



E-posters abstract book
PHONIATRY

**Défaut d'ouverture du Sphincter Supérieur de l'Œsophage :
Diagnostic et apport de la toxine botulinique:
Résultats à propos de 53 patients .**

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Après avoir rappelé la physiopathologie de l'ouverture du sphincter supérieur de l'œsophage, les auteurs rappellent la symptomatologie provoquée par son défaut d'ouverture.

Ils en énumèrent les étiologies, qu'elles soient neurogènes (en particulier les paralysies du nerf vague) ou non (en particulier après chirurgie ou radio chimiothérapie laryngée).

Les critères de diagnostic sont essentiellement fibroscopiques et surtout étayés par la vidéo radioscopie de la déglutition. L'intérêt de la manométrie est également discutée .

Les auteurs rapportent ensuite les différentes techniques de traitement du défaut d'ouverture du sphincter supérieur de l'oesophage par injection de toxine botulique, que ce soit sous anesthésie locale par voie cervicale directe, ou par nasofibroscopie ou encore sous anesthésie générale sous laryngoscopie directe en suspension .

Les résultats et les effets secondaires de ce type de traitement sont énoncés par pathologie sur les 53 patients traités. Ils sont satisfaisants à très satisfaisants chez les patients atteints de maladie de Wallenberg, chez les patients présentant des tumeurs du tronc cérébral opérées. Ils semblent moins bons chez les patients présentant une atteinte du X cervical ou chez les patients parkinsoniens. Chez les patients traités pour néoplasie pharyngo-laryngée, la toxine botulique peut autant être un "accélérateur" d'acquisition de la voix oesophagienne qu'un traitement réellement efficace dans l'amélioration de l'alimentation même chez des patients irradiés.

Enfin est discuté l'intérêt de la myotomie laser ou chirurgicale du cricopharyngien selon l'efficacité du traitement par toxine botulique.

Effets de la stimulation cérébrale profonde sur la qualité vocale de patients avec dystonie généralisée primaire

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INTRODUCTION

Primary generalized dystonia is characterized by intermittent and sustained muscle contractions generating involuntary movements or abnormal postures; a so-called hyperkinetic dysarthria is often present. Internal pallidum deep brain stimulation (IP-DBS) is a neurosurgical procedure that can be used for treatment of dystonia. This study aims at evaluating the effects of IP-DBS associated with other targets (thalamus [Th-DBS] or subthalamic nucleus [STN-DBS]) on speech in dystonia.

PATIENTS AND METHODS

A randomized and multicenter study, still ongoing, is performed to evaluate and compare the effects of deep brain stimulation on different subcortical nuclei targets to alleviate dystonic signs: IP-DBS, STN-DBS and Th-DBS. We had the opportunity of recording speech samples of 11 patients with primary generalized dystonia pre- and post-surgery: all patients benefited from IP-DBS; 7 patients had an additional electrode implantation in the STN and the remaining 4 patients, in the thalamus. The patients performed two speech production tasks: maximum phonation time (MPT) and sustained vowel /a/. This latter task allowed for the measurement of the following speech parameters: mean fundamental frequency (f_0 , in Hz), jitter (cycle-to-cycle f_0 variation), mean intensity (in dB), shimmer (cycle-to-cycle intensity variation) and harmonic/noise ratio (HNR, in %).

RESULTS

No significant statistical difference was found for the MPT between the different stimulation possibilities. The mean f_0 decreased only for the patients implanted both in the IP and STN, in the IP-DBS condition ($p=0.038$). The jitter factor was modulated only for the patients implanted both in the IP and thalamus: it decreased under IP-DBS alone ($p=0.005$), Th-DBS alone ($p=0.020$), and when the two IP-DBS and Th-DBS were combined ($p=0.003$). The mean intensity analysis demonstrated no significant statistical differences. The shimmer factor, however, increased post-operatively for the patients implanted both in the IP and STN, off-stimulation ($p=0.005$) and under IP-DBS ($p=0.020$). The HNR ($p=0.010$) only decreased under IP-DBS, for the same patients.

CONCLUSION

Ours preliminary findings suggest an improvement of the jitter factor under IP-DBS and Th-DBS in patients implanted both in the IP and thalamus, whereas in patients implanted both in the IP and STN, only IP-DBS led to a decreased mean f_0 , worsening in shimmer and improvement in HNR. So far, very few studies explored the effects of DBS in two targets on voice quality; thus, this study represents a unique opportunity for research and clinical management.

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Intérêt d'une étude quantifiée des capacités alimentaires et de déglutition lors d'une étude phase I d'administration progressivement croissante d'ocytocine à des nourrissons porteurs du Syndrome de Prader Willi

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Background and objective: Infants with Prader Willi syndrome (PWS) have poor suck and feeding skills and pre-clinical data demonstrated that early treatment with oxytocin restores sucking after birth for a PWS model mouse. To evaluate efficiency of this treatment clinical and videofluoroscopic evaluation have been performed.

Material and method: 18 infants, under six months old, were enrolled in a 3 steps escalating dose study of a short course oxytocin administration. Feeding assessment, clinical evaluation and videofluoroscopic swallowing study were performed before the first administration and after the last one, using validated scales.

Results: Population: 10 boys and 8 girls were included with a median age of 3.8 months. We did not observed any adverse events in relation with the treatment and the tolerance of OXT was excellent. The clinical score with the revised NOMAS scale before and after OXT administration was significantly improved after treatment in all infants ($p=0.0003$) and in each escalating dose step $p=0.027$, $p=0.028$ and $p=0.041$ respectively. Similarly the radiological score significantly improved on treatment in all infants ($p=0.004$) and in each step dose ($p=0.042$ in step1 and in step 2 and $p=0.027$ in step 3). Two infants could not be scored as they did not want to suck at the time of the evaluation. We observed a significant improvement in sucking activity in all infants receiving OXT that is even normalized in almost half of the infants. Regarding the sucking proficiency, the median percentage of milk taken from the bottle in the first 5 minutes (PRO index) prior to OXT administration in all infants was abnormally low at 27% and normalized to 45% after OXT ($p=0.06$). Among the 5 infants who were partially tube-fed, 2 were able to stop tube-feeding during the hospitalization and, one three days after leaving the hospital. Both patients who did not stop tube-feeding continued on it until the age of 6.5 months and 5 months respectively. The parents and clinician who examined the infants reported that the improvement observed in feeding and behavior remained after 30 days of the first administration.

