (TEOAE and ABR-A).The electrophysiological threshold in the clinical ABR was found through the click stimulus beginning at 80dBHL intensity for visualization of waves I, III and V and analysis of absolute latencies and interpeak intervals, proving the integrity. of the auditory pathway. After, the treshold found the wave V latency was also analyzed. The equipment used was the Elios® ECHODIA. This research was approved by the Ethics Committee, registration: 39000514.7.0000.5149. Data analysis considered gestational age to correlate with the threshold. Three groups were considered according to age in weeks: G1 (28 to 33 weeks), G2 (34 to 36 weeks) and G3 (37 to 41 weeks). Results: We tested 15 male and 10 female (50 ears). The average gestational age was 35 weeks, with a minimum 28 weeks and a maximum 41 gestational weeks. The average electrophysiological threshold of the 25 children was 30dBHL, with a minimum 10dBHL and a maximum 40dBHL in both ears. according to gestational age, group G1 presented an average of 38.5 dB HL, G2 27.5dB HL and G3 presented an average 28.5 dBHL. Regarding the wave V latency for the electrophysiological threshold, the values decreased according to age and in relation to the intensity, being the means G1: 8.4ms, G2 8.2 ms and G3 7.8 ms. Conclusion: The electrophysiological threshold improved according to the maturation of the auditory pathway as well as the latencies of wave V decrease with age. Acknowledgments: CAPES and Technical support: Echodia, St. Beauzire, France.

