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MAIN TOPICS

PONENCIAS OFICIALES

MAIN TOPIC

PONENCIA OFICIAL

AUDITORY DEPRIVATION AND DEVELOPMENT

DEPRIVACIÓN AUDITIVA Y DESARROLLO

Coordinador: Dr. J.M. Gorospe

LANGUAGE ACQUISITION IN THE EARLY PHASE AFTER COCHLEAR IMPLANTATION IN INFANTS

Adquisición del lenguaje en la etapa temprana post-implante coclear en niños pequeños

Prof. Dr. Dirk Mürbe

Universitätsklinikum Carl Gustav Carus Dresden, Alemania.

Cochlear Implantation has been established as a successful treatment option for children with severe to profound congenital hearing loss. After implantation, the prelingual hearing-impaired children get access to auditory stimulation and enter a habilitation process for the acquisition of speech and communication skills. This allows the development of auditory cortical functions and opens the prospect of oral communication. Apart from preceding auditory deprivation, they have to manage an auditory input diminished in spectral features and dynamics. Early diagnostics and interventions often allow the initiation of the interdisciplinary approach of habilitation between 12 to 18 months of life. At this age the assessment of auditory perception and speech and language development is a challenging task and in clinical practice usually limited to observation. However, behavioral assessment is influenced by attentiveness and auditory attention. Thus, even experienced therapists might have difficulties to evaluate the detailed development of auditory processing. A crucial step in this early phase of language acquisition is the ability to segment the continuous stream of speech. The process of segmentation is aided by extracting auditory cues, like vowel lengthening, stress patterns and phonotactics. Apart from behavioral approaches the presentation discusses

recent findings based on electroencephalographic studies which objectify what early implanted children can actually perceive with an implant in the first months after implantation. These findings have direct implications for habilitation concepts and further development of specific therapeutic interventions.

LOOKING FOR THE AUDITORY CRITICAL PERIOD IN CASES OF SEQUENTIAL BILATERAL COCHLEAR IMPLANTATION IN CHILDREN

Búsqueda del periodo crítico auditivo en casos de implante coclear bilateral secuencial en niños

Dra. Alicia Huarte

Clínica Universidad de Navarra, España.

Introduction. In order to get a complete development of the central auditory system it is mandatory to have a proper stimulation of the ascending auditory pathway. The goal of this communication is to present our findings concerning an auditory critical period for a sequential implant procedure and study the benefits of such bilateral stimulation in children. Material and Methods. From a population of 184 bilateral implanted children, we study 97 children sequentially implanted with a follow-up of 5 years at least. Mean age at the first implantation was 2.12 years and at the second implantation 7.31 years. Open-set logaudiometric testing was used in different conditions for auditory evaluation. Results. The separate analysis of both ears shows that discrimination of disyllable words was significantly lower in the second implanted ears at 1, 2, 3, 4 and 5 post-operative years. There were a negative correlation was found when the analysis compares discrimination level and the age at implantation of the first and second ear. Results show a binaural benefit with the use of both CI. These benefits were significant when the time from first to second implantation was lower than 6 years. Conclusions. Stimulation of the auditory system from one ear does not promote the complete development of the auditory system in children suffering from a congenital hearing loss. There is a critical period for the second ear implantation and the potential binaural benefit obtained with bilateral CIs. In children considered for sequential implantation, an early second implantation procedure is advisable.

DEVELOPMENT OF LANGUAGE AND
SPEECH PERCEPTION AS A FUNCTION OF
AGE AT COCHLEAR IMPLANTATION

*Desarrollo del lenguaje y de la percepción del
habla como variable dependiente de la edad
en la que se realiza el implante coclear*

Dr. Mario A. Svirsky
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York, USA.

Children who are born profoundly deaf and do not receive auditory input show severe limitations in oral language development. In contrast, some deaf children who receive cochlear implants start developing language at a rate comparable to that of hearing children. Studying the effect of age at cochlear implantation on the development of speech perception, speech production, and language development is important for both clinical and basic scientific reasons. From a clinical perspective, a comprehensive description of the effect of age at implantation helps clinicians and parents weigh the advantages of early implantation for the development of oral communication skills against potential disadvantages such as increased surgical risk and the possibility of misdiagnosis of profound hearing loss. From a scientific perspective, it is generally accepted that there is a "sensitive period" for language development when the ability to develop language and learn its rules is optimal. However, the ultimate experiment that would establish the existence and the characteristics of sensitive periods is one that cannot be done for ethical reasons. The "forbidden experiment" would involve withdrawing all language input from children, and then measuring their ability to develop language after different periods of deprivation. However, a somewhat imperfect version of the forbidden experiment can be done by studying the speech perception and language skills of children who were born profoundly deaf and whose hearing was partially restored with cochlear implants after a period of sound deprivation, ranging from a few months to several years. Taken together, the studies to be discussed in this presentation are consistent with the existence of a sensitive period for language development that starts closing well within the first few years of life. This finding has major implications for the clinical management of children with profound congenital deafness.

MAIN TOPIC
PONENCIA OFICIAL

EARLY SENSORY DEPRIVATION
DEPRIVACIÓN SENSORIAL TEMPRANA
Coordinador: Dr. M. Merchán

ELECTROPHYSIOLOGICAL CHANGES IN
THE MATURATION OF THE AUDITORY
SYSTEM IN THE MAN

*Cambios electrofisiológicos durante la
maduración del sistema auditivo humano*

Dr. J.J Barajas de Prat
Universidad de La Laguna, España.

Maturation is a process that takes place in a particular individual in order to reach the characteristics of an individual of the same species. Well before birth, changes occur within the Human auditory system. These structural and functional changes, take place in progressive afferent fashion from the Terminal Organ to the Cortex. It is interesting to note that the time constant of the maturation process of the auditory system, varies from the peripheral part to the more rostral structures. The auditory nerve maturation occurs at a rate considerably faster than that for more central parts of the nervous system. Even in a same region of the auditory system some structures reach adult values at earlier stages, than others. Cognitive components (P300) follow a maturation process fit well an equation that can be represented by a curvilinear trace with a floor effect around the second decade of life. Behavioral changes in hearing threshold show maturation rates similar to the physiological ones for the central nervous system. In this presentation we review the auditory electrophysiological changes that take place through the years that are of critical importance in clinical diagnosis.

SINGLE-SIDED DEAFNESS AFFECTS BINAURAL INTERACTIONS

La hipoacusia unilateral afecta a las interacciones binaurales

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Institute of Audio Neuro Technology & Dept. of Experimental Otology, ENT Clinics. Medical University Hannover, Germany.

Previous studies have shown that early single-sided deafness leads to a reorganization of aural preference in the brain (Kral et al., 2013, Brain; Kral et al., 2013, Front Syst Neurosci). Here we investigated sensitivity to binaural cues in the auditory cortex and compared binaural and monaural properties of neurons with cochlear implant stimulation in adult normal hearing cats (HCs), congenitally deaf cats (CDCs) born deaf on both ears, and cats born with unilateral deafness but normal hearing on the other ear (uCDCs). In CDCs the monaural response thresholds, dynamic ranges and spontaneous activity were significantly reduced compared to HCs. There were fewer excitatory-excitatory (EE) responses and more OE responses, but less binaural facilitation in CDCs. The highest spontaneous firing rate was found in uCDCs, followed by HCs and CDCs. uCDCs showed weaker responses to the deaf ear compared to the hearing ear. The monaural and binaural responsiveness depended on the relation of the recorded cortex and the hearing ear in uCDCs. The cortex ipsilateral to the hearing ear reorganized extensively, with more EE and less E0 responses. The cortex contralateral to the hearing ear demonstrated more E0 responses and more suppressive interactions. Facilitator binaural interactions were similarly reduced in CDCs and uCDCs. ITD sensitive units were rare in uCDCs and mostly observed in the contralateral cortex. The ipsilateral cortex had more flat or non-classified ITD responses. In total, unilateral deafness prevented nonspecific deficits in responsiveness, but reorganized the hemispheres differently, with more extensive reorganizations at the cortex ipsilateral to the hearing ear. Finally, binaural interactions and ITD sensitivity were extensively reduced in unilateral deafness. These results demonstrate sig-

nificant loss of binaural hearing following single-sided deafness and a hemisphere-specific reorganization as a consequence of the adaptation to single-sided deafness. Supported by Deutsche Forschungsgemeinschaft (Cluster of Excellence Hearing4all)

CROSSMODAL PLASTICITY AFTER HEARING DEPRIVATION

Plasticidad intermodal tras la privación auditiva

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Universidad de Salamanca, España.

One of the most exciting research frontiers in system neuroscience is that of seeking to understand how the brain cortex reorganizes after sensory deprivation. Supported on recent data from our rat experimental animal model, the aim of this talk will be to discuss about the reorganization in auditory and the neighboring visual and somatosensory cortex, at long term after auditory deprivation. Towards this goal, we analyzed immunostaining for the AMPAR subunit GluR 2/3 (as a marker of thalamic glutamate excitation), Arc – Arg 3.1, a protein involved in neuronal GluR trafficking, and C – Fos, a well-known marker of activity, 15 and 90 days after a bilateral cochlear lesions. A long lasting decrease in auditory cortical activation, detected by diminished C- Fos immunoreactivity, correlates with a decrease in Arc/Arg 3.1 immunolabeling in the auditory cortex and a parallel increase in the visual cortex, sustained even three months after bilateral cochlear lesions. Also, simultaneously in the three sensory cortices but more intensely in the auditory there was an increase in immunostaining for AMPAR GluR 2/3. Combining densitometry and morphometric cytoarchitectural maps of C Fos immunolabeling, layer-specific changes in activation were seen in the three cortical regions, with a decrease in c-Fos immunoreactive neurons in layers II, III and IV and an increase in layers I, V and VI. Such changes together with differences in the immunolabeling density of AMPA receptors predict intermodal homeostatic adaptations to rebalance neurotransmission in the visual and somatosensory cortices after auditory deactivation. The reported time line of three months supports the notion that after hearing deprivation in a rat animal model, the brain induces a novel

and permanent homeostatic balance for inter-modal interaction in the cortex of adult rats. We suggest discussing with the audience and the panel if auditory sensory deprivation actually triggers effective plastic crossmodal reorganization or is a passive consequence of silencing the thalamic response. Clinical implications of the answer to this question should be put forward during the round table session.

MAIN TOPIC

PONENCIA OFICIAL

VOICE DISORDERS

TRASTORNOS DE LA VOZ

Coordinadora: Dra. C. Casanova

EARLY SYMPTOMS OF VOCAL OVERDOING – THE REPETITIVE STRAIN INJURY

Primeros síntomas de la sobrecarga vocal. La lesión por estrés mecánico repetido

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Many people with high voice load complain of tension or pain in the anterior neck, and some of them also have a feeling of a lump in the throat (globus pharyngis). Thus, not only acoustic and auditorily perceptual symptoms can be present in 'vocal overdoing', but laryngeal symptoms that are not easy to verify objectively. Unfortunately, many physicians, vocal coaches and pedagogues misinterpret those symptoms as inflammation, reflux, allergies, or other diseases and disorders. And, although it is a well-known fact for many years that muscular strain is present in almost all cases of high vocal loading, we do not have a standardized protocol for how to assess and treat musculoskeletal problems of the laryngeal and paralaryngeal tissues. In contrast, in the field of orthopedics the term 'repetitive strain injury' (RSI) is well known and frequently used. - It will be shown in this lecture how to assess repetitive strain injury in the (anterior) paralaryngeal and neck region and how strained muscles can be treated quickly and effectively. In this lecture, laryngeal osteopathic treatment according to Jacob Lieberman will

be addressed, including many videos for an easier understanding of how these techniques work.

SINGING VOICE IN CHILDREN CHOIRS: A CHALLENGE FOR PHONiatricIANS

La voz cantada en los niños del coro: un desafío para la foniatría

Cori Casanova

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Phoniatricians often receive children who take part actively in choral groups; some with amateur level, and others with high artistic and singing voice demand. This presentation pretends to share some experiences from the world of children's singing voice, to make it possible for phoniatricians and other specialists who are working in children singing voice, approach different aspects involved in this issue. We will talk about basic exploration of the singer child: parameter regarding age, functional approach and laryngostroboscopy; the children out of tune: can the phoniatrician help them? Voice mutation: evaluation and follow-up; Voice problem prevention in children choirs.

PERCEPTION AND VOICE QUALITY AFTER SOME SEMIOCCLUDED VOCAL TRACT EXERCISES IN SINGERS

Percepción y calidad de voz en cantantes tras realizar ejercicios con semioclusión del tracto vocal

Franco Fussi

Centro Audiologico Foniatico. Ravenna, Italy.

In this report we detail the perceptual and physiological characteristics, pathological risks and phonosurgery suggestions in some singing styles. Particularly we describe the acoustic characteristics of some modern distorted singing (rock, blues, metal), belting (musical theater) and opera singing, analyzing perceptual alterations prevailing in the various pathologies

of the singing performer related to acute or chronic stress, types of pathology and their characteristics, therapeutic and surgical choices in relation to the singing styles.

MAIN TOPIC

PONENCIA OFICIAL

PHONOSURGERY

FONOCIRUGÍA

Coordinador: Dr. F. Ferrán

PHONOSURGERY OF SULCUS

Fonocirugía del sulcus

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Indication of phonosurgery for sulcus is controversial. Frequently we listen that the results are not good enough to indicate this kind of surgery. The two groups of lesions both named sulcus are very different and need to be considered independently. Based on the own experience we will see different examples of phonosurgery for sulcus type II (2a or vergetures) and type III (2b or sulcus). The technique for type III sulcus is the classical, described by Bouchayer and Cornut, with double cordotomy, pocket dissection and joining of the cordotomies. In Type II or vergetures we have been practicing cordotomies and intracordal injections simultaneously, separately or successively. An analysis of the vocal results for different pathologies treated by surgical methods with intracordal dissection justifies to continue operating on type III sulcus patients whereas our tendency for patients with type II sulcus or vergetures has been to stop the intracordal surgery progressively and to indicate techniques of intracordal injection (fat, hidroxiapatita). In our opinion, techniques including cordotomy and freeing the mucosa constitute an option for very few patients and results are difficult to predict. The lack of a biomaterial permitting to recreate Reinke's space is one of the main pending subjects in phonosurgery.

PHONOSURGERY OF VOCAL FOLD SCARS *Fonocirugía de las cicatrices de las cuerdas vocales*

Markus Hess¹, Ferran Ferran-Vilà²

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Vocal fold scars are an increasing pathology and a call to prudence must be done as there is no a good solution at present due to the structural damage we are facing. Microstructure of the scarred vocal fold differs from the normal structure limiting the possibilities of treatment. The diagnostic is sometimes easy but in some slight cases it can be less evident and some office tricks can help.

The surgery must be planned basing it in the different objectives we are focusing on (medialization, freeing the mucosa, sinechia, grafts) without ignoring the importance of functional treatment in these like in all the patients with vocal pathology. Some clinical cases will be presented to illustrate diagnostic and treatment. Considering the irresolute question to reconstruct Reinke's space, a revision of the possibilities of future about bioengineering and new materials; will conclude the presentation. It is necessary to carry out the preventive attitudes and not forget the importance of the non-surgical treatment and the interdisciplinarity, being realistic in the objectives that we can assume when we indicate a phonosurgical intervention in a patient with vocal fold scars.