Conclusion: This study thus shows the interest of at the same time qualitative and quantitative clinical and instrumental measurements in the follow-up of feeding and swallowing skills of infants with Prader Willi syndrome. These simple quantified assessments could be performed for any infant presenting feeding or swallowing disorders. Having scale record permit to reinforce the clinical observation and paternal impression.

Etude de qualité de vie et de qualité vocale chez les sujets traités pour un reflux laryngopharyngé: étude prospective multicentrique.

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Objective: To investigate the usefulness of voice quality assessment as a treatment outcome in responder and non-responder patients with laryngopharyngeal reflux disease (LPRD)-related symptoms.

Design: Prospective multi-centric case series.

Material and methods: Eighty clinically diagnosed LPRD patients with a reflux finding score (RFS)>7 and a reflux symptom index (RSI)>13 were treated with pantoprazole and diet recommendations for three months. RSI; RFS; Voice Handicap Index (VHI); blinded Grade, Roughness, Breathiness, Asthenia, Strain and Instability (GRBASI); and aerodynamic and acoustic measurements were assessed at baseline and after treatment in all patients (n=80), including responder (n=59) and non-responder patients (n=21), following a complete response to the empirical treatment. Studies of correlation between the adherence to the diet regimen and the evolution of both signs and symptoms and between videolaryngostroboscopic signs, blinded GRBASI and acoustic measurements were conducted. Statistical analysis was performed using Statistical Package for the Social Sciences (SPSS).

Results: Significant improvements in RSI, RFS, VHI, perceptual voice quality assessments (dysphonia and roughness scores), aerodynamic measurements and some fundamental frequency and intensity perturbation cues (i.e., shimmer, percent shimmer, Phonatory Fundamental Frequency Range (PFR) and Standard deviation of F0 (STD)) were identified after treatment in the entire cohort. The improvement of most of these outcomes was significant in responders but not in non-responders who slightly improved clinically and vocally after treatment. At baseline, non-responders presented objective voice quality lower than responders, and were characterized by some more severe endoscopic signs (i.e. tongue tonsil hypertrophy and posterior commissure granulations). The correlation analysis revealed significant relationships between the adherence to diet recommendations and the improvement of symptoms and substantial correlations between breathiness and fundamental frequency perturbation parameters.

Conclusion: Voice quality assessments can help to better understand voice disorders and can be used as indicators of the treatment effectiveness in patients with LPRD-related symptoms. Voice quality improvement seems to be consistently associated with clinical improvement.

Impact de la chimioradiothérapie sur les évaluations subjectives et objectives de la voix après un cancer supra ou infrahyoïdien de stage avancé: étude multi-centrique de 34 patients

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Objectives: to investigate the impact of chemoradiotherapy (CRT) on speech and voice quality according to the anatomical localization of the primary tumor (infrahyoid versus suprahyoid) of patients treated for an advanced head and neck cancer.

Study Design: Cross-sectional study.

Methods: From September 2013 to July 2016, we prospectively recruited 34 patients treated by CRT for an advanced suprahyoid (N=17) or infrahyoid (N=17) head and cancer who have finished CRT since at least 9 months. Videolaryngostroboscopy, Voice Handicap Index (VHI), blinded Grade, Roughness, Breathiness, Asthenia, Strain and Instability (GRBASI) and aerodynamic measures (forced expiratory volume in one second (FEV1), phonatory quotient (PQ), S/Z ratio, and Maximum Phonation Time) were assessed in all patients. Quality of life was evaluated using the EORTC QLQ-H&N35 questionnaire. Acoustic parameters were measured by selecting the most stable interval of the vowel /a/. To assess speech function, we used a standardized questionnaire developed in our Hospital evaluating the speech intelligibility and the orofacial motricity. A study of correlations was conducted between subjective and objective voice quality measurements.

Results: Patients treated for an infrahyoid cancer presented stringent values of VHI items, dysphonia, breathiness, asthenia, FEV1, VTI, SPI, DUV and NUV than suprahyoid patient group. The EORTC QLQ-H&N35 communication item was better in suprahyoid patient group. We did not found significant difference between groups according to the speech evaluation. The study of correlation reported positive correlations between the most of relevant acoustic parameters (VTI, DUV and NUV) and the grades of dysphonia, asthenia and strain.

Conclusions: The voice quality and the quality of life impairments related to CRT seems to be severe in patients treated for an advanced infrahyoid cancer than those treated for suprahyoid cancer. These results suggested differential post therapy management concerning the occurrence of voice disorders regarding the anatomical localization of the cancer.

Evaluation perceptive de la severite de la dysphonie chez des patients libanais bilingues

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The perceptual analysis is a key step in the evaluation of voice quality process. It can be done on recorded sounds but also by listening to the patient's voice in a clinical setting. Several factors seem to influence the results, such as the emotion of the speaker, the context of listening and bilingualism that is leading in Lebanon.

This study aims to find pertinent information for the characterization of dysphonia depending on the language spoken by the patient.

It is especially a question of appreciating if voice seems more dysphonic in Lebanese language and if the chosen text in Lebanese Arabic can be considered a valid tool for voice evaluation.

The sample consists of 22 Lebanese and bilingual women with dysphonia, aged between 20 and 60 years. They all have to read a Lebanese Arabic corpus and another in French or English depending on the language they practice every day. Voice recordings are then analyzed by a listening panel of eight members, four experts and four naive by using the GRBAS scale of Hirano as the most reliable tool to carry out a perceptive voice assessment. The judgments were made on two sessions a week apart.