French Brazilian Symposium on Hearing - 2019

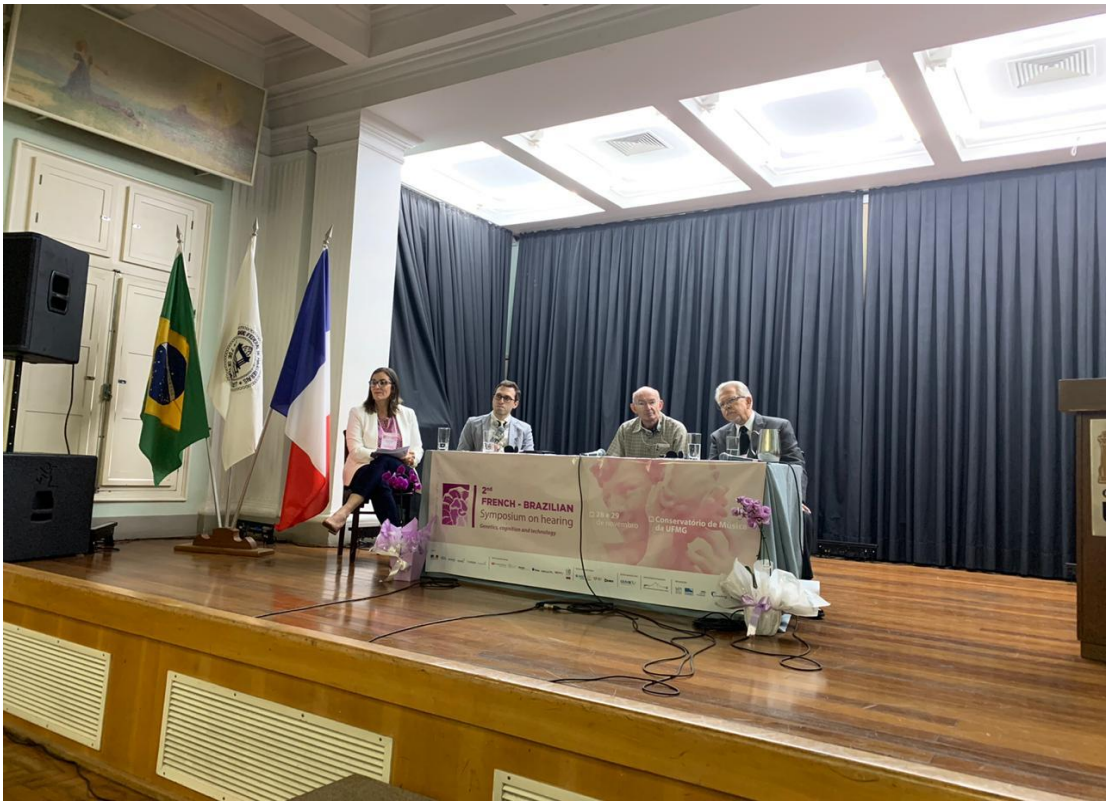
Collection of moments



Opening Ceremony
28th november, 2019

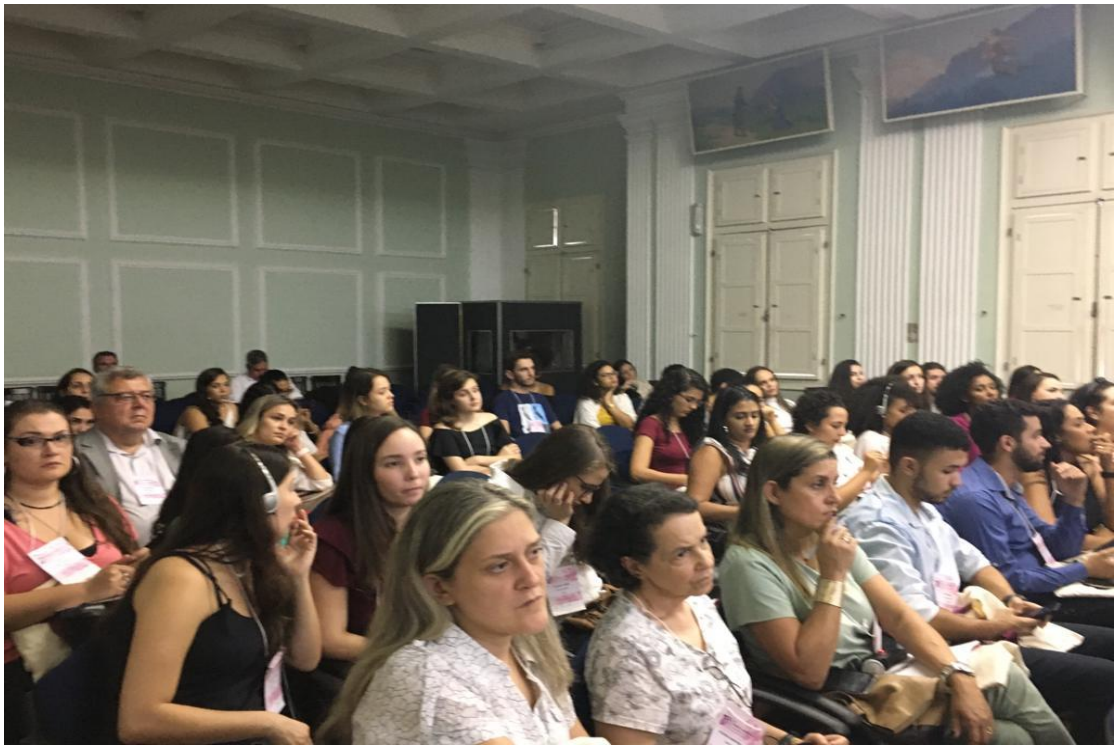