OFFICE-BASED PHONOSURGERY

Fonocirugía en consultas externas

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Office-based procedures with topical anesthesia avoid the risks that come with general anesthesia, and they also avoid the disadvantages that may occur with placement of the laryngoscope in suspension microlaryngoscopy. Furthermore, office-based intervention is mostly offered in an ambulatory setting and thus can help saving costs. The method of office-based indirect surgery of the larynx is more than one hundred years old, but is rarely chosen as first option to treat patients with laryngeal disorders. However, there is a revival of

its use within the last decade. All of the following procedures can be performed in an office-based indirect surgery setting: incision, excision, mobilization, coagulation, vaporization, suction, injection, implantation, and augmentation. In general, office-based surgery has the advantage of having (i) realistic physiological muscular tension of the vocal folds, (ii) physiological endolaryngeal configuration and (iii) the possibility to immediately assess the voice as a result of intervention and using videostroboscopy. Many instruments were designed to treat laryngeal problems: cupped forceps, alligators, scissors, and needles etc., in various sizes and shapes, for transoral approaches. Tiny instruments are used for flexible transnasal endoscopes. Injection needles as well as laser fibers can be passed and precisely placed into the laryngeal cavity. Procedures can be done alone, however, some interventions requires a third hand (physician or nurse). Special features: Within the presentation, several additional topics will be covered, e.g. topical anesthesia, sedation, antitussives, atropine, gag reflex control, precaution settings, airway etc. Information will be given about potassium titanyl potassium (KTP) laser interventions. Finally, augmentation with injectable is addressed.

ROUND TABLES

MESAS REDONDAS

ROUND TABLE

MESA REDONDA

DEGLUTITION AND DYSPHAGIA

DEGLUCIÓN Y DISFAGIA

Coordinador: Prof. Dr. J. Poch

FLEXIBLE ENDOSCOPIC VS. VIDEOFLUOROSCOPIC EVALUATION OF SWALLOWING

Nasofibroscofia versus videofluoroscopia en la evaluación de la deglución

Dr. A. López Salcedo
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Endoscopic and videofluoroscopic systems are currently of great assistance in the diagnosis and evaluation of patients with swallowing disorders. Although videofluoroscopy was initially considered the gold standard of these techniques, recent studies and reviews give both methods an equal relevance and emphasize the complementary information they each provide. After reviewing the advantages and disadvantages for both procedures, this lecture will provide practical examples of the role they both play in the assessment of dysphagia.

DYSPHAGIA IN NEURODEGENERATIVES DISEASES

Disfagia en las enfermedades neurodegenerativas

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Oropharyngeal dysphagia (OPD) represents a potentially life threatening condition that leads to malnutrition, dehydration and aspiration pneumonia. Its prevalence ranges from 30 to 100% depending on the population scrutinized and the definition of Oro-pharyngeal dysphagia that is used. Approximately one third of one

month post-stroke patients will present some degree aspiration observed during videofluoroscopy and 100% of Amyotrophic Lateral Sclerosis patients will present some degree of OPD at the moment of their death. Likewise, it is true to say that all individuals above the age of 75 will present some degree of OPD affecting one or more stages of the swallowing physiology. A proper swallow will consist in propelling a bolus-whatever its consistency- from the oral cavity to the esophagus keeping the airways clear of any aspiration and the pharynx clear of any residue. To achieve this result, the oral cavity musculature, the larynx, the pharynx and the esophagus will have to interdependently act under the neuro-muscular control of medullary, supra-medullary and cortical centers. This talk will cover basic OPD anatomy and physiology knowledge. Pathophysiology model will be proposed and linked with various neurodegenerative conditions. Eventually, adapted multidisciplinary treatment approaches will be exposed.

HEAD AND NECK SURGERY. SWALLOWING RESEARCH

Cirugía de cabeza y cuello. Investigación sobre disfagia

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To describe swallowing disorders in patients who have undergone head and neck surgery. Methods and Materials: Patients with malignant tumors of the larynx are treated with different surgical techniques depending on the tumor and the patient characteristics. Anatomical structures involved and resected in these different procedures are pointed, as well as swallowing impairment produced by the treatment. Videoendoscopic images are shown in order to understand the functional impact of head and neck surgery in swallowing. Results: Surgical techniques for the cancer of the larynx, from the endoscopic laser chordectomy to partial laryngectomy (supracricoid laryngectomy, supraglottic laryngectomy), near-total laryngectomy and total laryngectomy are shown with its swallowing and voice results. Organ preservation is differentiated from function preservation both in swallowing and voice results. Conclusion: Both surgery and organ preservation strategies for head and neck cancer result in

an impairment of laryngeal functions: breathing, swallowing and voice.

Key Words: Head and neck surgery, Swallowing, Laryngeal cancer

ROUND TABLE

MESA REDONDA

PHONiatricS AND REHABILITATION. A COMMON GOAL

FONIATRÍA Y REHABILITACIÓN

Coordinadora: Dra. M. Velasco

SOREFON SURVEY: FONIATRICS IN REHABILITATION SERVICES

Revisión de la Sociedad de Rehabilitación y Foniatría SOREFON

Dr. S. Rodríguez

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Introduction. Rehabilitation has been defined by the World Organization Health as the use of all means aimed at reducing the impact of disabling and handicapping conditions and at enabling people with disabilities to achieve optimal social integration. It is an independent medical specialty concerned with the promotion of physical and cognitive functioning, activities, participation and modifying personal and environmental factors. It is thus responsible for the prevention, diagnosis, treatment and rehabilitation management of people with disabling medical conditions and co-morbidity across all ages. Because of their comprehensive training, they are best placed to be responsible for the activities of multi-professional teams like Physiotherapist, Speech Therapist or Occupational therapy. Rehabilitation specialists are doctors trained in their discipline for four or more years according to the national training regulations of postgraduate medical training. They are not specialized in the management of a particular organ or medical condition but focus on functional problems resulting from a variety of diseases rather than specializing in the management of a specific organ or medical condition. In Spain Rehabilitation became medical specialist in 1969 but there were a Scientific Soci-

ety since 1954. Phoniatrics is a part of the Medicine that studies the voice, speech and the language; its defects and treatment. Tarneaud proposed in 1932 the term Phoniatrics. They are gradually differentiation as activity with Speech Therapist in educational and medical aspect. Society Rehabilitation Phoniatrics is a filial from Spain Society Physical Medicine and Rehabilitation that involves 50 specialists in Physical Medicine and Rehabilitation that practices Phoniatrics in the assistance activity. Material and methods. We did a survey specifically for this Round Table. We started with word documents with ten items. Finally we according fifteen questions with multiple choices to study the daily activity of the Rehabilitation specialist who are involve in Phoniatrics in their outpatients or inpatients. We send the questionnaire by Google forms. We received twenty-three answers to the applications forms. Conclusions. In Spain are two no proposal law to recognize Phoniatrics specialist. The most Rehabilitation specialist who involve Phoniatrics their patient have more disabilities. There are few postdoctoral courses to specialist in Phoniatrics. Physical Medicine and Rehabilitation have knowledge and competencies to diagnosis and treatment voice, speech, language pathologist included Dysphagia.

PHYSICAL MEDICINE AND REHABILITATION PHYSICIAN'S ROLE IN PHONiatric DISEASES OF CEREBRAL PALSY

El papel del especialista en Medicina física y Rehabilitación respecto a las alteraciones foniatricas de la parálisis cerebral

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Introduction. Cerebral palsy (CP) is a neurological syndrome secondary to a developing brain damage. Its effects are permanent. CP is associated to motor disorders as spasticity. But communication, feeding, swallowing, and respiratory disorders plus participation limitations are frequently observed too. Participants and Method. Prospective-descriptive survey. We report data from evaluation CP patients from Children Rehabilitation Unit (Virgen Macarena Hospital-Seville, Spain) along 4 months. We collect demographic data (age, gender, CP

classification), nutritional data (weight, height, body mass index (BMI), Waterlow scale), Gross Motor Function Measure (GMFM), Manual Ability Classification System (MACS), feeding mode, Schedule for Oral Motor-Assessment (SOMA), Eating and Drinking Ability Classification System (EDACS), intensity/ frequency of drooling, social participation (Child and Adolescent Scale of Participation (CASPP)), communication (Communication Function Classification System (CFCS)), intellectual disability, membership association and epilepsy. Statistical analysis (SPSS v.23): frequency/descriptive tests, and identify the existing correlation between variables. Results: 39 patients. 51.6% were boys (average age: 9 years old). Most common CP: tetraplegic (56.4%). Motor function: I-II GMFCS 46.2% and IV-V GMFCS 48.8%, MACS V 34.3%; 90% feeding by mouth. Modified diet: 51.4%. Underweight: 34.3%. Complete oral motor dysfunction: 34.3%. Communication: CFCS V 25.7%. Intellectual disability/epilepsy: 56.4%/ 53.8%. Severe limitation in participation: 20% (Older and worse motor levels showed the worst participation). Significant association ($p < 0.05$) between CP type/GMFS/MACS/SOMA/EDACS/BMI/WATERLOW was observed. Independent factors of less social participation: intellectual disability, communication disorders, epilepsy and intensity/severity drooling. Conclusions. Management CP patients include a multidisciplinary assessment. Association among motor function, comorbidities and phoniatric complaints haven't well correlated yet. Establishing which patients need most intensive assessment to avoid their consequences and goal setting adapted to their specific requirements must be a priority in our job.

ROUND TABLE MESA REDONDA

INSTRUMENTAL EXPLORATION OF THE VOICE

EXPLORACIÓN INSTRUMENTAL DE LA VOZ

Coordinador: Dr. S. Fernández

AN OPTICAL METHOD TO STUDY THE CHARACTERISTICS OF THE PATIENTS' BREATHING WITH DISORDERS OF VOICE

Un método óptico para evaluar las características respiratorias de pacientes con problemas de voz

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Aim. For diagnostic and therapeutic orientation in phonatory disorders, in addition to acoustic data, subglottal pressure, transglottal flow and tidal volumes, it is interesting to know the kinematics of the chest wall during quiet breathing and during phonation. An accurate and non-invasive application, simple installation and management are presented. Sources and methods. The system needs four videocameras, a system of capture of image, a manikin of calibration and a computer. There used videocamera, of resolution 752 x 582 pixels and size of reading counterfoil 0.25 ". The program developed in Matlab (Math Works, v. 2014b). The manikin of calibration was constructed in wood. To indicate the points of the surface of the patient, a tight vest was used, with some black points printed on his surface in the zone to analyzing: in the present study, 15 points in the front and part 15 in the back, forming paths counterfoils of 5x3. The patient breathes normally, and your device filmed with four cameras. A computer saves the images and analyze the data. The algorithm obtains precisely the trajectories of the dots printed on the shirt. Results. Characteristics of the algorithm: Precision small movements: 0.3 mm; Accuracy large movements (20 cm): <1 mm; Maximum speed detected: 12 cm/s; Detecting periodic movements: 0.4 mm; Number of points to follow: Arbitrary. Conclusion. The system has clear advantages over other technical solutions: Submillimeter accuracy measures, it is very simple to use, to calibrate and to use. It has an auto-detection calibration errors an effective detection of measuring points, and it is affordable

ACOUSTIC ANALYSIS OF VOICE USING INVERSE FILTERING

Análisis acústico de la voz usando filtrado inverso

Ahmed Geneid

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Introduction: Inaudible or subtle vocal organ symptoms upon exposure to different nonspecific irritants (dust, odors, allergens, etc.) are relatively common complaints in voice clinics. Their acoustic correlates have been rarely if ever studied before. **Aims of the study:** This study strived for finding correlations between changes in vocal organ symptoms upon exposure to organic dust with inverse filtering parameters in addition to vocal tract cross sectional planes. **Methods:** Voice samples were recorded before and after exposure to organic dust and placebo substance (lactose). A total of 180 samples were acoustically analyzed using inverse filtering. Patients' assessment of their own voices was carried out in addition to perceptual assessment by experienced voice clinicians. Vocal tract cross sectional planes of study subjects were developed using inverse filtering. **Results:** Upon exposure to organic dust a number of vocal organ symptoms changed significantly according the patients' own assessment. Perceptual assessment did not reveal any significant change in voice. A number of inverse filtering acoustic correlates changed upon exposure to organic dust. The vocal tract cross sectional plane immediately above the vocal folds correlated inversely - 0.743 ($p < 0.05$) with the feeling that voice is tense or feeling the need to make an effort when speaking. It also correlated inversely - 0.844 ($p < 0.01$) with feeling short of breath or need to gasp for air. **Conclusion:** Exposure to certain nonspecific irritants may cause subtle vocal organ changes. Patient herself is usually aware of these changes in voice and laryngeal symptoms. However, the vocal organ is able to compensate in a way that keeps these changes inaudible to listeners. Inverse filtering is a helpful method for detecting such subtle changes.

CLINICAL APPLICATIONS OF THE BIOMECHANICAL ANALYSIS OF PHONATION

Aplicaciones clínicas del análisis biomecánico de la fonación

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Objectives: Clinical assessment of phonation analysis has focused its attention on the speech signal as a whole. The complex structures involved in voice production have hindered a clear assignment of causes to correlates, reducing assessment performance. Besides, sophisticated sets of features have been used to improve performance, but lacking enough semantics for the clinical specialist. The approach presented is devised to circumvent both problems, basing the analysis on the glottal source deprived from the resonant effects of the vocal tract, and presenting sets of features with a clear interpretation under the clinical point of view. **Materials and Methods:** Patient's phonation recordings with standard costless microphones on general computer platforms are used. System requirements allow also dealing with signals obtained from mobile devices. The voice signal is processed to render the glottal source. Biomechanical correlates such as dynamic mass and stiffness within the vocal fold body and on the cover can be estimated in real time from the glottal source. Unbalance between neighbor phonation cycles as well as their cyclical variations, are also estimated. The stiffness instabilities, hypo- and hyper-expression are interesting correlates to larynx organic pathologies associated to asymmetry or contact defects. These features plus tremor are good markers of neurological diseases as well. **Results:** Several speech databases containing sustained vowels, syllables and short sentences have been used for the assessment of the methodology in detecting and grading laryngeal as well as neurological pathologies. These databases have been collected at Hospital Gregorio Marañón of Madrid. Specific study cases where the bio-

mechanical analysis has been used in monitoring phonation quality improvement in treating vocal fold paralysis with stem cell graft treatments will be presented and discussed. Conclusions: Phonation biomechanical analysis has been found a very convenient and simple way for monitoring phonation quality improvements in pre- and post-treatment monitoring. The methodology is simple and inexpensive, and may be of great help for the clinician and the speech therapist.

ROUND TABLE
MESA REDONDA

MISCELLANY 1
MISCELÁNEA 1

Coordinador: Dr. A. Geneid

DOES LONGTERM-TONGUE PIERCING AFFECT SPEECH?

¿El piercing lingual de larga duración, afecta al habla?

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Aim: Tongue piercing can cause bleeding, swelling, defects of teeth and alveolar bone etc. that may result in an impaired speech function. Whereas, a remarkable number of studies were performed immediately after piercing, less is known about whether or not there are long term effects of tongue piercing on the speech quality of their carriers. Thus, it was the aim of this study to examine the performance of tongue-pierced individuals for specific speech parameters according to length and position of barbells compared with non-pierced controls, estimated by blind raters. Methods: In a quasi-experimental design, audio-samples of 20 long term-pierced individuals (10 males, 10 females) and of 10 non-pierced men and women were recorded during reading "The Northwind and the Sun". In addition, phonetically defined word lists and bits of running speech were recorded. The groups of pierced individuals were examined with and without

wearing their barbell. The group of raters consisted of 26 female and 20 male laymen, and of 5 logopedics. The parameters speech acuity, speech rate, rhythm, fluency, and prosody were evaluated using a 5-step scale. Results: For neither of the analyzed parameters we could find a statistical significant difference between the reading and the running speech samples of the pierced vs. the non-pierced individuals. Piercing length and position had no significant influence of the speech parameters, even if the anterior produced phonemes were analyzed separately. In the group of the pierced individuals their speech quality with and without wearing their piercing was not different. Ratings of laymen and logopedics showed no influence of piercing. Conclusion: Tongue piercings seem to be of no influence on speech quality in long term use. It is possible that the pierced individuals develop articulatory adaption similar to those wearing dental devices. In future, the temporal characteristics of adaption and habituation should be focused.