The results show that, contrary to our expectations, the voice seems more dysphonic in French (mean = 1.88) by comparing it to the Lebanese Arabic (mean = 1.56) and English (mean = 1.39). In addition, and as in any study of perceptual voice analysis, consistency within and between judges is evaluated in order to ensure the validity of the results and the tools used for evaluation, especially the selected corpus in Lebanese Arabic. In fact, it seems valid and can constitute a reference in clinical practice.

Key words: perception – voice quality – dysphonia – bilingualism – Lebanese arabic

validation d'un test de dépistage de dysphonie pour les enseignants

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A survey was conducted among teachers to give information about voice problems and how to manage them. This observation promotes the emergence of a regional voice care chain. . This "voice's network" made in 2009 had 2 principal aims: teacher's prevention and doctor's information. In France, general doctors coordinate the patient with others specialized doctor. Medical informations were given by formations and a booklet. Another booklet was printed for teachers to sensitize them of voice'problem. About 40,000 booklets were diffused to the teacher's population in the region "Midi-Pyrénées".

The study's aim is to evaluate the impact of a screening test (ST) on teacher's population .

MATERIALS AND METHODS

It's a prospective study. Between february and march 2012 40,000 booklet were sended.

The screening test (ST) was divided in 9 questions. Every answer of each question was noted on 0 for never, 1: almost never, 2: sometimes, 3: almost always, 4: always. Maximum score was 36 points.

To see the effect of the booklet on teachers's voice problem, we studied teachers's behaviours on T1 (time of reception of the booklet: November to December 1012) and T2 (3 months later: march 2013). The diffusion of the second questionnaire was by letters or e-mail.

RESULTS

231 teachers responded at T1 and 88 patients responded at T1 and T2.

The ST's score average was 8.43 (standard deviation: 4.79). The results on qualitative test were higher on T2 (up to 33%). On T1 average score was 7.3 against 9.7 on T2.

ST has good internal consistency ($\alpha = 0.81$) and sensitivity.

Spearman Correlation Coefficient (r) between 2 items from ST is high (0.20 to 0.50).

Sensibility is excellent (100%) and specificity is correct (55.6%).

Spearman Correlation Coefficient (r) between VHI and ST is 0.70. There's a correlation between VHI and ST.

95% of teachers asked (n=88) think that this test (ST) is interesting on vocal prevention. 67% said that it's pertinent. 77% think that ST improves their conscience on vocal problems. 47% are afraid about vocal problems on their career.

CONCLUSION

Reliability of the questionnaire is good. The specificity is bad but it's a screening test with high sensibility (100%). If the cutoff score were 3 (score) the specificity would be better (55,5% vs 7% with score 1).

This screening test seems to be validate to detect vocals problems on teachers. It can be used as prevention.

Les voix des femmes avec œdème de Reinke à travers une perspective sociophonétique

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Purpose of the study: Women who smoke may experience a change in their voice quality due to the accumulation of fluid in Reinke's space of the vocal folds known as Reinke's edema (RE). This is a benign condition, often encountered in laryngology clinics, and is frequently treated surgically. Our objective is to demonstrate that, if studied using sociophonetic tools, these women's voices can shed light to the understanding of gender perception in voice.

Materials and Methods: We prospectively recruited 10 women with RE (RW), 10 women with normal voices (NW) and 10 men with normal voices (NM). We asked them to produce sustained vowels, and measured various acoustic voice parameters. We asked a group of 25 naïve listeners (14 men and 11 women) to rate these voices on a masculinity/femininity scale. We studied which acoustic parameters naïve listeners rely on to judge the masculinity of the voice using mixed models.

Results: Listeners (especially women) rate RW's voice gender as "surely masculine" more often than NW. This "surely masculine" rating is correlated with acoustic measures. The most contributing parameters to gender perception are: F0, CPP, H1H2, HNR05, HNR15, and HNR25. It seems that naïve listeners rely on pitch as well as on voice quality measures for the perception of the masculinity in voice.

Conclusion: Using sociophonetic tools to study voices of women with Reinke's edema contributes to a better understanding of the perception of gender in voice and will guide the rehabilitation plan of different groups of patients complaining of a gender ambiguous voice.

Analyse acoustique du comportement alimentaire en fonction de la texture

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Purpose: to assess acoustic characteristics during consumption of foods with different textures, in healthy subjects, using numerical technologies, in order to establish standards, according to gender and age and to verify the existence of different swallowing behaviors.

Methods: 33 healthy volunteers under 70 years were included. The reference meal was made of three different textures: 100 ml of water, 100 ml natural yoghurt and 100 ml of mashed potato. The recording was made using a tie-clip microphone placed on the right side of the neck just below the cricoid cartilage. Subjects were filmed by a camera with a synchronized acquisition of sound and video. Sound files were processed through the Cool Edit Pro® software. The durations of the acoustic parameters were compared by age and gender.

Results: The mean total duration of the reference meal was $116,78 \pm 40,98s$ (min = 47.90 s max =205,66s). The mean time of each deglutition was 699.1 ± 141.9 ms. The mean interval between two swallows was $3982.2 \pm 2260.6ms$. There were no differences according to age or gender. Three different swallowing behaviors were identified : progressive, regular and irregular.

Conclusion: This is the first study to establish standardized measures facilitating the acoustic analysis of the consumption of a meal featuring food of several textures. The work emphasizes that acoustic analysis is a reliable and non-invasive method that can be used to study swallowing and eating behavior. The use of a model meal to screen at-risk populations may alert health professionals. In future, the same meal will analyze an elderly population (>70 years of age) and we will develop automated software to render data analysis more efficient.

L'effet de l'échantillon de voix sur lequel l'analyse perceptuelle de la dysphonie est faite: une étude méthodologique.

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Objective: to study the impact of the speech task on the perceptual evaluations of mild and moderate dysphonia, on the intrarater and interrater reliabilities, and on the potential correlations with acoustic measurements.

Study Design: Prospective reliability study.