Welcome Reception
28th November, 2019

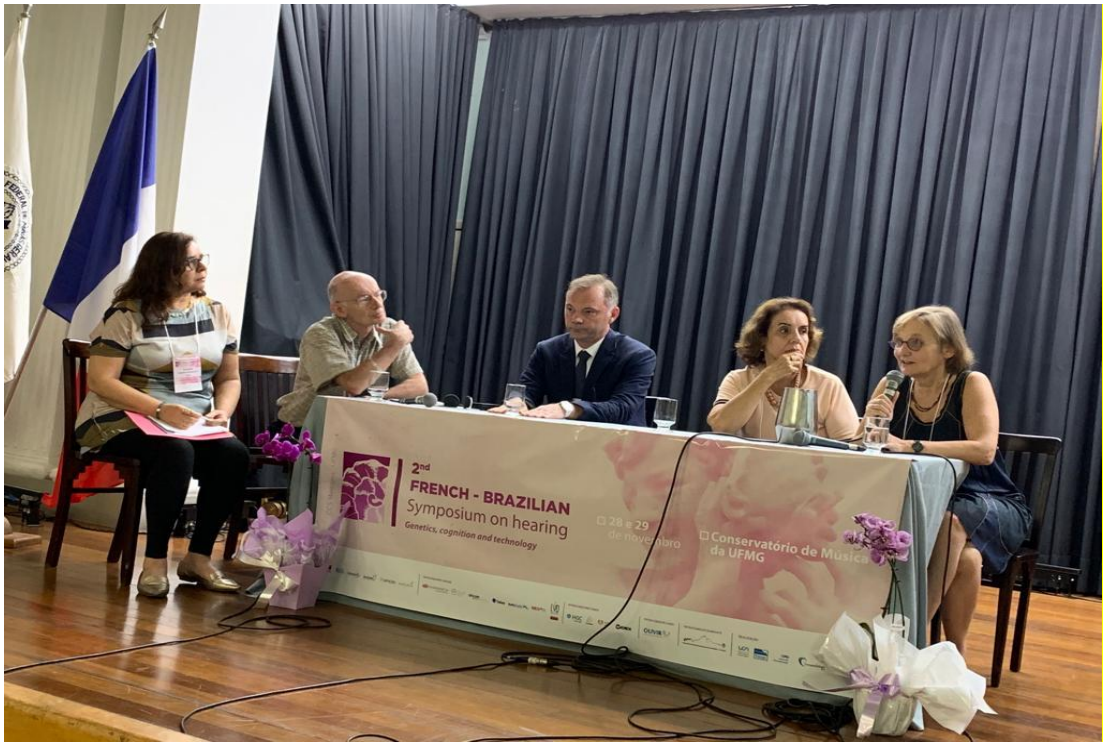


Left to right: Prof. Patricia Mancini, Prof. Nicholas Reed, Prof. Prof. Paul Avan and Prof. John Durrant