STUTTERING, DAF (DELAYED ALTERED FEED-BACK) - FAF (FREQUENCY ALTERED FEED-BACK) AIDS

Ayudas en el tartamudeo, DAF – FAF

Ahmed Geneid

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Introduction: Stuttering has a prevalence of 1% or less irrespective of the cultural background of the populations. Stuttering treatment modalities are usually speech therapy, medications or DAF/FAF devices. The idea of DAF/FAF devices originated from the so called, chorus effect and the finding that patients who stutter tend to have better fluency in choral singing. Aims: to investigate the development of the before mentioned devices and their usage in treatment of stuttering. Also to discuss the current available knowledge on their usage. Subjects and methods: presentation of the medical literature available DAF/FAF devices with new knowledge gained on their effects. Results: DAF/FAF devices seem to yield good results among 30% to 50% of the patients with stuttering. Children as young as 8 years may use the device. Fading of the effects of the device have

been reported. Conclusion: DAF/FAF devices are suitable modality of treatment for many patients with stuttering although that some of them encounter fading effects.

TRANSGENDER VOICE PRODUCTION AND PERCEPTION

Producción y percepción de la voz transgénero

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Aim: In human communication, male and female speakers can be easily distinguished. That is true, because the voice is an important sex differentiating marker. However, little is known either about the neural processing of voices, generated by speakers of the same vs. the opposite sex of the listener, nor in respect of the inevitable prerequisites of conclusive voice production according to the opposite, by the client desired sex. Voice Production: In respect of voice production, similarities and differences between healthy male and female voices will be presented. Transmitted to the tasks of voice adaption in transgenders, the special demands and strategies of female-to-male transsexuals (FMs) and male-to-female transsexuals (MFs) will be explicated. Focusing on the latter group, a critical review of non-phonosurgical therapy of voice fitting including our own data will be discussed. Voice Perception: For voice perception, it is the aim of this preliminary survey to present novel data on fMRI research for voice processing in biological males and females compared to transsexuals of both groups. These investigations represent data from voice processing activity as well as data from resting state conditions of the brain. Conclusion: In conclusion innovative scientific perspectives in gender vocology will be outlined and future questions in respect of their relevancy discussed.

FEMINIZATION OF THE VOICE. SURGICAL TREATMENT

Feminización de la voz. Tratamiento quirúrgico

Dra. Elena Mora-Rivas

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Abstract: La feminización de la voz en las personas transgénero varón a mujer se basa en la reeducación vocal y en algunos casos en la agudización del tono vocal mediante fonocirugía. En esta charla se explicarán los distintos mecanismos fisiológicos para el aumento del tono en la emisión vocal y las posibilidades quirúrgicas que permiten la emisión de una voz más aguda, actuando bien sobre las cuerdas vocales o bien sobre el esqueleto laríngeo. Se analizarán las ventajas e inconvenientes de las técnicas más usadas, así como sus resultados tanto en el aumento de la frecuencia fundamental de la voz como en la satisfacción de las personas intervenidas.

ROUND TABLE

MESA REDONDA

MISCELLANY 2

MISCELÁNEA 2

Coordinador: Dr. A. Zehnhoff-Dinnesen

STATUS OF PHONiatricS IN THE DIFFERENT COUNTRIES ON BASIS OF NATIONAL UEP COORDINATORS' REPORTS AND RESULTS OF THE UEP SURVEY 2015/2016 ON THE ROLE AND ACTIVITIES OF PHONiatric MEDICAL SPECIALISTS IN THE FIELD OF VOICE DISORDERS

Situación de la Foniatria en diferentes países, basado en informes de los coordinadores de la UEP y resultados de la encuesta de la UEP 2015/2016 sobre el papel y las actividades de los médicos foniatras especialistas en el campo de la patología de la voz

Antoinette am Zehnhoff-Dinnesen¹; Ahmed Geneid²; Michael Fuchs³; Manfred Gross⁴; Tadeus Nawka⁵; Rainer Schönweiler⁶; Jürgen Wendler⁷; Ilter Denizoglu⁸; Haldun Oguz⁹; Sevtap Akbulut¹⁰; Alexios Martin¹¹; Reinaldo Yazaki¹²; Peter Matulat¹

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Aim: On basis of the annual reports of the National UEP Coordinators of 42 countries available data about the official approval of phoniatics, number of phoniaticians, trainees and phoniatic institutions will be presented. Also a UEP survey will be introduced on the role of phoniatic specialists in the field of voice disorders. **Sources and methods:** The UEP online survey, performed in reference to the survey by the IALP Voice Committee on international perspectives in voice disorders, was supported by the European Laryngological Society and the European Confederation of Oto-Rhino-Laryngology. Answers of 107 phoniaticians/ laryngologists/ phonosurgeons from 30 countries and 4 continents could be included. **Results:** Workplaces are outpatient clinics, inpatient wards, private practices, and opera theatres. Most common co-workers are speech and language pathologists/logopedists and audiologists, followed by psychologists, physicists and singing pedagogues. The relation of children,

adults and elderly with voice problems is 15.3:61.6:19.8%. The physicians see in 28.8% functional, in 9.7% psychosomatic, in 14.0% neurologic, in 34.5% benign (including endocrinological/systemic diseases and allergy) and in 13.0% malignant organic voice disorders. 21.7% of the patients are singers, 42.2% have an occupation placing high demands on the speaking voice. Videolaryngoscopy, flexible endoscopy, endoscopy in children and videostroboscopy (95.4-97.7%), videokymography (100%), high speed recording (95.1%), electroglottography (68.9%), sonography (74.5%) and electromyography (96.2%) are mainly performed by physicians. Functional testing, voice range profile, and vocal load tests are more often undertaken by SLP-colleagues. The most frequent additional diagnostic examinations initiated by phoniaticians are audiometry, gastroenterological examinations, diagnostics of the sinuses, sonography, allergy, and endocrinological tests. The most frequent therapeutic procedures initiated by phoniaticians are medication, dietary and lifestyle advice, functional therapy, advice on exercises, physiotherapy, change of medication, and surgery. **Conclusion:** The summary of the reports shows the status of phoniatics, the survey the coordinative function of phoniaticians in diagnostics, differential diagnostics and therapy.

PHONiatricIANS AND MUSICIANS' MEDICINE *Foniatria en el tratamiento de los músicos*

Prof. Dr. Dirk Mürbe
Universitätsklinikum Carl Gustav Carus Dresden, Germany.

Abstract: Communication is an integral component of music performance. Hence, limited communicative abilities are restrictive both for professional but also non-professional musicians. Because communication disorders are the centerpiece of the medical specialty of Phoniatics there is a strong basis for interdisciplinary cooperation with Musicians' Medicine. The presentation describes the development and actual aspects of Musicians' Medicine and defines the contributions of Phoniatics to the different aspects of the field. Exemplarily, the presentation focuses on prevention and clinical

issues as typical examples for the collaboration. Thus, vocal health and prevention of voice disorders might be facilitated by structured education programs for voice professionals. This should be realized by compulsory curricula of voice care and physiology as already practiced at various European conservatories of music. Further, typical medical issues of voice professionals should be clearly addressed in the specialization of physicians in Phoniatics and determined in training programs and corresponding logbooks.

PROFESSIONAL POLITICS IN PHONIA-TRICS

Política profesional en la Foniatría

Dr. Med. Barbara Arnold
Munich, Germany.

In Germany the interests of phoniaticians and paedaudiologists are represented by the „German Professional Association of Medical Specialists for Phoniatics and Paedaudiology“ (DBVPP) since 1992. The aim of the Professional Association is to communicate all the concerns of the specialists towards the German health authorities and insurances, and to be of help in keeping contact with other medical specialties. In the last years, the Professional Association made a great effort in explaining of what the work of a specialist in phoniatics and paedaudiology consists in particular toward the different German health authorities and the head of health insurances. Currently DBVPP and the German Society of Phoniatics and Pedaudiology (DGPP) are involved in the development of the postgraduate training plan for our specialty. Furthermore, in 2015 the managing board was working on a new reimbursement system for all phoniatic and paedaudiologic practitioners, which is currently being implemented by the National Association of Statutory Health Insurance Physicians in order to achieve adequate payment for the medical services. The organization of and participation in conferences with phoniatic and paedaudiologic topics are a further assignment. The German Professional Association of Medical Specialists for Phoniatics and Pedaudiology. In 1983, the (DGPP) had been founded, based on already frequent meetings of the “Working Group of German-Speaking

Phoniaticians” that formed after an initiative of Friedrich Frank (Vienna) and Peter Biesalski (Mainz) in 1966 in Salzburg. While the DGPP has been founded as a scientific society, the DBVPP was established in order to better represent the professional interests that have become of growing importance especially for phoniaticians and paedaudiologists in private practice. Beyond scientific exchange, the first political aim of the phoniaticians had been the implementation of an own medical specialty “Phoniatics and Pedaudiology”. In the years before, the phoniatic patients were treated by specialized ENT doctors. Those also performed the paedaudiologic diagnostic procedures. A separate professional curriculum for these specialties did not exist. The concern was to look after hearing disabled children continuously for their whole childhood, as well as to support voice patients professionally by specialized doctors in phoniatic and paedaudiological departments and clinics. In the last decade of the 20th century, there was only a very small number of specialists in phoniatics and paedaudiology practicing independently in Germany. More than 90 percent were working in university clinics and specialized departments. The total amount of specialists in phoniatics and paedaudiology was still low. Therefore, the aim of the Professional Association was to represent these specialists with all their concerns towards the German health authorities and insurances, and to be of help in communicating with other medical specialties. The organization of and participation in conferences with phoniatic and paedaudiologic topics was a further assignment. In the last years, the Professional Association made a great effort in explaining of what the work of a specialist in phoniatics and paedaudiology consists in particular toward the different German health authorities and the head of health insurances. It took a while to illustrate the difference between an ENT specialist and a phoniatics and paedaudiology specialist to all the authorities. In 2009, the newborn hearing screening was accepted by the German health insurances as a new service. Nevertheless, cost efficiency had to be demonstrated. The executive members Dr. Gerrit Wohlt, Dr. Barbara Arnold, and Dr. Christine Schmitz-Salue got into a conversation with the head of the health insurance to fight for the usefulness of the neonatal hearing screening even in relation to cost efficiency. In 2014, five years after the successful start of the

neonatal hearing screening, a study was initiated by the head of the insurances and the government to prove the cost effectiveness of the neonatal hearing screening. In the medical statistics of the German Medical Association (Bundesärztekammer) at December 31 2013, 327 specialists for phoniatics and paedaudiology are listed. 115 are practitioners in own offices, 72 without medical occupation. 129 members are currently registered in the Professional Association of the Medical Specialists in Phoniatics and Pedaudiology; 307 are members in the German scientific Association of Phoniatics and Pedaudiology DGPP (September 2014). The actual managing board of the DBVPP was elected in September 2014 and consists of three executive members: Dr. Christine Schmitz-Salue, Dr. Barbara Arnold, and Dr. Jan Baade. In addition, a treasurer and a secretary (Alexander Swiridoff, Dr. Marianne Röhrs) belong to the board. In 2014, the DBVPP and the DGPP were involved in the development of the postgraduate training plan for our specialty. Currently both associations are in discussion with the speech pathologist association about the necessity for patients to receive a medical examination and medical diagnosis before starting a voice or speech therapy, which speech pathologists plan to neglect. In 2015 the managing board is working on a new reimbursement system, which is currently being implemented by the National Association of Statutory Health Insurance Physicians (Kassenärztliche Bundes-Vereinigung KBV) for all practitioners. These innovations are established around every ten years. The work of the executive members of the German Professional Association of the Medical Specialists in Phoniatics and Pedaudiology is to present and depict the actual medical diagnostic procedures and therapies in order to achieve adequate payment for the medical services.

PHONiatricIANS AND AUDIOLOGY - COOPERATION OF UEP AND IAPA

Foniatría y Audiología- Cooperación entre UEP y IAPA

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The Union of the European PhoniaticIANS (UEP) is a platform for phoniaticIANS to exchange knowledge, clinical experience and scientific work of voice, speech, language, hearing and swallowing disorders, while the International Association of Physicians in Audiology IAPA is a platform of cooperation to provide updates on diagnosis, treatment, and rehabilitation of hearing and balance disorders. Cooperation between these two organizations has been discussed since 2006 when representatives from UEP and IAPA have met twice in Berlin. The joint considerations have resulted in a Letter of Intent signed by the presidents of both associations in Ferrara in 2008. Their proposal amongst others is to invite all members of both associations to their conferences, introduce a link between the websites of the two organizations, inform each other about research projects which might be performed together, and to suggest their members to support the activities of both organizations in research, education and health care. Both organizations are in contact and in negotiation with the UEMS in order to be accepted as independent specialties within the European Union. Since 2008 the following activities of UEP and IAPA could be noticed: e. g. organizing a phoniatic session with participation of UEP members on the 15th International IAPA Congress in Krakow, Poland (2010); organizing UEP Round Tables on the 16th International IAPA Congress in Beijing, China (2012) and the 17th Conference in Pattaya, Thailand (2014). The Volume 8, Issue 4 (2010) of the journal "Audiological Medicine" currently renamed to "Hearing, Balance and Communication Disorders", an official organ of IAPA, was entirely devoted to Phoniatics and prepared by members of the UEP. Future opportunities of cooperation will be presented.

THE COLLABORATION BETWEEN THE UEP AND THE WHO

Colaboración entre la UEP y la WHO

Katrin Neumann

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The UEP has started a close collaboration with the WHO. It aims on strengthening both the WHO and the UEP in their work on curtailing the global burden of communication disorders and raise international awareness on this issue. This collaboration increases the international visibility and outreach of the UEP. A focus of the WHO in this cooperation is the prevention of deafness and hearing loss (WHO PDH). The collaborative work-plan for 2015-17 involves the following past and current UEP activities: 1. A survey on the current situation of newborn and infant hearing screening programs across the world undertaken by Katrin Neumann and her co-workers. 2. The participation in a WHO publication on the prevention and care for childhood hearing loss (Krug et al. 2016). 3. The support of Shelly Chadha, the WHO Technical Officer of the Prevention of Deafness and Hearing Loss Team, in preparing a new resolution on ear and hearing care which is planned to be launched on the World Health Assembly in 2017. 4. The organization of the audiology part of the All Africa ENT and Audiology Congress which takes place in June 2016 in Rwanda, by Katrin Neumann and Shelly Chadha. 5. The organizing of a plenary session on primary ear and hearing care in the 2016 UEP congress in collaboration with the WHO. 6. UEP activities to promote the World Hearing Day on 3 March. Antoinette am Zehnhoff-Dinnesen and Katrin Neumann participated in a respective seminar in the WHO headquarter in Geneva on that day. 7. The financial support of the WHO PDH by the UEP through an annual sponsoring. 8. The work of the Hearing Committee of the UEP on the prevention, identification, treatment and follow-through of hearing loss which is caused by congenital cytomegalovirus infections. References: Krug E, Cieza A, Chadha S, Sminkey L, Martinez R, Stevens G, White K, Neumann K, Olusanya B, Stringer P, Kameswaran M, Vaughan G, Warick R, Bohnert A, Henderson

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ROUND TABLE

MESA REDONDA

PHONiatricS & OTORHINOLARYNGOL- OGY. A COMMON GOAL

FONIATRÍA Y OTORRINOLARINGOLOGÍA. UN OBJETIVO COMÚN

Presidente: Dr. G. Desuter

HOW CLIMATE AND ENVIRONMENTAL CHANGES WITH RESPIRATORY ALLER- GIES CAN AFFECT VOICE PRODUCTION

Cómo los cambios climáticos y ambientales, junto a las alergias, pueden afectar a la producción vocal

R. Eugenia Chávez-Calderón M.D. Prof. Director of Centro de Foniatría y Audiología, Ciudad de México, México. Universidad Nacional Autónoma de México.