Material and Methods: fifteen voice samples with mild or moderate dysphonia from 80 outpatients diagnosed with Laryngopharyngeal Reflux (LPR) were presented to 6 female experienced judges blinded to the clinical and voice states of patient recordings. Each judge performed GRBASI evaluations on connected speech (reading text) and sustained vowel (/a/). The intrarater reliability was determined using intraclass correlation coefficient (ICC). The interrater reliability was assessed with Kendall's W and Friedman analyses. Correlation study between perceptual assessments and acoustic measurements was conducted according to the initial task.

Results: The average GRBASI scores were significantly worse when performed on sustained vowel. Intrarater reliability depended of the judge and was moderate-to-high. Superior ICC values were achieved with connected speech than sustained vowel task. Moderate to good interrater reliability was found for the evaluations of G, R, B and I based on connected speech samples. According to the Friedman test, only the G and the R reported high reproducibility between judges. A higher interrater reliability was found for G, R and I components assessed on sustained vowel than reading text, without providing good reproducibility. The correlation study reported significant different results depending of the speech task used to perform the correlation study.

Conclusion: Average grade of perceptual voice impairment, intra- and interrater reliabilities, and the results of the study correlation between perceptual and acoustic assessments vary according to the speech task. Future studies are needed to determine and standardize the most suitable speech stimuli for perceptual ratings.

Approches phonétiques du reflux laryngopharyngé: étude acoustique méthodologique.

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Objective: to explore the impact of the selection of the analyzed time interval on the significance of acoustic measurements used to investigate the treatment effectiveness of laryngopharyngeal reflux disease (LPRD), and based on these results, to develop an alternative statistical approach in data analysis focusing on individual patient vocal behavior.

Design: methodological prospective case series.

Methods: Eighty patients with a reflux finding score (RFS) >7 and a reflux symptom index (RSI) >13 were treated with pantoprazole 20 mg twice daily and diet behavioral changes for 3 months. Voice recordings and acoustic analysis were performed at baseline and after 3 months of treatment. Most stable time intervals of 1, 2, 3, 4, and 5 seconds, and a 1-second time interval positioned at mid-production, were subjected to acoustic analysis, all for the first, second or third sustained vowel. Based on the latter, we developed an "informativeness coefficient" for each acoustic parameter that aimed at assessing its sensitivity to clinical resolution in the case of LPRD.

Results: Significant clinical improvement (RSI & RFS) was observed after treatment ($p<.05$). Acoustic analysis revealed that acoustic measurements significantly improving from pre- to posttreatment varied across time intervals. The duration, the position of the analyzed time interval in the production, and the vowel on which the measure was done, yielded considerable differences in the results. Analysis of the informativeness coefficient indicated that Mean F0, amplitude perturbation quotient (APQ) and Percent shimmer (Shim) were the indices most sensitive to medical treatment efficacy, with a coefficient ranging from 88% to 81%.

Conclusions: Depending on the selection of the time interval or the vowel (1st vs 2nd vs 3rd) over which the acoustic parameters are measured, the potential effect of the treatment may or may not be statistically demonstrated. Future studies are needed to establish standardized methodological procedures for acoustic data analysis.

Acoustics of VCD and their correlation with the glottal dimensions

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Purpose of the study: To investigate correlations between the breathing sound spectra and glottal dimensions in exercise-induced vocal cord dysfunction (EIVCD). **Materials and methods:** Nineteen subjects with suspected EIVCD were studied. Vocal folds were continuously imaged through fiberoptic videolaryngoscopy and breathing sounds were recorded during the bicycle ergometry test. Twelve subjects showed paradoxical movement of the vocal folds during inspiration by the end of the exercise. The rest, seven subjects, showed no abnormal reactions in vocal folds were found; thus served as control subjects. The glottal quotient, interarytenoid distance divided by the anteroposterior glottal distance, was calculated from the videolaryngoscopy frames recorded during maximal exertion recorded during the test. From the same time period, the tracheal-vocal tract resonance peaks of the inspiratory and expiratory breathing sound spectra were recorded and analyzed acoustically. **Results:** Subjects with the EIVCD reaction showed significantly higher resonance peaks during the inspiratory phase, compared to the expiratory phase ($p < 0.014$). The glottal quotient measured decreased significantly in the EIVCD group ($p < 0.001$) but not in the control group. There was a significant inverse correlation between the frequencies of the breathing sound resonance peaks and the glottal quotient. **Conclusions:** Findings indicate that the typical EIVCD reaction, a paradoxical approximation of the vocal folds during inspiration, measured here as a decrease in the glottal quotient, is significantly associated with an increase in inspiratory resonance peaks. These findings are applicable in the documentation of EIVCD findings using videolaryngoscopy. They can give clinicians tools for EIVCD recognition. In addition, they open the way for possible usage of acoustic analysis in diagnosis of EIVCD in the field.

Speech handicap index in patients after laryngectomy

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Speech disorder is the main socioeconomic problem for patients after laryngectomy. Because of different physiological parameters voice analysis methods should not be used for speech self-assessment. For this purpose Speech Handicap Index (SHI) was developed and validated by Rinkel RN (2008) in patients after oropharyngeal cancer treatment. Objective: to evaluate SHI clinical applications for patients after laryngectomy. Methods: The validated Lithuanian version of SHI (SHI-LT) was completed by 46 patients after total laryngectomy and 60 healthy subjects - control group. The mean follow-up after surgery was 43.9 ± 48.3 month. Age and gender dependence, cut-off score and discriminatory power were calculated. Results: No age or gender dependence of SHI-LT was found ($p > 0.05$). The Receiver Operating Characteristic test revealed cut-off score > 17.0 points distinguishing patients and healthy controls with the sensitivity of 98.1% and specificity of 95.0%. High discriminatory power was confirmed ($p < 0.001$) by comparing the mean scores of the control (5.5 ± 6.5 points) and the patient groups (74.7 ± 26.9 points). Conclusion: the SHI-LT is considered to be a valid and reliable tool for self-assessment of the severity of speech disorders in patients after laryngectomy.