28th november, 2019

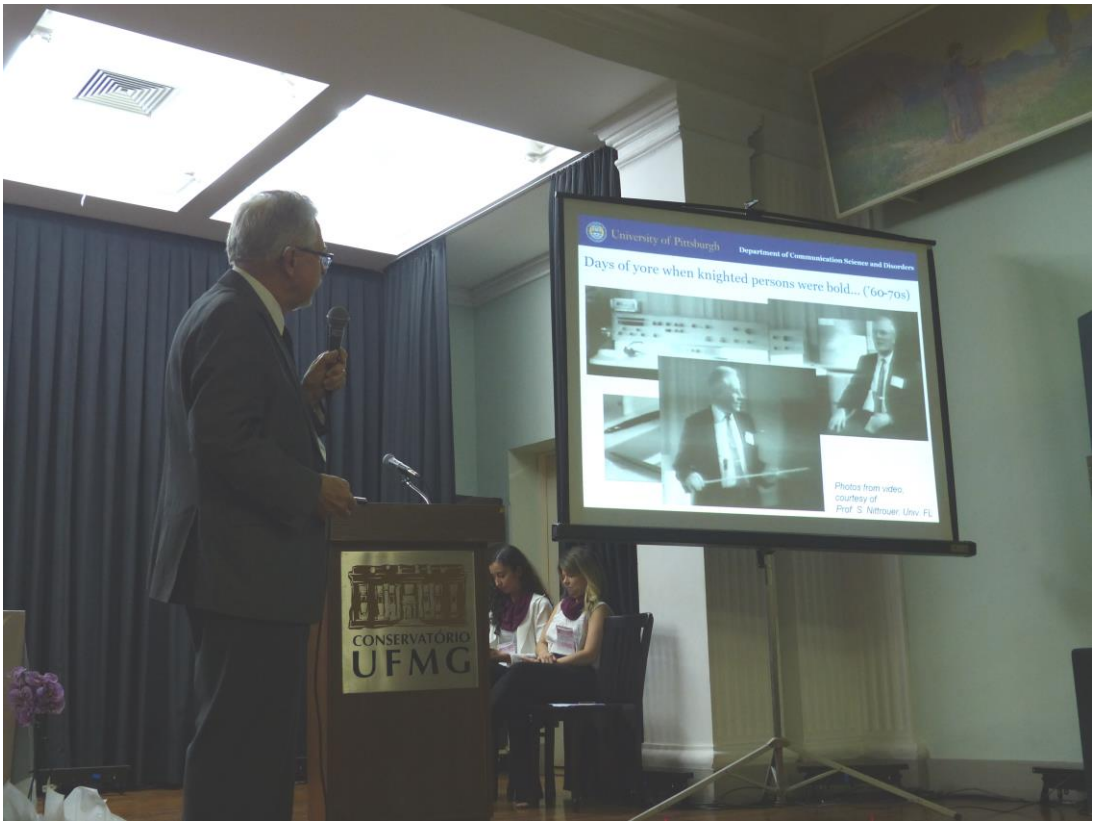


Audience
28th November, 2019

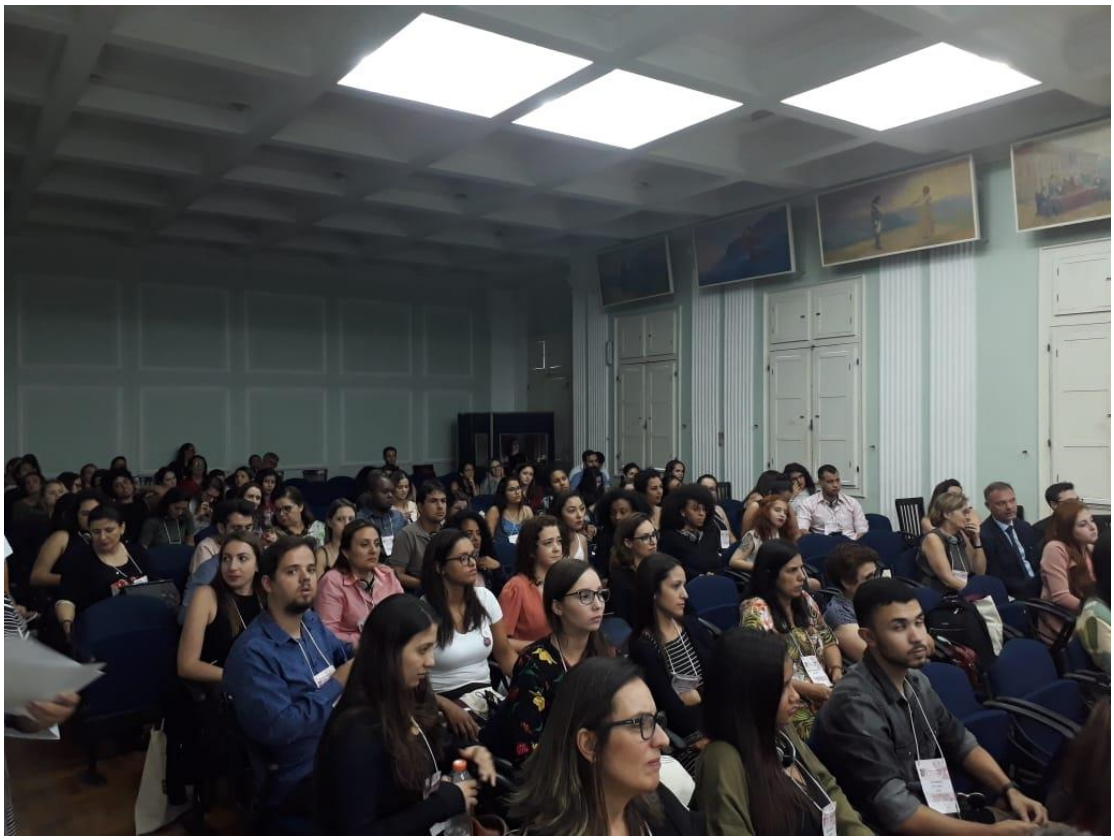


Left to right: Prof. Amélia Augusta Friche, Prof. Paul Avan, Dr. Arnaud Coez, Prof. Erica Couto and Prof. Severine Samson