Objective: The climate change depending on internal and external causes. Internal changes are due to the earth activities and produce global warming. The external causes can be natural or anthropogenic. The human influence makes higher CO2 levels. Industries, cars and a chaotic population growth, without any urban planning, are making the climate change accelerated. Weather has an impact on short term environmental changes. In this paper a relationship between the climate change, environmental conditions and respiratory allergies is made. Material: Outdoors and indoors environment pollution is due to gases and particles. Usually the particles have the different allergens that can provoke allergic reaction.

Method: In a 100 nonprofessional voice users group a questionnaire for outdoor pollution symptoms through voice handicap index has been made. Voice production, using the airway system, can suffer several damages. If the respiratory mucosa has also special allergic response to different particles, the voice can be harmed. At the beginning there are qualitative changes but they can developed anatomical and functional changes such as chronic vocal folds inflammation, or several benign tumors. **Results:** In a group of 716 voice allergic patients the main allergens are examined finding the trees as number one, with a small difference with the weeds, yeasts and animals and insects. Allergies have to be diagnosed and treated in an integral way. There are improvements of the environment to help the air pollution such as purifier with H.E.P.A. filters. In the 100 persons group about pollution the main symptoms are dryness and irritation, and the results are presented. **Conclusions:** The respiratory allergies have to be well diagnosed and treated. As world citizens we have to fulfill laws to try to diminish these climate conditions. We must demand that the governments make the correct decisions to protect the world.

USEFULNESS OF LARYNGEAL ELECTROMYOGRAPHY IN DIAGNOSIS AND TREATMENT OF VOICE DISORDERS

Utilidad de la Electromiografía laríngea en el diagnóstico y tratamiento de la patología vocal

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Hospital La Paz. España.

Objective: To describe the usefulness of the laryngeal electromyography (LEMG) in a voice clinic. **Methods and Materials:** Patients with different laryngeal movement disorders seen in the voice clinic are referred for LEMG. All the patients underwent voice assessment and videolaryngostroboscopy. LEMG procedure is performed by a laryngologist and a neurophysiologist. Cricothyroid, thyroarytenoid and posterior cricoarytenoid muscles are explored when necessary. **Results:** More than 250 patients have undergone the procedure. The initial diagnosis was vocal fold immobility in most part of cases (65%), followed by spasmodic dysphonia in (13%), paradoxical vocal fold movement, bilateral vocal fold atrophy, vocal

granuloma, and psychogenic dysphonia. Sensitivity of LEMG was around 80% in vocal fold immobility. **Conclusion:** LEMG is a valuable tool in diagnosis assessment and prognosis of laryngeal movement disorders. **Key Words:** Laryngeal electromyography, vocal fold immobility, laryngeal movement disorders.

ANATOMICAL AND BIOMECHANICAL ANALYSIS OF THE HUMAN RECURRENT LARYNGEAL NERVE

Análisis anatómico y biomecánico del nervio laríngeo recurrente en el hombre

Róbert Késmárszky¹; Péter Nagy²; Tamás Micsik³; Gergely Rác³; Liza Pelyhe⁴; Bettina Pogácsás⁵; Réka Potsabay⁶; Eszter Bognár^{2,7}
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Aim: The motor functions of the human recurrent laryngeal nerve have an extremely important impact on the quality of life. Iatrogenic injuries are amongst the leading causes of their palsy. The authors achieved an ex-vivo study analyzing the anatomy of the nerve, factors of risk during surgeries and to help to understand its answers to mechanical forces. **Sources and Methods:** More than one hundred human recurrent laryngeal nerves were dissected. The anatomy was observed immediately and reviewed using digital imaging. The nerves after tests were analyzed by stereomicroscopy. **Results:** The morphology of the examined nerves presents an important heterogeneity. Differences occur regardless of the examined side, sex or age. Their position related to the anatomical landmarks and the branching patterns are not constant. Pathologies of the related structures, mostly in case of the thyroid gland and anatomical variations are important risk

factors during the interventions. The morphological characteristics of the nerves do not allow predicting the answers to mechanical forces. Conclusion: The anatomy of the human recurrent laryngeal nerve and its surrounding tissues is highly variable making the nerve vulnerable and the reconstruction difficult. To avoid nerve damage, precise anatomical knowledge and careful surgery are musts.

FREE COMMUNICATIONS

COMUNICACIONES LIBRES

HEARING DISORDERS

TRASTORNOS AUDITIVOS

Coordinador: Dr. A. Ibargutxi

SUCCESS IN COMMUNICATION AND SOCIAL PARTICIPATION – OLDER ADULTS WITH CI

Logros en comunicación y participación social - adultos mayores con implante coclear

Reinhild Hofmann; Karen Reichmuth; Stephanie Brinkheetker; Antoinette am Zehnhoff-Dinnesen

Münster University Hospital, Clinic of Phoniatrics and Pedaudiology, Germany.

Aim. The success of cochlear implantation in post-lingually deafened adults is usually measured by pure-tone and speech audiometry. However, the WHO states in the ICF that rehabilitation should also be assessed according to individual communication skills, social participation and quality of life. We developed and implemented a questionnaire that focuses on everyday communication and allows comparison between people with normal and impaired hearing. A parallel version for assessment of the CI-users' communication by their significant other was also developed. Additionally, we assessed social participation and quality of life of CI-users before implantation and with 4 months CI experience. Sources and methods. In a prospective pilot study, five post-lingually and progressively deafened participants (55-80 yrs) and their significant others answered questionnaires concerning communication behavior (questionnaires developed by the authors), social and emotional handicap (HHIA, HHIE, HII-SOP) [1-3], and quality of life (AQoL-6D) [4] at two time points: pre-implantation and with 4 months CI experience. Hearing ability was measured using pure-tone and speech audiometry and the SSQ [5]. Five matched normal hearing participants served as controls. Results. Participants with 4 months CI experience reported fewer misunderstandings,

higher communicative success and less communicative effort required than before implantation, though they did not reach the level of normal hearing controls on these measures. CI users still often pretend that they have understood spoken communication and are still dependent on their significant other. They wish for further communicative success and greater independence. Conclusion. Cochlear implantation alone does not lead to normal communication behavior and social participation. These issues and the role of the significant other should also be focused on in rehabilitation alongside auditory training. Apart from the AQoL-6D the questionnaires used in this study proved to be suitable instruments for documenting the course of rehabilitation. [1] Newman CW et al. (1990). The Hearing Handicap Inventory for Adults (HHIA): psychometric adequacy and audiometric correlates. *Ear Hear*, 11(6):430-3. [2] Ventry IM, Weinstein BE. (1982). The hearing handicap inventory for the elderly (HHIE): A new tool. *Ear Hear*, 3:128-134. [3] Preminger JE, Meeks S (2012). DOI: 10.3766/jaaa.23.10.6. [4] Hawthorne G, Richardson J, Osborne R. (1999). DOI: 10.1023/A:1008815005736. [5] Gatehouse S, Noble W (2004). <http://www.ihr.mrc.ac.uk/pages/products/ssq>.

HEARING OUTCOMES AND EXPERIENCE OF THE SURGERIES OF CHRONIC SUPPURATIVE OTITIS MEDIA

Resultados auditivos y experiencia de las cirugías de la otitis media crónica supurada

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Aim. To analyze the surgical outcomes and share experience in the surgical management of Chronic Suppurative Otitis Media. Sources and methods. Retrospective review was performed in 1372 patients with Chronic Suppurative Otitis Media operated from January 2003 to December 2012. Follow up 2 to 4 years, summarize the time of dry ear after surgery, compare the changes of hearing, tinnitus, facial paralysis and other symptoms and compare the effect of clinical pathway before and

after surgery. Results. 672 cases of chronic suppurative otitis media (resting stage), 348 cases of chronic suppurative otitis media (active stage), and 352 cases of middle ear cholesteatoma were reviewed. Postoperatively, the average dry ear time is 2-6 weeks (4.31 ± 0.96), the air conduction hearing improve (14.56 ± 3.21) dB on average, patients with tinnitus symptom improved significantly after tympanoplasty, THI dropped 9.6 ± 2.5 on average. Among all the cases, 4 patients appeared sensorineural hearing loss, 4 patients had temporary facial paralysis, and 5 patients aroused suppurative perichondritis of auricle. After the implementation of clinical pathway, patients' satisfaction was further improved, and postoperative complications were significantly decreased. Conclusion. In a word, sufficient preoperative preparation, strict control of the surgical indications, multiple levels of strict quality assurance, the implementation of clinical pathway, postoperative follow-up of patients, all of these are safe strategies for successful operation.

FREE COMMUNICATIONS

COMUNICACIONES LIBRES

CONTRIBUTIONS TO PHONOSURGERY

CONTRIBUCIONES A LA FONOCIRUGÍA

Coordinadora: Dra. E. Chavez

CONTRIBUTIONS OF THE INDIRECT ENDOSCOPICAL PHONOSURGERY

Aportaciones de la Fonocirugía Endoscópica Indirecta

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Objective. Phonosurgery has had an increasing development in the last 30 years .In 1970 s, Wendler and Seidner developed indirect micro- and tele-laryngo-strobo-phonosurgery. Due to the presence of telescopes, more power in light sources, new recording systems, high definition possibilities and digitalized computer, the indirect endoscopic surgery is performed

since latest 80 and has been improving. Material. Indirect phonosurgery with local anesthesia and intravenous sedation is performed in 2500 patients in 20 years from 15 to 83 years old. Method. The patients had phoniatric examination with endostroboscopy , acoustical analysis ,examination of the nose and the ear ,voice handicapped Index and at least two sessions of voice rehabilitation before the surgical procedure. Indirect eendoscopic surgery needs an anesthetist during the procedure , previous blood exams and cardiologist examination in order to protect the patient from any complication. This in office procedure avoids complications with endolaryngeal intubation. The surgeon needs special skills to decide the fine use of the different instruments. The use of stroboscopical light during the production of the various voice registers and volumes permits the exact need of the approach in order to reach the best vocal function. Results. There are benign tumors such as nodules, polyps, cysts, Reinke's edema and hypertrophic inflammation. Premalignant lesions like leukoplaquias, papillomatosis and malign lesions such as epidermoid carcinoma. There were also patients who needed Botox, fat and cidofovir injection. All the patients had voice rehabilitation after surgery. Conclusions. The main contributions of this phonosurgical procedure are the great advantage of a free glottal area without endoscopes and tubes and to have the vocal function under stroboscopic light to reach the best function of the vocal folds and intralaryngeal structures.

INFLUENCE OF EXTRAESOPHAGEAL REFLUX ON THE OCCURRENCE OF VOICE PROSTHESIS COMPLICATIONS AND VOICE QUALITY

Influencia del reflujo extraesofágico en la aparición de complicaciones en la voz protésica y en la calidad de voz

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Introduction. There are several risk factors that contribute to the development of VP complications including extraesophageal reflux (EER).

Recently, pepsin was identified as a sensitive and specific marker of EER, and showed that measurement of concentration of pepsin in saliva is a reliable, cheap, simple and non-invasive method to diagnose EER. Method: The study included 60 laryngectomees with VP and 30 healthy control subjects in whom concentrations of pepsin in saliva samples were analyzed with ELISA method. Clinical examination in the studied group evaluated the presence of VP complications and speech rehabilitation performance score with Harrison-Robillard-Schultz scale. Patients with VP complications were randomized in two groups: therapy with pantoprazole at a dose of 40 mg in the morning for 6 months or no medication. Results: Saliva samples of all subjects, laryngectomees and healthy controls, demonstrated the presence of pepsin. Values above 0.884 pg/ml were considered increased and EER was diagnosed in 25% of laryngectomy patients. Median pepsin concentrations did not differ significantly between patients and controls, between patients with and without VP complications, nor among patients with different types of VP complications. This study demonstrated a high performance of speech rehabilitation but did not find any significant correlation between the concentration of pepsin in saliva and voice quality in patients with VP. Incidence of VP complications, voice quality and concentration of pepsin did not differ significantly among patients regarding radiotherapy. Six months pantoprazole therapy did not significantly reduced incidence of VP complications or pepsin in saliva, or show any significant improvement of voice quality. Conclusion: This study demonstrated that EER, diagnosed non-invasively by concentration of pepsin in saliva, did not significantly affect the incidence of VP complications. Therefore, there are no data to support prophylactic proton pump inhibitor therapy in all patients with VP complications.

TREATMENT OF LARYNGEAL WEB USING NEW GORE-TEX KEEL DESIGN AND MITOMYCIN-C

Tratamiento de la microsinequia laríngea mediante el nuevo diseño Gore-Tex y Mitomicina-C

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Aim. To evaluate the efficacy of a new Gore-Tex keel design in prevention of recurrence of laryngeal web following excision via direct laryngoscope. Sources and methods. The recurrent adhesion after excision of the laryngeal web was very common problem. There were many methods design to prevent adhesion using different material. Study design: Prospective. Subjects. Three subjects were presented with dysphonia and mild stridor on exertion. On examination, partial adhesion of both vocal folds ranged from 50 to 75% of the membranous glottis was found. Two subjects have laryngeal web and one subject has congenital laryngeal web with subglottic stenosis. Methods. All patients underwent nasofibrosopic examination and acoustic analysis assessment before operation and 2 months postoperative. Elective tracheostomy was made for ventilation anesthesia and keeping airway postoperative. Excision of the web was made through direct laryngoscope up to the anterior commissure. Dissection continued to the subglottic area below the anterior commissure for the subglottic stenosis with trimming of excess tissues. Mitomycin-C-soaked cotton was applied to the larynx and subglottic area for 5 minutes. A rectangular Gore-Tex sheet prepared individually according to the length of the raw areas in vocal folds and subglottic area (horizontal and vertical planes). This rectangular sheet folded upon itself in the middle on a vertically placed small sterile tube. This tube keeps the keel lodged well in the anterior commissure. The already designed Gore-Tex keel is introduced by direct laryngoscope and threaded with Prolene suture 2-0. The 2 ends of the thread passed in the midline from the cricothyroid membrane and through thyroid cartilage, then, tied subcutaneously in the neck. The keel removed after 3 weeks and the tracheostomy closed. Auditory perceptual assessment and acoustic analysis was conducted preoperatively and 1 to 2

months postoperatively. Results. Postoperative evaluation revealed significant improvement of the perceptual voice quality and acoustic measurements. Also, respiration was improved after surgery in all cases. Endoscopic examination revealed free mobility of both vocal folds with no adhesion after 2 months post-operative. All patients got satisfied by their voice and birthing. Conclusion. Gore-Tex keel prevents vocal fold reactions by providing excellent inert barrier between the two vocal folds. Also, it prevents re-adhesion without the need for the relatively extensive laryngofissure. In addition, Mitomycin-C application minimizes postoperative fibrosis. This technique is a successful and easy method in treatment of congenital and acquired laryngeal web.