Key words: speech disorder, speech handicap index, questionnaires, laryngectomy.

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Hyperactive sensorimotor cortex during speech perception in spasmodic dysphonia

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Background: Adductor type of spasmodic dysphonia (ADSD) is characterized by an involuntary laryngeal muscle spasm during vocalization. Most previous neuroimaging studies of ADSD measured brain activation during voice production and suggest that ADSD arises from abnormal sensorimotor integration involving the primary sensorimotor cortex, basal ganglia, thalamus and cerebellum. However, it remains unclear whether this abnormal sensorimotor activation arises from some endogenous neural mechanism underlying ADSD or merely reflects neural activation produced by symptomatic vocalization. To identify the specific neural source of ADSD, we compared neural activation between ADSD and healthy participants using a sound discrimination task which does not require overt speech production, thereby allowing us to eliminate any neural effects associated with abnormal vocalization. We hypothesized that the abnormal sensorimotor activation in ADSD would be detectable during speech perception, because (1) speech perception is known to recruit the neural system for speech production and (2) the sensorimotor learning hypothesis of dystonia predicts abnormal activation of the sensorimotor cortex even when no overt motor output is executed. **Materials and Methods:** Ten ADSD patients and 10 healthy subjects participated. On each trial, sound stimuli including speech, falsetto, and noise were randomly presented for 2s, started with a variable jitter interval (3, 4, 5, 6, 7 s). Participants were requested to press the buttons corresponding to each sound. Echo-planer imaging data were acquired using a Siemens Trio 3 T head scanner with the following parameters: TR = 1.0 s, TE = 30 ms, flip angle = 90°, FOV = 192 mm × 192 mm, multiband acceleration factor = 4, voxel size 3 × 3 × 3 mm, 64 axial slices. Imaging data was analyzed using SPM8. **Results:** Overall accuracy rate was 98 % in both groups. At neural level, sound stimuli activated the bilateral frontotemporal network in both groups. The between-groups comparison revealed that speech stimuli, but not falsetto, activated the right precentral and postcentral gyri in ADSD patients more greatly than controls during speech perception. **Discussion:** We found that the speech perception activated different neural system between ADSD patients and healthy subjects. Specifically, the right sensorimotor cortex was more engaged during the perception of symptomatic voice of ADSD, whereas the same region showed no difference between the two groups during the perception of asymptomatic voice. These findings suggest that like other types of dystonic disorder, the hyperactive sensorimotor cortex plays a central role in the generation of abnormal phonation in ADSD.

PH-Ot-01

A pathology of vegetative nervous system and a voice disorder

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Purpose of the study: The research is aimed at studying interrelations between functional dysphonia and dysfunction of the vegetative nervous system for professional and non-professional voice users.

Materials and methods used: The examination included videolaryngostroboscopy, endoscopic high speed imaging, acoustic voice analysis, reliability heart rate, and various psychological tests aimed at detecting anxiety.

The results: The Phoniatics department of Federal Research Clinical Otolaryngology Centre Of the Russian Federation Healthcare Ministry has got a huge experience in voice disorder diagnostics connected with the disbalance of a vegetative nervous system in the period of 2012-2017.

58 patients with functional dysphonia were examined. Examination showed that 75% patients had a vegetative dysfunction, 25% - vegetative dystonia; 53 % – an expressed weakness of the symptomatic center activity; 15 % – a reduced vasomotor center; 10% – a moderate predomination of the symptomatic nervous system.

The conclusion: The pathology of vegetative nervous system was diagnosed in patients with functional dysphonia, chronic laryngitis, polyps. The most expressed voice disturbances were typical for patients with the vegetative dysfunction syndrome - voice professionals, which became a burden for working. Tension at work, psychological and pathological factors have a big influence on developing voice disorders. The correction of the vegetative dysfunction results in a higher efficiency of the voice disorder therapy.

PH-Ot-02

BODY COMPOSITION, PHYSICAL CONDITION AND PULMONARY FUNCTION IN PATIENT WITH VOICE DISORDERS.

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BODY COMPOSITION, PHYSICAL CONDITION AND PULMONARY FUNCTION IN PATIENT WITH VOICE DISORDERS.

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PURPOSE OF THE STUDY: All disorders of the voice have large impact both on daily work and social activities of many people. A number of articles have illuminated the way in which posture, particularly of the cervical spine, is directly related to vocal resonance.

The purpose of this study is to explain whether the physical activity, body composition and pulmonary function affects the production of voice in patient with voice disorders with the indicators of healthy people.

MATERIALS AND METHODS USED: The tests were conducted with functional voice disorders patients aged 19-52, (n=12; F =7 M=5). The control group consisted of healthy people of same age (n=12; F =9 M=3).

Lung volumes were assessed the spirometry. Additionally Maximum Phonation Test was used. Their balance was tested by Stork test. Weight and body mass index was calculated. The patient's trunk muscle strength was tested by Lafayette Instrument. Functional voice disorders were identified by using laryngoscopy. Both groups filled the Voice Handicap Index 10 questionnaires and indicated on the visual analog scale the severity of their problem and a physical activity questionnaire.

RESULTS: According to the Body Mass Index voice disorders patients were overweight (mean 25, 97 ± 9.06 vs 24, 26 ± 4, 54) and their thoracic mobility was lower (mean 5 ± 3,5 cm vs 6,92 ± 4 cm). The control group maximum phonation was longer (mean 15, 35 ± 7 sec vs 21, 80 ± 11, 68 sec) and their results in spirometry were better. Patients who were physically active had positive correlation between spirometry and trunk muscle (p<0,05) and Stork test too. Patients who regularly take part in sport rated their physical form higher (p<0,005). There was a positive correlation between regular physical activity, thoracic mobility (p<0,01) and spirometry PEF (p<0,05).

CONCLUSION: The research indicated clear correlation between voice disorders, physical activity, maximum phonation time and spirometry. Physical activity affects the production of voice through the lung volume and improvement in respiratory function. Prospective studies and qualitative approaches may be useful to further understand this relation between voice disorders and physical activity and create more effective intervention programs.