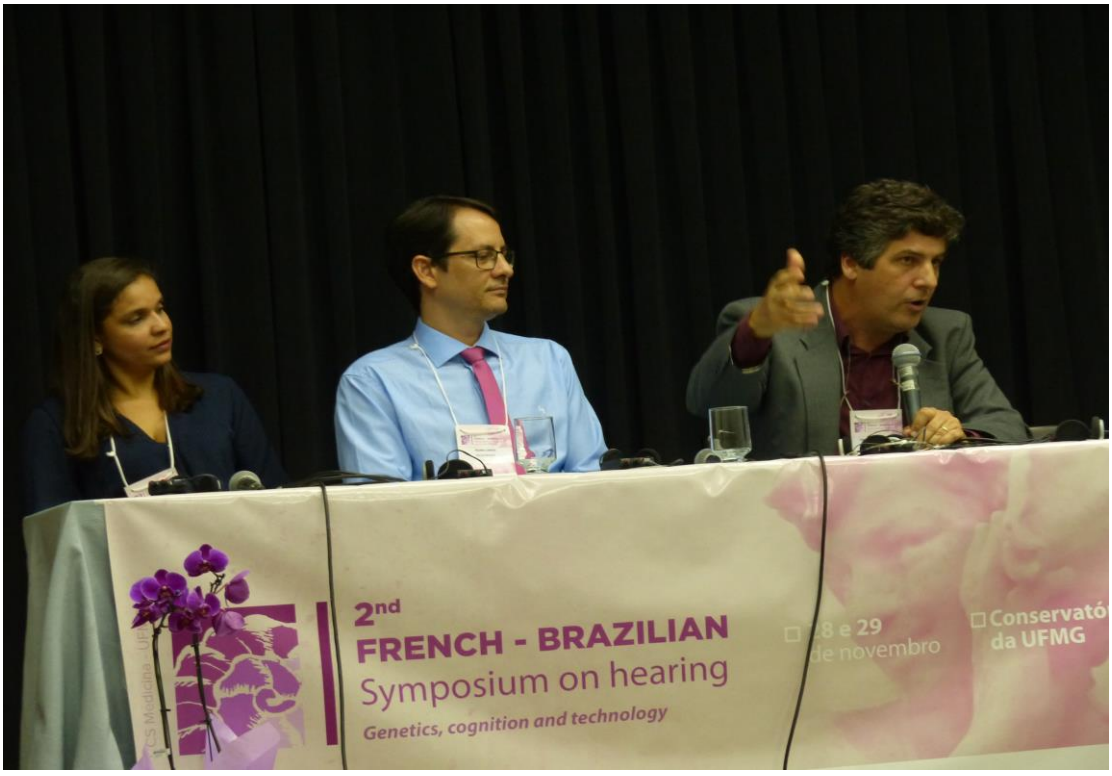
28th november, 2019



Prof. John Durrant
28th November, 2019

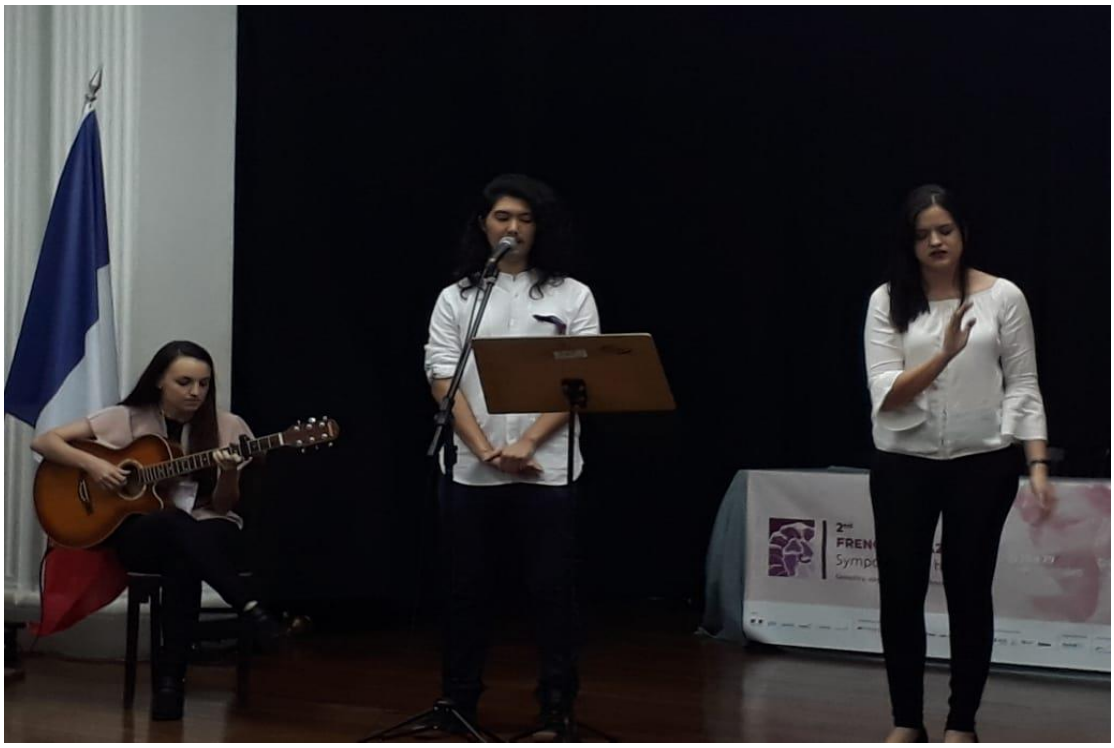


Audience
29th November, 2019

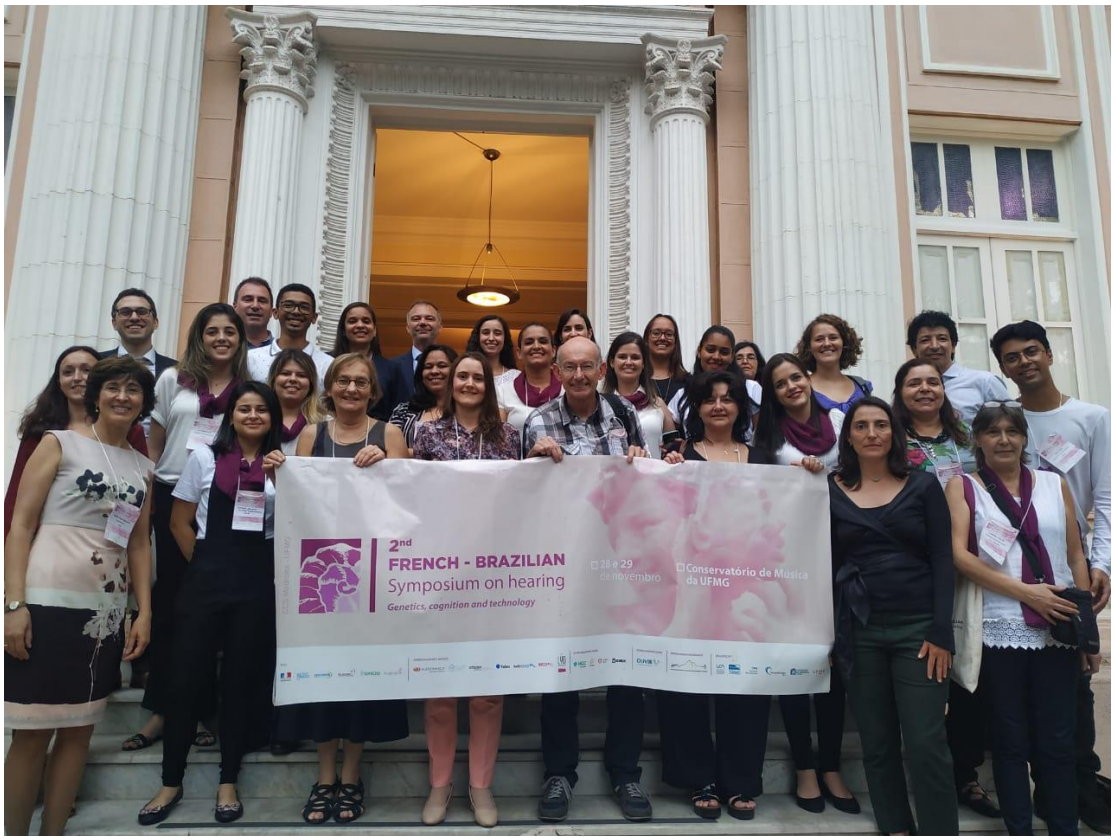


Left to right: Dr. Thamara Suzi dos Santos, Prof. Pedro Lemos de Menezes and Prof. Eduardo Romeiro Filho

28th November, 2019



Musical presentation
Left to right: Ana Clara, Lucas Massaro Araújo Nachi and Erika Fernanda Clark
29th November, 2019



Organizing Committee and Support Committee-
29th November, 2019

Thank you!

Obrigado!

Merci beaucoup!