SURGICAL FEMINIZATION OF THE VOICE: CRICOTHYROID APPROXIMATION VERSUS GLOTTOPLASTY

Feminización quirúrgica de la voz: aproximación cricotiroidea versus glotoplastia

Elena Mora ¹; Ignacio Cobeta ¹; Antonio Becerra ²; María Jesús Lucio ²

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Aim. Compare feminization of the voice and patient's satisfaction in male to female transsexuals undergoing cricothyroid approximation versus glottoplasty. Sources and Methods. 42 patients in sex reassignment process male to female were studied. 28 went under cricothyroid approximation and 18 glottoplasty (4 patients went glottoplasty after failed cricothyroid approximation). Cricothyroid approximation was performed from 2007 to 2011 as the gold standard surgery and glottoplasty after that. Fundamental frequency of voice, hoarseness and Voice Handicap Index-10 (VHI-10) were studied in all patients before and after the feminization surgery. Femaleness own perceived of voice, overall satisfaction with the surgical process and complications of the surgical techniques are also analyzed. Results. Fundamental frequency rises up in average 44 Hz after cricothyroid approximation and 53 Hz after

glottoplasty, without statistical relevance in lineal regression test (Regression coefficient 5.67, SD 14.01, P0.6, CI -22 33). Average GBRAS had no change before and after the surgery in each group, with one point of difference between both surgical techniques with statistical relevance (Regression Coefficient 1.00, SD 0.39, P0.01, CI 0.20-1.80). VHI-10 go down from 16 to 10 points in the first group and from 17 to 10 points in the second group without statistical difference (Regression Coefficient -0.55, SD 1.74, P0.75, CI -4.07 2.97). Femaleness own perceived voice after surgery was in both groups 6 points from 10. Overall satisfaction with the whole surgical process was 7 points from 10 also in both groups). Conclusion. Both the cricothyroid approximation and the glottoplasty rises up the vocal pitch. In this study we found no difference in the change of fundamental frequency they gain. Overall satisfaction about the surgical process as well as the femaleness of the voice are acceptable and very similar with both techniques.

INJECTION LARYNGOPLASTY AS A TREATMENT METHOD OF AGE-RELATED DYSPHONIA

Laringoplastia de inyección como tratamiento de la disfonía debida a la edad

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Aim. To assess the quality of voice after injection laryngoplasty in patients with age-related vocal folds atrophy. Sources and methods. The material included 26 subjects with presbyphonia who were referred for injection augmentation. The average age of patients was 67.4 ranging from 59-82 y.o. Preoperative and postoperative examination included laryngo-videostroboscopy (LVS), perceptual voice assessment (GRBAS), objective acoustic analysis (MDVP) and self-assessment of voice by Voice Handicap Index (VHI). All the patients underwent injection laryngoplasty: hyaluronic (21

subjects) and calcium hydroxyapatite (5 subjects). Voice therapy was continued out for 3-4 months after injection (1-2 sessions/week) to release bad vocal habits or compensatory phonatory patterns developed after the onset of the disease. Follow-up examinations were conducted 6 and 12 months postoperatively. Results. The postoperative LVS examination showed that in all cases the phonatory gap was partially or totally closed. Perceptual voice quality using GRBAS scale was improved and the results were stable in the follow up periods. Objective voice analysis MDVP showed a significant statistical improvement within the group of amplitude (APQ, Shim, vAm) and frequency parameters (Jita); other studied parameters didn't change significantly, although their values decreased after surgery. The differences in value between follow up periods were not statistically significant. In observed follow up periods we found improvement of VHI scores. Conclusions. Injection laryngoplasty is the fast method of rehabilitation of phonatory function and restoration of voice in older people. Long term follow up confirms that injection augmentation is an efficient method improving of the voice. Injection laryngoplasty allows older patients to quickly return the communicative function, professional activity and prevents their social isolation.

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DEGLUTITION – MISCELLANY

DEGLUCIÓN - MISCELÁNEA

Coordinador: Dra. M. Pérez. Asociación de Familias de Personas Sordas de Guipuzkoa. España.

CREATION OF A TEST FOR ASSESSING ORAL AND MANUAL STEREOGNOSIS: INTEREST IN HEAD AND NECK CANCER PATIENTS

Creación de un test para evaluar la estereognosia oral y manual: interés para pacientes con cáncer de cabeza y cuello

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Literature data show that perceptive skills are involved in the functional recovery of deglutition, phonation and enunciation among patients suffering from upper aerodigestive cancer. In fact, motor skills which are inherent in oral functions are always based on perceptive treatment. Therefore, some patients hardly recover their motor skills because of an underlying perceptive defect. It then seems relevant to test the patients' perceptive skills before starting treatments in order to know if they have a good tactile acuity but also to be predictive regarding the recovery of their motor skills. Therefore, this essay is about creating a tool that could evaluate oral and manual stereognosis skills. The neurological treatment being similar for both hand and mouth, these two elements can be compared. The association of oral and manual skills could enable to suggest a manual evaluation to patients with oral sensitive difficulties. The ability to recognize forms, which is linked to tactile sensitivity but also to proprioception and motor skills, are part of the perceptive elements that can influence the rehabilitation of oral functions after a surgical and/or radiotherapy and/or chemotherapy treatment among patients suffering from upper aero-digestive cancer. Suggesting an evaluation of the oral stereognosis before the various treatments could particularly enable a speech therapy rehabilitation based on tactile perception for patients in greatest difficulty. The aim of this study is to create a shape recognition test for oral and manual skills and to verify that there is a correlation between the both skills. Material and methods. Two sets of shapes were created and the tests were performed by

60 normal people and 20 head and neck cancer patients. The results show a different distribution between the both skills with an expected better performance for the manual modality. But there is no correlation between the oral and the manual modalities. In conclusion. The test we created is useful for assessing oral and/or manual gnosis but there is no argument to use the manual testing for predicting oral stereognosis performance in adult with this test.

THE INFLUENCE OF REIKI THERAPY ON THE EMOTIONAL STATE, COMMUNICATIVE ABILITY AND QUALITY OF LIFE IN APHASIC PATIENTS

Influencia de la terapia Reiki sobre el estado emocional, la habilidad comunicativa y la calidad de vida de pacientes afásicos

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Introduction. Numerous studies collect the emotional impact that aphasia produces. These alterations complicate the global and speech therapy treatments, slowing down or hindering the patient's recovery. There is growing concern about the impact disability has on quality of life (QOL) and obtained benefits through some alternative therapies have been posted. Objectives. To assess whether the Reiki Therapy (RT) helps improving QOL, emotional state and communication skills in aphasic patients who are in conventional speech therapy treatment (CSTT). Method. Experimental design cross-case control study with 13 subacute phase and chronic aphasia patients in CSTT. Both groups were treated alternately with RT and CSTT during 4 weeks and only speech therapy during 4 more weeks. They were evaluated at the start, after the first cycle and at the end of the study. Variables in speech, emotional state (STAI scale), QOL with EuroQol-5D questionnaire assessed by the patient and the family, and the speech therapist's opinion on communication skills and emotional expression are collected. Results. Sample composed by 9 women and 4 men,

aged between 30 and 70, being 49 the median age. The 30.8% of the patients present fluent aphasia and 69.2% not fluent aphasia. No statistical significance is obtained among the means of each scale, but differences in absolute terms among the means are obtained. It is found that RT provides improvements in some language aspects, in patients' emotional state and in their perception of QOL. Longitudinal studies with large and homogeneous samples are needed. KEY WORDS: aphasia, quality of life, anxiety/depression, Reiki Therapy.

VALIDITY AND RELIABILITY OF THE SPI (STUTTERING PREDICTION INSTRUMENT) IN ASSESSMENT OF STUTTERING SEVERITY AND CHRONICITY AMONG ARABIC SPEAKING CHILDREN

Validez y fiabilidad del SPI (Instrumento de Predicción de la Disfemia) en la evaluación de la severidad y cronicidad de la disfemia en niños de idioma árabe

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Objectives. This study aimed to standardize an objective Arabic tool for measurement stuttering severity and prediction of its chronicity among Arabic speaking normal dysfluency children. SPI was changed into Arabic form & materials were prepared and changed to suit Arabic society. Subjects and Method. This test was conducted on two groups: first group consists of (100) stuttering children (control group), Age ranged from 3 to 8years. Second group consists of (100) children who have normal non-fluency, age ranged from 3 to 8years, were randomly chosen for the standardization procedure. The SSI Arabic test, and SPI Arabic test were applied, during which the patients speech was audio-recorded, to facilitate judging the duration of the moments of stuttering. A follow up was done by SPI on normal dysfluency group every 6ms for 18ms to get a cutoff point between recovering and non-recovering children. Results. Test reliability was measured by inter rater reliability, while validity was

measured by correlation with previous standardized test and internal consistency validity. Conclusion. The Arabic form of the S.P.I. (A.S.P.I.) presented in this article is an objective, valid and reliable test that can be used in evaluating the Arabic-speaking children who had dysfluency before and throughout the course of therapy. It was considered the first pioneer test to differentiate the diagnosis between the normal dysfluency children and children who stutter.

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VOICE AND RESONANCE 1

VOZ Y RESONANCIA 1

Coordinador: Dra. R. Bermúdez de Alvear

SELF PERCEIVED VOICE DISORDERS IN SINGERS: SYSTEMATIC REVIEW AND META-ANALYSIS

Autopercepción de la patología vocal en los cantantes: revisión y meta-análisis

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Aim: Review the prevalence of self-perceived voice disorders in singers. Sources and methods: A systematic review was conducted in five of the major scientific databases. An extensive search strategy was adopted taking into account the rules of each database. Original articles which included data related to auto perception of dysphonia in past were included. A meta-analysis was performed in order to assess the heterogeneity and the relative results significance. Results: 2371 articles were identified as result of the used search strings. Duplicates were deleted, screenings were conducted and, inclusion and exclusion criteria were applied. Final analysis was based on 11 studies. The most used instrument was customized questionnaire. In relation to the samples, singing styles are quite different among

subjects, as well as their ages. The mean prevalence of self-reported dysphonia in singers is 46.01% (from 16.33 to 65.33). Age rank varied between 3 years old and 82. The heterogeneity was substantial among the studied samples (I²=85.81). The popular and traditional singers present higher risk to develop dysphonia, as well as singing teachers. In an opposite direction, to be a singing student acts as a protective effect. Conclusion: Although with low homogeneity, all groups presented a high prevalence of self-perceived dysphonia over their careers, comparing to the general population. This emphasizes the need of a preventive approach in traditional and non-formal trained singers. Keywords: voice, singers, dysphonia, occupational health, self-perception

MULTIDIMENSIONAL ASSESSMENT OF VOICE QUALITY OF FUTURE ELITE VOCAL PERFORMERS

Evaluación multidimensional de la calidad de la voz de los futuros profesionales de la élite vocal

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Objectives: This study correlates the Singing Voice Handicap Index (SVHI) scores with videostroboscopy and acoustic analysis in healthy professional singers as a measure of self-perceived vocal health versus actual pathology seen on examination or modification at the acoustic evaluation of voice. The objective was to measure the strength of self-assessment among professional singers and determine if there is a benefit of combining SVHI, acoustic analysis and videostroboscopy for routine assessment of singers without an obvious singing voice problem. Study Design: Prospective cross-sectional study. Methods: The voice quality of 50 students of the faculty of music, was assessed by means of a multidimensional test battery containing: singing voice handicap index (SVHI) and SVHI-10, videolaryngostroboscopy, maximum phonation time on vowel /a/, S/Z ratio, jitter, shimmer, NHR (harmonic noise ratio), lowest frequency, highest frequency, conversational frequency, dysphonia severity index (DSI). In a questionnaire on daily habits the prevalence of smoking, eating habits, and vocal abuse were recorded. The correlation between SVHI scores,

acoustic analysis and pathologic findings seen on videostroboscopy was analyzed using linear regression and serial t tests. Results: SVHI scores were as expected for healthy singers. Singers preferred SVHI-10 and the results were quite similar between these two tests. However, although all singers self-identified as healthy, laryngeal abnormalities were relatively common. Acoustic analysis of students voices showed relative instability of pitches, problems with F0 variation, TMF and S/Z. Linear regression found no significant correlation ($P = 0.9501$) between SVHI scores, acoustic analysis and videostroboscopy findings. Conclusion: Multidimensional assessment of voice quality for routine assessment of singers without an obvious singing voice problem is an important tool to detect early voice problems despite the apparent normal appearance. A trained singer has the possibility to compensate minor laryngeal modification by using a proper singing technique and thus ignore existing pathology. In conclusion, acoustic evaluation of the performers' voices could detect early signs of vocal pathology.

DIFFERENCES BETWEEN OVERTONES SONORITY IN LATVIAN VOWELS

Diferencia entre la sonoridad de los armónicos en las vocales letonas

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Aim: The aim of the study was to analyze voice overtones sonority and to reveal differences between overtone intensity (expressed in dB) in Latvian vowels [a, e, i, o, u]. Sources and methods 60 choir singers were observed; male (n=25) and female (n=35). They were asked to sing Latvian vowels [a, e, i, o, u] on the pitch A3 (220Hz, males) and A4 (440Hz, females). Participants' voice was analyzed by Inventis program Daisy. Program provided formant 1 – 4 automatically, sound intensity was measured. Statistical analysis was conducted using SPSS 22.0 software, significance level was set at 0.05. Shapiro-Wilk, Descriptive Statistics, Non-Parametric and T-Tests were used. Results: The median age was 24 years (IQR 21 – 29). Female group showed median of intensity in voice as follows: [u] -2.32 dB (IQR -2.79 - -

1.94), [a] -2.3 dB (IQR -1.41 - -1.97), [o] -2.39 dB (IQR -3.03 - -1.92), [e] -2.51 dB (IQR -3.06 - -2.16), [i] -2.55 dB (IQR -3.10 - -1.89). The following results of male group were: [o] -2.34 dB (IQR -3.14 - -1.72), [a] -2.39 dB (IQR -3.5 - -1.85), [i] -2.49 dB (IQR -3.43 - -2.12), [e] -2.51 dB (IQR -3.42 - -1.88), [u] -2.57 dB (IQR -3.32 - -1.98). 3rd group was made by summarizing both results: [o] -2.37 dB (IQR -3.04 - -1.82), [a] -2.38 dB (IQR -3.06 - -1.96), [u] -2.51 dB (IQR -3.08 - -1.97), [e] -2.51 dB (IQR -3.08 - -1.97), [i] -2.52 dB (IQR -3.18 - -2.09). Conclusion: Comparative intensity of Latvian vowels shows that [a] > [e] and [o] > [i], however in the formant F3 the most sonority show [e] and [i].

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VOICE AND RESONANCE 2

VOZ Y RESONANCIA 2

Coordinador: Dra. M.P. Murtró

VALIDITY OF THE ACOUSTIC VOICE QUALITY INDEX IN LITHUANIAN SPEAKING POPULATION

Validez del índice de calidad acústica de la voz en la población de habla lituana

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Aim: The aim of the present study was to validate the Acoustic Voice Quality Index in Lithuanian language (AVQI-LT) and investigate the feasibility and robustness of its diagnostic accuracy differentiating normal and dysphonic voice. Sources and methods: A total study group consisted of 184 native Lithuanian subjects with normal voices (n= 46) and various

voice disorders (n= 138). The subjects were asked to read aloud the phonetically balanced Lithuanian text and to sustain the vowel /a/. A sentence with 13 syllables and a 3-second midvowel portion of the sustained vowel were edited. Both speech tasks were concatenated, and perceptually rated for dysphonia severity by five voice clinicians. They rated the Grade (G) from the GRBAS protocol and the overall severity from the CAPE-V protocol with a Visual Analogue Scale (VAS). The average scores (Gmean and VASmean) were taken as the perceptual dysphonia severity level for every voice sample. All concatenated voice samples were acoustically analyzed to receive an AVQI-LT score. Results: The results for both intra-rater and inter-rater reliability showed totally sufficient strength of agreement between five raters in judging voice samples. The results achieved significant and marked concurrent validity between both auditory-perceptual judgment procedures and AVQI-LT. For both auditory-perceptual judgment procedures comparable results were found in AVQI-LT diagnostic accuracy with two different AVQI-LT thresholds. For the Gmean rating ROC-analysis resulted in area under ROC-curve of 0.940 and indicated the cutoff score of AVQI-LT=2.97 to yield best diagnostic accuracy, i.e. sensitivity = 0.838 and specificity = 0.937. For the VAS-rating, ROC analysis resulted in area under ROC curve of 0.962 and AVQI-LT threshold of 3.48 was determined with sensitivity = 0.840 and specificity = 0.922. Conclusion: The AVQI-LT is considered to be a valid and reliable tool for assessment of the dysphonia severity level in Lithuanian-speaking population.