Can Reflux Finding Score And Reflux Symptom Index Be Used Among Children To Reflect The Severity Of Esophagitis

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Objectives and Study: Laryngopharyngeal reflux (LPR), a growing issue in ENT and pediatrics, is the backflow of stomach contents into the laryngopharynx. Patients complain with frequent upper and/or lower respiratory tract infections, coughing, etc. These findings are associated with acid-induced and pepsin-mediated injury to the mucosa of the larynx and pharynx. Now we know that LPR is associated with rhinosinusitis, laryngitis, pneumonia, and asthma. Children with LPR often do not experience classic GERD symptoms and symptoms may occur intermittently. Still there are few studies searching the correlation of symptoms, endoscopic findings and results of frequently used diagnostic tests

The aim of our study We aimed to search any association among RFS, RSI and degree of esophagitis reported pathologically.

Methods: We reviewed the data of children who underwent upper gastrointestinal system endoscopy and had LFR symptoms reported by ENT department. Reflux symptom index was fulfilled by the pediatric gastroenterology doctor and reflux finding score was fulfilled by the ear nose throat(ENT) doctor by laryngoscopic examination. The patients esophageal pathological data were retrospectively evaluated.

Results: There were 52 patients with 29 boys. Mean age of the children was 11.4+/-4.5 years. The descriptives of the patients are seen in Table 1. According to pathological evaluation there was one patient with normal esophageal finding, 28 patients with mild esophagitis, 16 patients with esophagitis an 8 patients with severe esophagitis. Among 52 patients 13 patients had esophageal pseudopolypoid lesions seen on endoscopic examination secondary to GER (HPV negative). There was no statistical important correlation among RFS, RFI, and age. There was significant correlation between pathology and RFS (p:0,010;r:0,461).

Digital HD Videoscopic Evaluation of 3 Major Modern HANGUL Vowels

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PURPOSE

HANGUL is unique ergonomic korean alphabet, created by King Sejong, Kingdom of Chosen in 1443 A.D. Hangul is originally consist of 17 consonants and 11 vowels. The consonant fall into five homorganic groups through oropharyngeal pathway, the vowel fall into three homorganic groups at tongue position. 11 Vowel letters are originally based on three elements “ · , — , | ”. Hangul vowel is classified as epiglottis and tongue movement. This research shows that tongue and epiglottis movement are important on HANGUL vowel phonation. Especially, when epiglottis move on backward and forward, 3 Major Modern HANGUL Vowels “ ㅏ , — , ㅣ ”/a,u,i/ are pronounced step by step.

METHOD

HANGUL 11 vowels evaluation are performed by rhino-laryngo videoscope system for korean individuals. Especially, HUNMINJEONGEUM technique is focused on relationship between 3 Major Modern HANGUL Vowels “ ㅏ , — , ㅣ ”/a,u,i/ and epiglottis movement.

RESULT

The research result are made of pentax Digital HD rhino-laryngo videoscope system. 2 epiglottis control muscle newly discovered by Digital HD rhino-laryngo-videoscope. Muscle of King Sejong and Muscle of Danyoung are thought to play a major role in HANGUL vowels phonation. Vowel " ㅏ " /a/ is related to backward movement of epiglottis. Vowel " — " /u/ is related to action of King Sejong-Muscle and neutral position of epiglottis. Vowel " ㅣ " /i/ is related to action of Danyoung-Muscle and forward movement of epiglottis.

CONCLUSION

Hangul vowel is classified as epiglottis and tongue movement. 3 Major Modern HANGUL Vowels “ ㅏ , — , ㅣ ”/a,u,i/ pronunciation have deep relationship between epiglottis forward-backward movement and 2 epiglottis control muscle. Rhino-Laryngo Videoscopic evaluation of Hangul vowel is more helpful than x-ray, ultrasound examination.

Keywords : Hangul, Ergonomic korean alphabet, pentax digital HD videoscope, 3 Major Modern HANGUL Vowels, Muscle of King Sejong, Muscle of Danyoung

Epidemiological study of Vocal Fold Scarring and Sulcus Vocalis. -backgrounds factors and Swedish Voice Handicap index data.

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Objective:

Vocal fold scarring (VFS) and sulcus vocalis (SV) often result in severe and chronic voice disorders. This study compares subjective voice complaints as rated with Swedish Voice Handicap Index (Sw-VHI) and etiological factors for patients with VFS and SV.

Patients and Methods:

Data were collected from the medical records at the Department of Otorhinolaryngology Karolinska University Hospital for 27 VFS-patients and 27 SV-patients. Descriptive background factors were compared between the groups and data from Sw-VHI questionnaires were analysed.

Results:

Previous laryngeal surgery/trauma was significantly more common in the group of patients with VFS, $p < 0,0001$. The SV-group had significantly more persistent dysphonia since childhood, $p = 0,024$. It was significantly more common to have a non germanic language origin, among the SV-patients, $p = 0,025$.

VFS and SV rated high for the total median Sw-VHI scores (VFS 59, SV 41). The VFSs' total and the three domains' separate Sw-VHI scores, were significantly higher as compared to the SVs'. The physical domain showed a significant higher score when compared to the functional-, and emotional domains in the SV cohort and when compared to the emotional domain E in the VFS cohort.

Conclusion:

There are significant differences between the VFS group and SV group regarding specific etiological factors as well as for the Sw-VHI score. Scoring and profile of Sw-VHI should be considered when selecting patients and evaluating the result of new treatments concerning this group of patients.

Keywords: Sulcus Vocalis, vocal fold, scar, epidemiology, VHI, voice handicap Index, age onset, inheritance

Non-surgical and surgical voice treatment options for male to female transgender persons

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In male to female transgender persons a controversy exists concerning possible therapeutic options to feminize the voice. On one hand conservative modalities are commonly prioritized by the majority of specialists of the different fields involved. On the other hand, for some of those being affected, surgery appeals to be an attractive option to raise the individual voice pitch. The present study focusses on how much surgery may contribute to the individual needs in m-to-f transgender persons and how surgery needs to be accompanied by additional means of counseling and therapy.