NORMAL VOICE IN FEMALES 9 TO 17 YEARS AND AS ALTERED IN PATIENTS WITH BEHAVIOR DISORDER ANOREXIA NERVOSA FOOD – RESTRICTIVE

Voz normal en mujeres de 9 a 17 años y cómo se altera en pacientes con anorexia nerviosa de alimentación restrictiva

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Object: This study is about the tone of voice (acoustic perception) in patients with restrictive anorexia nervosa (AN-R). Our goal was to study whether or not there is an alteration of the tone in restrictive anorexia nervosa when the disease has started in the puberty. Material and methods: We measured and analyzed the voice's F0 in the control group and patients of AN-R. Total sample were 148 subjects divided in two groups: control (n=102), AN-R (n=46). The voice's Fundamental Frequencies (F0) was determined based on the repetition of two phonemes ("a" and "i"), measured by a microphone and analyzed by a digital recorder. Results: We present for the first time the range of normal values for fundamental frequencies in women, from 9 to 17 years old, whose mother tongue was Spanish from Spain and haven't been diagnosed with any voice-related pathology. Finally, we show the comparative data between patients of AN-R and a control group analyzing the disorders we found. Conclusions: In this pilot study, we could only calculate the predictive value of having AN-R starting from the fundamental frequencies for the age group ranging 15-17 years old. We believe the measurement of fundamental frequencies in primary healthcare would simplify the detection of behavioral eating disorders, and the referral to a specialist on psychology or psychiatry for an in-depth evaluation.

Key words: Voice. Restrictive anorexia nervosa. Puberty.

DOCTORVOX: A NEW DEVICE FOR VOICE THERAPY AND VOCAL TRAINING

DOCTORVOX: un dispositivo nuevo para la terapia y el entrenamiento vocal

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Aim: Introduce doctorVOX, a new device designed by the author to assist in voice therapy and to provide vocal folds humidification. It is also intended to serve as a supporting device for professional voice users. **Sources and Methods:** doctorVOX is based on LaxVox Voice Therapy Technique. The main mechanisms are artificial elongation of the vocal tract and a secondary oscillatory resistance to increase vocal tract inertance. DoctorVOX is formed by two parts. The upper part of the device is basically formed by two tubes mounted one inside other. The phonation inlet is the opening of the inner tube from which the user can phonate into water. The active length of the inner tube can be adjusted individually according to the user's vocal tract length by cutting the silicone mouthpiece. The swan-neck like tube indicates the breathing outlet from the container. The humidified air directly affects vocal fold mucosa. Water in the container is then intended to be between 40-45° +C (a thermos wrap is provided for keeping the water warm for a longer time). The bottom part of the device which is named the container, is filled with certain amount of water. An additional specially cut silicone tube –the tip tuner- can be used to increase backpressure in order to help professional vocalists train in high loudness levels. Water spillage during blowing and aspiration of water during inhalation, are prevented by the circle fold (like an inkstand) at the roof of the container and the enlargement in the neck part of the device. **Result and Conclusion:** Therapy adherence is a major factor in treatment of voice disorders. Task orientation, motivation and attentional focus are important for motor learning. Near its physical effects, doctorVOX is designed to help motor learning and cogni-

tive processes in voice therapy and vocal training. Future clinical studies are needed to be done.

VOICE COACHING APPLIED TO CHILD DYSPHONIA

Entrenamiento vocal en la disfonía infantil

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Aim: To make the children aware of their voice problem and involve them as the person in charge of their rehabilitation. To do so, we use a coach who adapts his/her tools to the children's voice and their situation. **Material and methodology:** Child dysphonia is often associated with abuse and misuse of the voice. It is treated by re-educating the voice and for it to be successful it is necessary to raise awareness among children and their relatives. Coaching is the process which starts from the current state and goes through to a desired state. How do we get from the current to the desired state? The person must be made aware of their own state and propose change solutions. We included children aged from 9 to 13 attending a speech therapist or phoniatician to treat child dysphonia. In the first session, the child is explained the pathology they are suffering from, showing them a drawing of their vocal chords and that this pathology "is fed" by the bad way in which they use their voice. We introduce them to the "Voice Wheel" which indicates the main ways of abusing or misusing their voice, so that they can identify theirs. We suggest they write the ways in which they misuse their voice in one column and solutions to eliminate these in the other. We give

them two calendars, one where they will have to identify and write down the ways in which they abuse their voice every day, and another to note down how often they do their exercises. Their relatives are also informed of the entire process. Voice rehabilitation begins with vocal exercises and the abuses and exercise calendar is reviewed weekly, encouraging the child to continue progressing. Results: We shall have the first results this summer. Conclusion: This methodology is well received both by the children and their relatives. We are continuing to use it in our surgery while we await the results.

CONTRIBUTIONS OF THE ESTILL VOICE CRAFT TECHNIQUE TO SPEECH THERAPY INTERVENTION IN DISORDERS OF THE VOICE

Contribuciones del método Estill Voice Craft a la terapia intervencionista en la patología de la voz

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In recent years the method of vocal training Estill Voice Craft (EVC) is undergoing growing recognition by voice professionals, including the speech therapists and the phoniatricians. This method is based on the vocal Physiology and seeks to control isolated muscle from each of the structures of phonation. EVC is designed to work with healthy voices. Objectives: Show that the physiological substrate of the exercises proposed by EVC can be useful both in functional logopaedic diagnosis and rehabilitation in vocal pathology, and establish some guidelines for the adaptation of EVC exercises in speech therapy intervention. Method: Images are collected of the supraglottic space of a woman without dysphonia trained in the EVC method during the exercises of EVC through a nasal fibroendoscopy flexible. For the adaptation of the method a review is carried out of the literature, including material edited for training in EVC and scientific articles and books on physiology of voice and vocal re-education. Results: The images obtained by nasal recto-

vaginal show matches with exercises and investigations described by EVC. These data, together with the review of the literature and our experience in the application of EVC serve as basis to propose an adaptation of the method for voice disorders speech therapy intervention. Conclusions: EVC is a powerful tool in the rehabilitation of voice pathology due to its analytical view about the vocal phenomenon. We believe that the guidelines presented here to adapt this method to clinical practice are the basis for developing a survey that will allow us to validate the effectiveness of the inclusion of this method in vocal therapy.

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VOICE AND RESONANCE 3

Voz y Resonancia 3

Coordinador: J.M. Roqués

PEDIATRIC DYSPHONIA SAMPLE: AERODYNAMIC AND AUDIO PERCEPTUAL ANALYSIS

Muestra de disfonía infantil: análisis aerodinámico y audioperceptual

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Aim: The aim of this paper is to point out which aerodynamic and audio perceptual measures mirror the effectiveness of speech therapy regarding childhood dysphonia associated to kissing nodules. Sources and Methods: The analyzed subjects are 55 pediatric patient (until 17 years) with bilateral vocal fold nodules. The pre and post therapy results were measured using a standardized assessment protocol, which includes laryngeal, audio perceptual and aerodynamic measures of voice production. In order to compare results of the different referred forms of voice evaluation, descriptive and inferential statistics were used. The statistical analysis was made with SPSS 23.0.0. Results: The sample includes 60% of males. Mean age was 9.45%, ranging from 4 to 17 years old. The analysis of the laryngeal diag-

noses revealed the total remission of the bilateral vocal fold nodules in 34.5% (n=19) of the patients; the positive evolution to smaller nodules in 18% (n=10) and the maintenance of initial diagnosis in 5.5% (n=3) of the cases. Regarding the variability of the audio perceptual parameters (RBASHI scale) there were statistical significant improvements in Roughness (p=0.017), Strain (p=0.013) and Instability (p=0.016). The analysis of maximum phonation times (s, z and vowels) showed an improvement in all, but the only closer to statistical significance was the /a/ (p= 0.063). Conclusion: The results of the used assessment protocol reinforce the effectiveness of voice therapy in pediatric dysphonia, specifically bilateral vocal fold nodules. We concluded the importance of the aerodynamic measures and audio perceptual parameters. Improvement in roughness, strain and instability were noticed, as well as a higher maximum phonation time (especially of the vowel /a/), corresponding to mass lesion reduction and more complete glottal closure.

"BAMBOO NODULES" VOCAL CORDS AS A CAUSE OF DYSPHONIA IN A PATIENT WITH CHURG-STRAUSS SYNDROME. A CASE STUDY

Nódulos en bambú en cuerdas vocales como causa de disfonía en un paciente con Síndrome de Churg-Strauss. Estudio de un caso

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The so called "bamboo nodules" is not common and insufficiently studied laryngeal manifestation of some autoimmune diseases. Visually these lesions are similar to vocal cord cysts or to the common "singer's nodes" (phono-traumatic nodules), and so they can mislead even the experienced otolaryngologist. The laryngoscopic picture looks like sub-epithelial, transverse lesions at the superior surface of the vocal cords, often surrounded by inflamed tissue. The mucosal oscillation wave during phonation usually corresponds to the degree of inflammation. The term "bamboo nodules" was first used by Hosako in 1993, who noted their similarity

to a bamboo stem. Usually the bamboo nodules are bilateral, but asymmetrical lesions are possible. Their typical location at the middle third of the vocal cords allows suggesting the role of voice trauma in pathogenesis of these granulomas. The "bamboo nodules" were described in patients with rheumatoid arthritis, systemic lupus erythematosus, autoimmune hepatitis, Hashimoto thyroiditis, Sharp's syndrome, Sjogren's syndrome. Hoarseness, caused by such laryngeal lesions, may be the first clinical manifestation of the mentioned systemic diseases, and only laboratory tests (rheumatoid factor, Sjogren's antibodies, antinuclear antibodies, hypergammaglobulinemia et al.), allow proving the autoimmune nature of the disease. The "bamboo nodules" do not necessarily predict the manifestation of the system disease symptoms, and in some patients they can be the only signs of serious pathology during many years. A female patient, 25 y.o., with a severe bronchial asthma, allergic rhinitis and a low body mass (BMI 17), presented on 08.06.2015 with complains for mucous secretions in the throat and hoarseness during the last 9 months. Video-laryngoscopy revealed bilateral symmetric fusiform transverse sub-epithelial lesions of the yellowish color on the superior surface of the vocal cords - "bamboo nodules" (Fig 1). Histological examination revealed linear granulomas with the area of central necrosis, surrounded by macrophages. Because of these clinical findings the patient was thoroughly examined in search of any autoimmune disease (blood tests, rheumatoid factor, CRP, myeloperoxidase antibodies, anti-neutrophil cytoplasm antibodies and others). Finally, the patient was diagnosed with the Churg-Strauss syndrome. Noteworthy it is the first description of "bamboo nodules" in this pathology in available literature. The patient is still under observation. In conclusion, we want to emphasize the importance of otolaryngologist – phoniatrician in diagnostics of a rare laryngeal lesion in a patient with autoimmune Churg-Strauss syndrome.

MOISTURIZED PHONATION TO ENHANCE THE MUCOSAL WAVE

Fonación hidratada para mejorar la onda mucosa

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Aim/Abstract: Recently, it has become acknowledged that tissue in addition to elasticity, viscoelasticity of the Lamina Propria, and glottal closure, hydration, are all essential for a euphonic voice. Changes produces in a dysphonic voice after contact with 100% humidity for at least 10 minutes are known by our group (Muò, 2013). In this study we ask: "Can we observe changes in the non-pathologic voice after using moisture or lubrication?" **Methodology:** We studied changes in: the mucosal wave (via laryngostroboscopy); acoustic characteristics (MDVP, tonal and intensity range); perceptive characteristics (GIRBAS); VHI before and after 10 minute treatment. 45 individuals with a normal voice, divided into four groups, participated in the experiment as follows: Group 1 - phonation under hydration (breathing through a moistened gauze); Group 2 - phonation with lubricants (hydration using pectin without swallowing); Group 3 - vocal stretching exercises at high volume; Group 4 - a control group (speaking for 10 minutes). This analytical and experimental transversal study was completed with a new assessment after each group had performed daily exercises for a month. **Results and discussion:** ANOVAS and Post Hoc Tests using a t-test were conducted to observe differences between groups before and after treatment. Important differences were found in the mucosal wave amplitude and glottic closure parameters when subjected to humidity, lubrication and stretching. We observe that hydration and pectin produce post-treatment ultrastructural tissue change. The said changes are noted to persist after a month's treatment. **Conclusions:** Dynamic changes in the Lamina Propria are easily observed not only when hydration or lubrication are used, but also with the use of the voice. The more we talk the greater the mucosal wave. "Moisturized Phonation" is one of the factors that helps.

POSTERS

POSTERS

LARYNX PAPILOMATOSIS AFTER CARCINOMA IN SITU OF THE GLOTTIC LARYNX

Papilomatosis laríngea después de carcinoma glótico in situ

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Aim. The earliest stage of squamous cancer usually invades into the tissue beneath the surface and in most cases transforms into invasive disease when untreated. Larynx papillomatosis also has the potential to degenerate into invasive cancer. We want to report about a patient where a larynx papillomatosis was diagnosed two years after initial diagnosis of a carcinoma in situ of the glottic larynx. **Sources and methods.** A 48 year old man initially introduced himself to our clinic due to a hoarse voice. A microlaryngoscopy was performed because of a high suspicion of chronic laryngitis. After diagnosing a carcinoma in situ of both vocal cords and the anterior commissure, the tumor was excised by laser (Steiner method). In a control microlaryngoscopy twelve months later polypoid tissue and a synechia of the anterior commissure was resected. Additionally Mitomycin-C was applied topically to avoid a recurrent synechia. Follow-up laryngeal endoscopic examination and stroboscopy showed an unsuspecting swelling of the right vocal cord and vestibular fold with a plain surface. At first the patient declined further investigations, so a microlaryngoscopic excision of the tumor was performed in jet ventilation two years after initial diagnosis. One year later papilloma formations were excised again. **Results.** The histopathological result first showed papillomatosis squamous epithelium tissue with low and moderate dysplasia of the right vocal gland and both vestibular folds. One year later high dysplasia and positivity for HPV6 (low risk) was reported. In both cases no invasive carcinoma nor P16-positivity was de-

tected. **Conclusions.** The occurrence of laryngeal papillomatosis should be considered after laser excision of glottic carcinoma in situ. Regular laryngeal endoscopic as well as microlaryngoscopic examinations should be performed in order to diagnose it at an early stage and to exclude an invasive carcinoma.

CLEFT LIP PALATINA UNILATERAL: THE ROLE OF THE LOGOPAEDIC TREATMENT IN OPTIMIZING OUTCOMES, THE PRE- AND POST-SURGICAL TREATMENT

Fisura labio-palatina unilateral: el papel del tratamiento logopédico para optimizar resultados, tratamiento pre- y postquirúrgico

Eladi Madalina Petriman

Introduction. Cleft lip and/or palate is 15% of all congenital malformations. 25% of the cleft lips have associated malformations. High-dose folic acid supplementation can reduce the risk of emergence. The ultrasonography enables the diagnosis of orofacial malformations from 16 weeks of pregnancy. According to the American Cleft Palate Association (ACPA) and the Eurocleft the treatment is multidisciplinary and starts in the newborn period. **Objective.** Highlight the importance of Phoniatric appraisal and initiate early Logopaedic treatment in children with cleft lip and/or palate. **Material and method.** The case is presented of a newborn baby born on term, with prenatal diagnosis of Down syndrome, valued at 2 days of life due to presenting difficulty to complete takes by mouth in context of cleft lip and/or palate right complete, of moderate degree (defect 14 mm). On Phoniatric examination it presented: enteral nutrition by SNG, default full right cleft lip, hypotonic orofacial musculature, and full tongue movements before stimulation with incomplete suction movements. Incomplete lip sealing offset partially by lower lip. During his hospital stay, he received daily Logopaedic treatment, consisting of guidelines and orofacial stimulation exercises, the mother doing them before each take. Revised on a quarterly basis in Phoniatrics consultations, he continued to have specific Logopaedic treatment combined with the orthopedic treatment. **Results.** Standardization of takes after 4 sessions of stimulation. Logopaedic and orthopedic treatment with duration of 5 months before corrective lip surgery,

based on cheiloplasty by technical de Cutting and prior Rhinoplasty. Conclusions. The results are consistent with those published in the literature. Early Logophoniatic treatment together with the use of orthotic devices favors nasal projection and its symmetry, to facilitate corrective labionasal surgery, with an aesthetic and functional improvement of the deformity.

VOICE OUTCOME AFTER INJECTION OF HYALURONIC ACID IN CASES OF UNILATERAL VOCAL FOLD PARALYSIS

Resultados vocales tras la inyección de ácido hialurónico en casos de parálisis laríngea unilateral

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Introduction. Voice disorders resulting from glottic insufficiency are a significant clinical problem in everyday Phoniatic practice. When one side is paralyzed it doesn't move toward the center to meet the other side. This leaves a gap in the center which causes a whispery voice. Secondary to the loss of glottic closure, patients can experience dysphonia, dysphagia, and potentially respiratory compromise. Injection laryngoplasty is considered one of the methods for treatment. The aim of this study is to evaluate voice outcome in patients with unilateral vocal fold paralysis injected with Hyaluronic acid. Methods. Patients with unilateral vocal fold paralysis of symptoms less than one year with a glottal gap less than 3 mm were included in the study. All patients were subjected to office-based intrafolder Hyaluronic acid injection in the affected vocal fold. Size of the gap, acoustic study's parameters, and aerodynamic study's parameters were measured pre and post injection. Subjective voice assessment using 0-5 score (0 means no dysphonia and 5 means severe dysphonia) was also conducted pre and post injection. Length of follow up was 6 months. Results. The study included 16 patients, ten females and six males. Age ranged between 17 and 61. Pre injection voice assessment was between 3 and 5. Post injection 10 patients scored 0, and 6 patients scored

1. Injection achieved complete glottic closure during phonation, except 4 patients who had minimal phonatory waste. Conclusion. Injection of Hyaluronic acid under direct visual control for medialization of the paralyzed vocal fold facilitates almost complete glottic closure. It is a safe, quick and effective technique which can reduce the need for permanent laryngoplasty in patients with less than 3 mm glottal gap.

ADULT COCHLEAR IMPLANTS GROUP THERAPY

Terapia grupal para adultos post-implante coclear

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Introduction. A cochlear implant is an electronic medical device that replaces the function of the damaged inner ear. Adults with a severe to profound hearing loss who cannot be helped with hearing aids may be helped with cochlear implants. Patients receive extensive rehabilitation services as they learn to listen, improve speech, use speech reading, and handle communication. They are taught how to use the implant and how to respond to the sounds they are receiving. Objective. Evaluation of a structured group therapy intervention for adult cochlear implant (CI) designed to improve overall communication skills. Method. We analyzed our cochlear implant therapy group for adults created 7 months ago. Inclusion criteria: older 18 years, 1 year or less since intervention and level 3 or more in rehabilitation treatment stage. Structured intervention included: communication/ hearing skills and problems solutions. They participated one session in a week for 3 months. Measures: VAS patient satisfaction (max. 10), categories auditory performance (CAP) index, communication activities improved and patient suggestions. Results. 14 adults CI recipient patients (10 female, 4 male, mean age: 59). VAS mean 9. CAP initial/ final mean 7/7. Patients described (90%) more social participation with less anxiety. High valuation of group activities because they can share their experience and learn from others. They suggested performance outdoor activities with

environmental noise. Conclusions. Although subjects had presumably adapted to their cochlear implants and they had learned communication strategies in hearing rehabilitation programs, the improvements on social participation suggest that a structured group therapy intervention can enhance outcome following cochlear implantation. These findings support the potential for conversationally-oriented therapy models of assessment in adults with acquired hearing impairment.

SENSITIVITY AND SPECIFICITY OF THE SHORTENED VERSION OF THE HEARING HANDICAP INVENTORY

Sensibilidad y especificidad de la versión reducida del Hearing Handicap Inventory

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Aim. The objective of the thesis was to compare the subjective perception of hearing impairment using a shortened version of the questionnaire Hearing Handicap Inventory with the measured hearing threshold using pure tone audiometry. **Sources and methods.** In study 27,708 adults were examined, with an average age of 53.9 years. A cross-sectional design was applied, information was collected on patients' health and the auditory threshold respondents. Hearing was investigated by using audiometry and tympanometry tests and shortened version Hearing Handicap Inventory (HHI). **Results.** The severity of hearing loss according to the threshold pure tone audiometry was divided into two variants. In the first variant hearing loss 26 dB or more was evaluated. Sensitivity of HHI was 72% and specificity 92%. A better outcome is based on a comparison of subjective evaluation of auditory handi-

cap respondents and hearing examinations using pure tone audiometry for hearing loss according to the average tone audiometry to better hearing ear above 41 dB HL. Sensitivity of HHI was 93% and specificity 80%. **Conclusion.** Use of a truncated form of the questionnaire HHI seems to be sufficiently specific and sensitive method for screening a revelation from moderate hearing loss. Simple, fast questionnaire form HHI is suitable for screening the hearing of the adult population in the context of preventive examinations by a medical practitioner. If questionnaire scores are greater, the patient should be further examined with threshold pure tone audiometry by ENT specialist, which is nowadays the gold standard hearing test compared with a questionnaire form, but it is temporally and financially more challenging. Therefore, it cannot be used in the normal screening, because it is expensive and time consuming. Early diagnostic and treatment of hearing loss could help to raise quality of life for many people with hearing loss. Work was supported by the Czech Ministry of Health grant project called Epidemiological and Genetic Study of the Frequency of Hearing Loss (2011–2015; NT12246-5/2011).

ASSESSMENT OF EARLY POST-THYROIDECTOMY VOICE AND SWALLOWING CHANGES AND THE POSSIBLE ROLE OF ENDOTRACHEAL INTUBATION

Evaluación de los cambios tempranos en la voz y la deglución tras tiroidectomía y el posible papel de la entubación endotraqueal

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Objective. The aim of our study was to evaluate early postoperative voice and swallowing disorders, their impact on patient's quality of life, possible causes and role of endotracheal intubation. **Methods.** We conducted a prospective nonrandomized study of patients who underwent thyroid and parathyroid surgery (n=100) and compared the results with control group of

patients who underwent laparoscopic cholecystectomy with endotracheal intubation (n=109). Videolaryngostroboscopy (VLS), acoustic voice analysis using Multi-Dimensional Voice Program (MDVP) and maximum phonation time (MPT) were performed, subjective evaluation of voice (Voice Handicap Index VHI) and swallowing (Swallowing Impairment Score SIS) obtained preoperatively and 1 week postoperatively. Results. Thyroidectomy group was divided into two subgroups postoperatively: without (n=78) and with (n=31) laryngeal nerve damage. Statistically significant postoperative subjective voice and swallowing changes were found in both study groups: thyroidectomy group without laryngeal nerve damage (VHI p=0,035; SIS p=0.04) and with laryngeal nerve damage (VHI p< 0.0001; SIS p=0.002). Pre- and postoperative acoustic analysis showed no statistically significant changes in any of the investigated parameters either in control group or in thyroidectomy groups. MPT showed postoperatively significantly lower values in control group (p=0.03) and thyroidectomy group with laryngeal nerve damage (p=0.004). VLS showed clinical changes in 14% of patients in control group, 21.1% in thyroidectomy group without laryngeal nerve damage and 100% in thyroidectomy group with laryngeal nerve damage. Conclusions. Thyroidectomy causes subjective voice and swallowing changes in the early postoperative period, irrespective of laryngeal nerve damage. Endotracheal intubation itself seems to play no role in the aforementioned complications.

RISK FACTORS IN THE DEVELOPMENT OF DYSPHONIA IN CHILDHOOD

Factores de riesgo para la aparición de disfonía infantil

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Aim. Childhood dysphonia has an estimated incidence of 6–24%. Dysphonia may adversely impact the child's communicative effectiveness, social and educational development, self-esteem and participation in school group

activities. It is commonly believed that children become dysphonic due to vocal misuse behaviors, however there are no consistent data in the few studies published on this topic. Our aim was to evaluate the influence of some potential risk factors on the development of childhood dysphonia. Sources and methods. 33 consecutive dysphonic children with vocal folds nodules underwent a Phoniatic examination in the Phoniatic Unit of the "Azienda Policlinico Umberto I Hospital" of Rome. The mean age was 10 years (DS ± 2 ys). Several risk factor were examined, such as temperament, ENT pathologies, number of siblings, sport practices, scouting, extended school, singing activities, environmental noise in classrooms. Data were compared with a control group of 33 matched children without voice pathologies. Results. The incidence of allergy, sport practices and extended school was found significantly higher in the group of dysphonic children compared with the control group. Furthermore also a prevalence of extrovert and anxious personality in dysphonic children was found. Conclusions. Data from our study on risk factors that act in the development of dysphonia in childhood, stress the relevance of both personality and behavioral factors. It would be useful to encourage the diffusion of information to show the risks related to voice abuse in children, in order to prevent the development of pediatric dysphonia. It would also be necessary to develop instruments specifically designed to examine personality dispositions in dysphonic children.

PROBLEMS OF FEEDING IN CHILDREN WITH WILLIAM'S SYNDROME

Problemas de alimentación en niños con Síndrome de Williams

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Objectives. The primary objective is to describe the problems of feeding and associated symptoms in children with William's syndrome (WS). Material and used method. The clinical information of five patients with diagnosis of

WS is gathered from Phoniatrics and children's rehabilitation in the last five years and the problems detected in the process of feeding and other competing factors are described. Results. The data of five children (2 females and 3 males) of 13, 10, 8, 5 and 4 years old are analyzed. They all present light psychomotor delay and learning disabilities. Problems of conduct are described in 80% (rigid conduct and hyperactivity). The problems of feeding appear from birth. Only one girl maintains breast feeding beyond the first month and 3/5 of the children present difficulties in the capture of the feeding-bottle. Pureed texture is introduced between 4 and 24 months (average 12 months) and solid foods between 6 and 48 months (average 27.6 months). Mothers complain about slowness in the eating process and four children present difficulty in chewing meat and present oral hypotonia. In the 80% of the cases information of oral hypersensitivity is recorded and the smallest child has difficulties with all sort of textures for this cause. Four children have slow weight gain and three are diagnosed of hypothyroidism. Conclusions. The WS is a genetic condition caused by a gene deletion (7q11.23) that affects 1 of every 7500 newborn babies. They are characterized by distinctive facial features, light to moderated mental deficiency, cardiovascular anomalies and metabolic abnormalities. Although they are very extrovert and talkative children, the communicative and social skills are usually affected. Based on reviews and the results of our sample we can determine that the problems of swallowing and feeding are frequent in the WS and benefit from early speech therapy.

ADAPTATION AND VALIDATION OF THE SPANISH VERSION OF THE DEGLUTITION HANDICAP INDEX (DHI)

Adaptación cultural y validación del "Deglutition Handicap Index" (DHI) [Cross-Cultural

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Objectives. Dysphagia is a disorder of swallowing due to functional or organic disorders of the

oropharyngeal area and esophageal which affects people of all ages. It has nutritional, respiratory complications and also changes in the feeding mode. The comprehensive therapeutic approach must include an appraisal of the aspects of everyday life most affected, the perception of the patient regarding the disability that dysphagia causes and about the success or failure of the treatment. For this purpose, we have adapted and validated the Deglutition Handicap Index (DHI) into the Spanish language. It is a self-administered questionnaire of 30 items which assesses how dysphagia influences their daily lives on the physical, functional and emotional level. Material and method. The translation, cross-cultural adaptation and retro-translation was done of the original questionnaire in French. After a pilot test the DHI has been administered to adult patients diagnosed with dysphagia in different etiologies in a tertiary hospital and a group control without symptoms of dysphagia. Clinical results of dysphagia are compared: EAT-10, MECV-V, instrumental test (FEES, VFSS), with the results of the questionnaire. To validate the psychometric properties the internal consistency is assessed (Cronbach's α) and the test-retest reliability. Is expected to obtain psychometric properties similar to the original version of the DHI (Cronbach's $\alpha = 0.9$). Results and Conclusion. With the Spanish validation of the DHI, we hope to see that it is a tool for quick and easy self-administration which shows the influence of dysphagia on the quality of life and the perception of the patient according to their degree of severity. This questionnaire has been shown to be suitable for use in the clinic, both in the diagnosis and control of the therapeutic efficacy and in research.

THE SIGNIFICANCE OF VKG FOR THE DIAGNOSIS OF VOICE DISORDERS

Importancia de la videokimografía para el diagnóstico de los problemas vocales

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Aim. Kymography aims at observing and evaluating the vibratory function of the vocal folds and of the surrounding tissues. The method aims at diagnosing the vibrational problems in functional dysphonia where the vocal folds do not show any obvious structural abnormality but the voice is impaired in some way. **Sources and methods.** VKG allows visualizing different types of vibrational characteristics of the vocal folds. The following selected characteristics have most often been evaluated in clinical practice: presence or absence, regularity and symmetry of oscillations, duration of closure within the cycle, laterally travelling mucosal waves, shape of lateral and medial peaks. **Results.** VKG is helpful particularly in the cases when the vocal fold structure appears rather normal but the voice is impaired. Here we provide with clinical examples in which the method was found useful in establishing the diagnosis. **Conclusion.** Videokymography belongs to optical laryngeal examination methods and aims at the diagnosis of vibration disorders of the vocal folds. We find the method useful for diagnosing organic and functional voice disorders at an early stage. It shows to be particularly helpful for diagnosis of voice professionals and for deciding on their therapy. We find it particularly important for an early diagnosis of vocal fold cancer. It allows detecting pathologic processes at the stages when laryngoscopic and stroboscopic findings appear normal.

COMMUNICATIVE BENEFITS OF GROUP THERAPY IN PATIENTS WITH CHRONIC BRAIN DAMAGE. COMMUNICATION WORKSHOP: ELABORATION OF A MAGAZINE

Beneficios en la comunicación en la terapia en grupo en pacientes con daño cerebral crónico. Taller de comunicación: elaboración de una revista

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Objectives: A relevant issue in the speech therapy for the aphasic patient is the generalization of communicative strategies in the sessions. There are studies that include the role of group therapy and peer collaborative work as a way to enhance the functional communication in activities of daily living. The objective of this work is to foster communication and social interaction among patients treated in the Neurorehabilitation Day Hospital of a tertiary hospital through a workshop in which a magazine was prepared. **Method:** A voluntary communication workshop is considered complementary to the intensive rehabilitation treatment with speech therapy, physiotherapy and occupational therapy. Participants (n = 26) were non-progressive acquired brain injury affecting language and communication (62.5%), cognitive-behavioral sequelae (37.5%), and/or motor (100%). The average age is 48.5 years old (range = 15-66). Both males (n = 16) and women (n = 10) participated from 5 different nationalities. The workshop was held with a frequency of 1 weekly session with the average of 4.8 sessions per participant (range 1-12 sessions). The activities were adjusted to the tastes and abilities of the patients, who worked in pairs (patients with and without language disorder) together with a speech therapist. Participants engaged in the development and management of tasks, implementing specific communication strategies, trained in the logopaedic treatment sessions. At the end all participants, family members and therapists expressed their satisfaction and demanded other activities that serve as a bridge between the regulated treatment and adapting to everyday life. **Results and conclusion:** Three months of work provided material for a magazine titled Tiritia (plaster), which includes poetry, fiction, hobbies, tips, photography, drawing or painting. Coop-

erative work led, also, to a new space for communication between patients, and much satisfaction.