18 m-to-f transgender persons underwent vocal fold shortening glottoplasty, came back for questionnaires, laryngeal videoendoscopy, voice recordings, voice range profile measurements and a specifically designed gender specific voice performance telephone test. Special focus was given to personal experiences of the individuals in the course of their gender reassignment, frustrations with therapeutic modalities and e. g. discussions in groups of transgender people.

Despite of the fact that surgical outcome in the majority of cases shows good or very good results, objective and individual satisfaction with surgery as a therapeutic option remains moderate. In summary, surgery is very well able to raise the pitch of the voice, however, it appears to be only a small piece in a big mosaic of feminizing voice and appearance in m-to-f transgender persons. For the benefit of those being affected, orchestrated efforts of the various professionals dealing with transgender persons are required and should be offered by specialized centres.

Papillary thyroid carcinoma : lymph node status

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Purpose of the study:

The aim of our work was to study the profile of the papillary thyroid carcinoma' lymph node.

Materials and Methods used:

Retrospective study concerning 50 patients operated for a papillary thyroid carcinoma during the period between January, 2012 and December, 2014.

Results :

The average age of our patients was 42,38 years. The sex-ratio (H/F) was 0,13. The clinical presentation was not specific. It was an anterior cervical swelling in most cases. The ultrasound was realized in all cases. The fine needle aspiration was practised in five cases and concluded to carcinoma or was suspect in three cases.

The first operating time consisted in a loboisthmectomy in 30 cases and a total thyroïdectomy in 16 cases. A cervical adenectomy followed by a total thyroïdectomy was realised in four cases.

Twelve patients had thyroid totalization on the same operating time.

Eighteen patients had secondly thyroid totalization. The central lymph node dissection was realized in 39 cases. An unilateral lateral lymph node dissection was realized in five cases. The frozen section was realized in 42 cases.

The central lymph node dissection realized in 38 cases, was positive in ten cases. The lateral lymph node dissection was positive in four cases.

More of 2/3 of our patients were classified T1b or T2 (68 %). More than half of our patients were classified N0 (58 %). No distant metastasis was observed.

During the evolution, 12 patients were considered cured. The rest was lost sight or we haven't sufficient data to declare their cure.

Conclusion :

Lymph node involvement during the papillary thyroid carcinoma is not insignificant affecting especially the central sector. Bilateral central lymph node dissection must be realized as long as possible.

Risk factors for the aggressive form of laryngeal papillomatosis.

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Purpose of the study. Laryngeal papillomatosis (LP) is caused by human papilloma virus (HPV) and appears in the childhood and in the adulthood. In a minority of patients it has an aggressive clinical course which requires many surgical procedures in the larynx. The factors causing the aggressive form of the disease have not been completely revealed yet.

Materials and methods used. In a group of 203 patients with LP (140 men in 63 women), the risk factors for the aggressive form of the disease were detected on the basis of history (gender, age at diagnosis, number of surgical procedures, use of proton pump inhibitors), determination of the serum levels of antibodies against herpes simplex virus 1 and 2 (HSV 1, HSV 2), cytomegalovirus (CMV) and Epstein-Barr virus (EBV) and HPV type in hystological specimens.

Results. A correlation between the aggressive clinical course of LP (35% of all patients) and the juvenile type of LP (18,2% of all patients), female gender, co-infection with HSV1, CMV, EBV and the treatment of the suspected gastroesophageal reflux was found.

Conclusion. The aggressive course of the disease appears to be connected with co-infections with several different viruses, all having an impact on the hosts' immune system. The influence of gastroesophageal reflux was proven only indirectly. The results suggest a possibility that the treatment of a known co-infection with other viruses and of the reflux of the gastric content up the oesophagus could decrease the risk for aggressive growth of papillomas in the larynx.

PH-Ot-09

Starting a laryngology service - pitfalls and pearls from Singapore

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Setting up a voice clinic has its own challenges depending on the economic, cultural and political forces that govern healthcare. Singapore is a multi-cultural island nation with a population of nearly 6 million people living in close proximity. There are many languages and dialects which are spoken regularly although Mandarin, Malay, Tamil and English are viewed as the four official languages. Our unit is the newest tertiary hospital system built in the western part of the island serving both a thriving local population and many foreign workers who are based in the industrial sector within our precinct. Over the last 18 months, we have built up a team of dedicated speech pathologists who are part of our ENT voice clinic. We aim to share our experiences developing our twice weekly voice clinic with videolaryngostroboscopy as well as our regular voice therapy sessions. We have developed a voice laboratory for vocal assessment (acoustic and aerodynamic studies). We hope to build on our office based services and the use of laryngeal EMG over the next year. Thus far we have had over 30 cases requiring surgical intervention for both benign and malignant conditions. Our aim is to develop our service in tandem with our growing volume and add on the services as demand picks up.

STUDY OF THE EFFECT OF DIRECT LARYNGSCOPIC MANIPULATION IN CASES OF PUBERHONIA

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Purpose of the study : STUDY OF THE EFFECT OF DIRECT LARYNGSCOPIC MANIPULATION IN CASES OF PUBERHONIA.

Materials and methods used:

The study included 91 consecutive patients between the ages of 14 to 20 years diagnosed clinically as cases of puberphonia from 1991 to 2015. Secondary causes of voice changes including hypogonadism were excluded for the study. After due informed consent Patient was asked to come nil by mouth for six hours before the procedure in the ENT outdoor. Patient was examined under xylocaine spray anaesthesia by anesthesiologist's intubation laryngoscope (Macintosh). Long blade of laryngoscope was put in valleculae and patient was asked to speak a long eeeee. Pressure over the valleculae stretched the vocal cords. Sometimes-additional pressure was applied by a laryngeal biopsy forceps over the anterior commissure. The external digital pressure over the thyroid cartilage also helped in improvement of the voice quality. The procedure was repeated 3-4 times in a single sitting.