EXPLORING LANGUAGE IN BRAIN TUMOUR SURGERY WITH AN AWAKE PATIENT

Exploración del lenguaje durante la cirugía de un tumor cerebral con el paciente consciente

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Aim: We are presenting the technique of exploring language in surgery on brain tumors in eloquent areas, with the patient awake, as a useful method for minimizing clinical consequences on language during the removal of the tumor. **Material and Methodology:** This is a clinical case of a 34-year-old patient with language alterations due to the expansion of an intracerebral tumor, whereby we describe said technique. **Presurgical study of the patient:** FMR, CT scan, Tractography or DTI. **Language assessment:** Boston test (TDBA) with alterations in denomination, nominal and semantic paraphasias and alterations in reading and writing capabilities. **Tumor diagnosis:** Grade III oligodendroglioma. **Surgical technique:** Pre-surgical cortical mapping of the tumor resection using cortical electrical stimulation (CES) to locate the eloquent areas in the cerebral cortex, in order to make on-the-spot decisions and map out an exact plan of action for the neurosurgeon by defining the functional cortex. **Post-surgical assessment of language and speech therapy:** Assessment 5 days after, with favourable language development, only moderate anomia, slow fluency and problems in reading and writing abilities. 6 months' speech therapy is programmed with good results compensating the deficits. **Results:** At the end of the treatment, a clear improvement was appreciable in the symptomatology and in the patient's reading production and comprehension and in their

writing. **Conclusions:** This type of approach to brain tumors enables the largest possible resection and a reduction of the clinical consequences on language. It is important to have a multi-disciplinary team and to programme treatment early and on a personalized basis in order to assure greater success in language recovery and the possibility of maximum tumor resection with a better end prognosis.

MUSICAL THERAPY FOR LANGUAGE REHABILITATION IN CHILDREN: A LITERATURE REVIEW

Terapia musical para la rehabilitación del lenguaje en niños: revisión de la literatura

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Introduction/aim: Music may have impact in the psychological, emotional and physiological development of a child. There's scientific evidence that it can prevent stagnation of development in children with long hospital stays. In language rehabilitation, it seems there's a widespread use but not definitive agreement about its efficacy. Our aim is to determine its current applicability in this field. **Sources and methods:** Search in PubMed (until 03/01/2016). **Keywords:** "Speech rehabilitation, musical therapy, children". We tried to find high quality evidence as randomized controlled clinical trials. Studies about any kind of condition that affects language development were included (speech, writing, reading and comprehension). The following exclusion criteria were used: Musical therapy not being the main rehabilitation tool. Studies that were not done exclusively in children. **Results:** 21 articles, of which only 9 fit the criteria. There were no randomized controlled trials. Evidence regarding musical-therapy effectiveness was found in the following conditions: **Delayed Speech:** enhancement of phonological memory, comprehension and speech performance. **Autism (x2):** Increase of number of words and imitation attempts. **Dyslexia (x2):** Significant improvement of phonological awareness and reading skills. **Cochlear Implants:** Helps compensate the developmental delay of language. **Neurological disorders-Cerebral Palsy:** Showed brain

plasticity specific for music therapy in event-related potentials (ERP). Rett Syndrome: Helps achieve relaxation, stimulates the use of hands, improvement of language comprehension according to parents. Conclusion: Musical-therapy seems to be a valid tool in language rehabilitation for several pathologies. Positive quantifiable findings were observed in experimental studies, proving that protocols based on musical tasks may not only improve language skills, but also attention, memory, behavior and social skills. More studies need to be conducted to have higher quality evidence that supports the use of musical-therapy in language rehabilitation.

MUTATIONAL FALSETTO

Falsete mutacional

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Aim: Mutational falsetto is the most common mutation disturbance. The aim of our study is to give appearance of a significance of this clinical entity, often neglected in clinical ENT practice. Sources and methods: In 10 year period we treated 65 such patients (men, age from 16 to 45) in the Phoniatic Department of ENT and MFS Clinic, Clinical Center of Serbia in Belgrade. Comprehensive management includes detailed history, clinical ENT and phoniatic examination, videolaryngostroboscopy and multi-dimensional computer analysis of voice and speech. Results: Phoniatic team (phoniaticians, speech therapists and psychologist) take part in vocal rehabilitation. The results of prospective clinical trial are presented: complete recovery of voice after first session in 32 patients, 25 patients had supportive psychological treatment combined with intensive phoniatic rehabilitation during period of several weeks to months, unsuccessful treatment was recorded in 8 patients mainly because of lack of their motivation for voice improving. Conclusion: Most of these patients were treated with unnecessary and expensive diagnostic procedures before coming to phoniaticians. There is need for more educational activities about this

clinical entity, even among ENT specialist and pediatrics.

ASSESSMENT PROTOCOL FOR PATIENTS WITH ACQUIRED APRAXIA OF SPEECH

Protocolo de evaluación para pacientes con apraxia del habla, adquirida

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Background: Apraxia of speech (AOS) is an articulation disorder that results from impairment of the capacity to order the positioning of speech musculature and the sequencing of muscle movements for volitional production of phonemes and sequences of phonemes. Objective: The purpose of the present study was to adapt the Apraxia Battery for Adults (ABA II) to suit the Egyptian culture in order to apply this test for assessing the Egyptian apraxic patients for proper management of this ailment. Subjects and Methods: This study was conducted on two groups, the first group consisted of fifty six adult patients with expressive aphasia and/or dysarthria, and they were evaluated by ABA II to detect any apraxic elements. The second group consisted of one hundred healthy adult subjects as a control group. The patients were adults of both sexes aged 18 years and above with expressive aphasia and or dysarthria and history of speech and or language affection after neurological lesion. A pilot study was conducted on twenty healthy individual and five patients with expressive aphasia and or dysarthria to modify the test after translation of the test to Arabic language and a number of modifications were done to the pictures of the picture book and some test items to suit the Egyptian culture. Results: Reliability of the Test of Apraxia Battery for Adult II was proved to be high by the high values of coefficient alpha in

all test items (0.746 - 0.937) denoting inter correlation between test items. Validity of the Test of Apraxia Battery for Adult II was performed and there was strong correlation between the test items. The test was proved to be sensitive and specific; the percentage of sensitivity and specificity ranged from 70% to 100% for cutoff scores of the test items. Conclusion: The results were highly significant and were capable of discriminating between normal subjects and apraxic patients. Keywords: apraxia of speech, Apraxia Battery for Adults II, Reliability, Validity Learning outcomes: The participants will be able to evaluate and diagnose a case of apraxia of speech. The participants will be able to understand the different items of the Test of Apraxia Battery for Adult II

APPLICABILITY OF COMPUTER VISION ALGORITHMS FOR QUANTITATIVE ASSESSMENT OF VIDEOLARYNGOSTROSCOPIC IMAGES

Aplicación de algoritmos de visión computarizados para la evaluación cuantitativa de las imágenes de videolaringoestroboscopia

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Introduction: Digital imaging techniques enable determination of novel visualization modalities of the vocal folds vibrations and definition of parameters that can aid the phoniatician in a more precise diagnosis of voice disorders. Aim: Application of computer vision algorithms for analysis of videolaryngostroboscopic (VLS) images aimed at qualitative and quantitative description of phonatory movements. Materials and methods: VLS examinations were performed in 45 females, including 15 normophonic females, 15 subjects with vocal nodules and 15 subjects with glottal insufficiency. Image pre-processing and image segmentation algorithms were applied. The glottis area was segmented out and the glottal cycles were

identified. The glottovibrograms, which facilitate spatial-temporal visualization of the vibrating vocal folds were built. Then the glottal area waveforms (GAW) were parameterized by computing the following measurements: the Open Quotient (OQ), the Closing Quotient (CQ), the Speed Quotient (SQ), the Minimal Relative Glottal Area (MRGA), and a new parameter termed the Closure Difference Index (CDI). Results: The average width profiles of the glottal area for the maximal closure of the glottal cycle have been computed for each group of examined subjects. Comparison of the determined parameters reveals pronounced between-group differences and comparable within-group values. Profiles of the glottal widths assessed along the glottal length differentiated the study groups ($p < 0.001$). Moreover, it was shown that the OQ, CQ, CDI and MRGA indices can be considered as viable parameters for quantifying kinematics of the vocal folds for the normophonic subjects and patients with diagnosed vocal nodules and glottal incompetence ($p < 0.001$). Conclusions: Computer image processing and analysis methods applied to videolaryngostroboscopic images enable their quantitative assessment. Computation of the size-related and time-related parameters characterizing glottic pathologies is of interest for evidence-based voice diagnostics.

ADAPTATION AND VALIDATION TO THE CATALAN AND SPANISH OF THE CHILDREN VOICE HANDICAP INDEX-10 AND CHILDREN VOICE HANDICAP INDEX-10-PARENTS QUESTIONNAIRES. PILOT STUDY

Adaptación y validación al catalán y al castellano de los cuestionarios del Children Voice Handicap Index-10 y del Children Voice Handicap Index-10-Parents. Estudio piloto

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Objectives: The prevalence of infantile dysphonia makes it necessary to have instruments to measure its impact on quality of life, to decide the best therapeutic approach and measure the effectiveness of the treatment. The objective is to adapt and validate into Spanish and Catalan a tool allowing us to know and compare the perceived degree of vocal disability by patients in infant age and their parents. **Method:** After translation and transcultural adaptation of the Italian version of the CVHI-10 and CVHI-10-P questionnaires to Catalan and Spanish, the CVHI-10 was administered to patients of both sexes aged between 8 and 14 years, who attended a hospital unit of phoniatric and speech therapy for dysphonia. The CVHI-10-P was given to the parents of these patients. Questionnaires were filled out for each other separately, only once, in the language of choice of the family. The sample is of disphonic patients visited for the first time, with or without logopaedic therapy, with or without a control group of patients without dysphonia according to the GRBAS scale valued by an expert in voice speech therapist and phonosurgery. The phoniatric visit registered: fundamental frequency, maximum time of phonation and exhalation, GRBAS and diagnostic pathology patients strobe. **Results and conclusions:** We analyze the differences between dysphonic children and control group, the internal consistency and test-retest reliability. Based on the results obtained in the pilot study the usefulness is confirmed of the validation of the CVHI-10 questionnaire as a practical and appropriate tool to be administered in children's ages and the CVHI-10-P as a comparative reference. However, we would need to have one larger sample for conclusive results.

INFLUENCE OF THE ADMINISTRATION PROCEDURE ON THE VOICE HANDICAP INDEX-10, VHI-10

Influencia de la forma de administrar el Voice Handicap Index-10, VHI-10

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Objective: The aim of the research is to study whether the presentation of VHI-10 questionnaire administered at the beginning of the treatment impinged on the results of the responses from the end of the treatment. **Method:** The questionnaire was administered at the beginning of the treatment to a total of 308 patients. After the treatment, a group of 235 patients answered the questionnaire again without any reference to their responses on the initial administration. The other group of participants, consisting of 73 subjects, completed the questionnaire with the answer sheet of his initial self-assessment in sight. **Results:** The data obtained show that patients who responded to the exposed answer test show less dispersion and a smaller coefficient of variation (CV= 0.90) than those who responded the non-exposed answer test (CV=1.66). **Conclusion:** The method of administration of VHI-10 at the end of a treatment influences the dispersion of the results. We recommend the patient be exposed to the initial answer sheet while responding to the final self-assessment.

THE EFFECTS OF VOWELS ON SPECTRAL SLOPE PARAMETERS

El efecto de las vocales en los parámetros de gradiente del espectro

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Aim: The aim of this investigation is to discover the correlations between four spectral slope parameters such as H1-H2, H1-A1, H1-A2, H1-

A3 (H1, amplitude of the first harmonic; H2, amplitude of the second harmonic; A1, amplitude of the strongest harmonic component in the region of first formant frequency; A2, amplitude of the strongest harmonic component in the region of second formant frequency; A3, amplitude of the strongest harmonic component in the region of third formant frequency) and the eight Turkish vowels. Source & Methods: For this purpose, the 20 healthy non-smoker volunteers (10 males and 10 females, aged between 18 and 50 years) who are native Turkish speakers uttered the eight Turkish vowels. The mean F0 (fundamental frequency), the four spectral slope parameters, the frequency values of the first three formants, perturbation parameters (such as jitter local, jitter ppq5, shimmer local and shimmer apq11) and mean HNR of the sustained vowels were measured using the using the PRAAT program. Results: The results showed significant differences between the spectral parameters and the vowels ($p < 0.05$). Conclusion: The effect of vowel quality on spectral slope parameters suggests that the normal values of these parameters may be language-dependent. Key words: acoustics, spectral slope parameters, vowel formants, harmonics.

WORKSHOPS

TALLERES

OBSERVATION AND CHANGE OF GESTURE FOCUSING ON BODY WORK

Observación y modificación del gesto a través del trabajo corporal

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Es evidente que uno de los elementos básicos para un buen uso de la voz es una respiración adecuada. Ésta a veces se ve alterada por el grado de tensión de algunos músculos, a veces por exceso de tensión y a veces por falta de tono muscular. Ésta disposición muscular, a su vez, conllevan algunas actitudes corporales concretas. Actitudes que podemos observar sin la necesidad de tocar al paciente. Nuestras emociones también inciden en nuestro cuerpo, sobre todo cuando no queremos expresarlas y las contenemos. Para evitar su expresión ponemos en marcha mecanismos corporales que pueden incidir también en nuestra respiración. Así que podríamos afirmar que uno no respira como quiere sino como puede y que enseñar a respirar puede ser un camino muy largo y frustrante. Por eso nuestra propuesta es trabajar sobre aquellas estructuras (músculos, fascias) que participan en la respiración para favorecer el cambio en el gesto respiratorio. El taller muestra herramientas que utilizamos en Yoga de polaridad y sobretodo en el Método de liberación de corazas MLC©. Un método psico-corporal creado por M. Lise Labonté. En MLC realizamos ejercicios suaves pero profundos con la ayuda de material (pelotas de tenis, pelotas de espuma, bastones de madera recubiertos de caucho, pequeños sacos). Estos materiales nos ayudan a trabajar los músculos y las fascias, abriéndolos, estirándolos y armonizándolos. Son ejercicios que movilizan estas estructuras respetando siempre el cuerpo, el ritmo y la ecología interior de cada persona. En el taller mostraremos: 1. qué estructuras trabajamos de manera directa e indirecta para equilibrar y cambiar el gesto respiratorio; 2- cómo observar, desde la postura, la respiración de nuestros pacientes. Cuando están de pie o tumbados;

3- qué ejercicios podemos utilizar para cambiar el gesto respiratorio y porqué, 4- qué emociones pueden afectar la movilidad del diafragma y como abordar este trabajo.

VIDEOKYMOGRAPHY AND HIGHSPEED RECORDING

Videokimografía y grabaciones de alta velocidad

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Until now, laryngostroboscopy is the most frequently used method for examination of the vocal fold mucosal wave in dysphonia. However, laryngostroboscopy is not a real-time registration, but yields an illusionary picture, that is composed of pictures of subsequent vibratory cycles. Therefore, a reliable picture of the vocal fold mucosal wave cannot be obtained in irregular vibration in dysphonic voices and certain conditions like mild scars and asymmetry of vocal fold vibration can be missed. In contrast to laryngostroboscopy, videokymography is a real-time registration of one-line with a frequency of 7200/sec. Highspeed recording also give the chance for recordings up to 10 000 /sec of the whole picture with kymography possibilities depending on the software used. Both enables reliable registration of irregular vocal fold vibration. In kymography, the selected line can be moved over the entire length of the vocal folds, in order to yield a complete picture. Highspeed recording gives the picture of the complete vocal fold on both sides. Both real time methods are easy to perform in clinical practise and can be considered as the new „gold standard“ in examination of vocal fold vibration.