Results:

There were 91 males in the study between ages ranging 14 to 20 years. In all patients procedure was done under local anaesthesia. Patients having other aetiologies for change in voice had been excluded from the study. After laryngeal stretching with intubation laryngoscope there was immediate improvement in the voice quality from child pitch to male pitch. Patients were followed for 3 months fortnightly and 11 patients required repetition of procedure after 3 months, out of which four didn't improve and had been sent to speech therapist and psychological evaluation.

Conclusion:

We have used a novel approach by using a Macintosh anaesthetic laryngoscope for stretching of vocal cords, which gives immediate and permanent relief. This procedure, which was incidentally found to be useful, while doing a laryngoscopic examination of a puberphonic patient, was effective and superior to any method used in the past .91 cases treated during 1991 to 2015 had been followed with the excellent results.

The vowel acoustic space transformation in individuals with long-term hearing loss

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Objectives: To apply a new procedure of vowel acoustic space (VAS) transformation for the purpose of characterization of vowel production in individuals with long-term hearing loss (HL).

Materials and methods: Recordings of sustained Russian vowels /a/, /i/, /u/ of 5 women and 5 men with HL were acoustically analyzed. For each participant, two first formants (F1 and F2) values of each vowel were measured and log-transformed (logF1, logF2). Mean of log-transformed values were calculated. Acoustic data on vowel production of one woman and one man with no hearing disorders was used as reference. An approach that transforms vowel triangles in logF1-logF2 coordinate space into right triangles, translates their /u/ corners to the origin, and aligns their legs with axes was applied. The transformed vowel triangles which graphically represent VAS were studied. HL in the speech frequencies in individuals were estimated according to Watson-Tolan procedure.

Results: HL in the speech frequencies in individuals varied from 53 to 98 %. Reduction of VAS was observed in all participants. The most significant decrease were in 3 women with profound HL who used no or just one hearing aid and in 1 man who have used hearing aid for no more than one year. Linear dependence of VAS on Watson-Tolan HL with approximation coefficient 0.79 was observed. The vowel triangles were almost symmetrical, equal and have a maximum size in control group while these of hearing impaired group tended to stretch along /ui/ or /ua/ leg.

Conclusions: Besides linear relationship between VAS and HL values, the study showed that new VAS normalization approach can distinguish at least three groups of people with HL. There are those with vowel triangles stretched along logF1-axis (/ua/ leg longer than /ui/ leg), with vowel triangles stretched along logF2-axis (/ui/ leg longer than /ua/ leg), and with symmetrical vowel triangles (/ui/ leg equal to /ua/ leg). Causes of the VAS differences require further investigation.

Vocal tract morphology in inhaling vowel production.

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This study goes together with earlier manuscripts which described the physiologic and acoustic features of inspiratory phonation and the morphology of the vocal tract in inhaling singing (1, 2).

Study design: prospective

Methods: a professional singer uttered the various vowels /a/, /e/, /i/, /o/, /u/ on an inspiratory flow at a stable, comfortable tone, under magnetic resonance imaging (MRI). This provided 10 images, on which various anatomical structures were measured (distances, angles and areas). Wilcoxon directional was performed on these measurements.

Results: directional testing revealed statistical significance at the 0.05 level for 1) distance between the lips/teeth, 2) the antero-posterior (AP) distance of the tongue, 3) the subglottic AP distance, and 4) subglottic area. Significance at the 0.025 level occurred for the 5) distance between the lips and tongue tip, 6) distance between the epiglottis and dorsal pharyngeal wall and for 7) the oropharyngeal area.

Conclusions: this study concurs with the previous reported morphology changes in inhaling singing. The narrowing of the subglottis, the smaller mouth opening and the smaller laryngeal inlet can be considered as constant features in inhaling phonation. In what extent articulation influences the measurements is currently under study.

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When did gastro-esophageal reflux become a disease?

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Background: Within the span of a few decades, gastro-esophageal reflux (GER) evolved from a rare entity to the most commonly diagnosed upper gastro-intestinal disease, i.e. gastro-esophageal reflux disease (GERD). It is estimated that more than a quarter of the North American population is afflicted by GERD, and the prevalence of the condition is on a constant rise. The definition of this entity remains controversial. The Montreal definition based on expert consensus in 2006 is commonly used. Disease starts when reflux of gastric contents results in “troublesome symptoms and/or complications.” To date, no study has elucidated the genesis of GERD as a new disease category. This study focuses on the history of defining reflux as a disease in relation to the evolution of its name. The boundaries of GERD remain matter of controversy and appear to be ever expanding. This historical investigation might help better understand what it is about reflux disease that makes defining its limits so difficult.

Methods: We performed an extensive historical review of the original medical literature using Medline and Google, along with a compilation of original and secondary texts in English, French and German.

Results: Our finding is that those actively involved in treating the reflux, first surgeons in the 1960s and then gastroenterologists in the 1970s, initiated naming it a disease. This historical study into the initial nomenclature of GERD reveals that issues with defining the boundaries of the pathological condition of this entity have been present since the earliest recognition of the harmful effects of gastric regurgitation on the esophagus. While in its early descriptions, reflux was recognized through its objective manifestations only (esophagitis and ulcers), it soon became apparent that symptoms were another important component of the pathology. Problems with the nomenclature reflect challenges physicians faced in conceptualizing GERD and its pathologic spectrum. This investigation also demonstrates that those actively involved in treating the reflux, first surgeons then gastroenterologists, also initiated calling it a disease. Similarly, “laryngopharyngeal reflux disease” was introduced by the otolaryngological community. With diverse manifestations of varying severity, GERD remains a disease that is hard to contain into one category and that veers towards expansion.

Conclusion: Understanding the genesis of GERD may shed light upon its expansion as a disease category.

Which mathematical and physical formulas are relevant in voice and speech diagnostics

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Introduction

This study focuses upon changes in quantifiable parameters of voice production comparing normal voices and patients with complaints of hoarseness for more than two weeks. Acoustical signals and high speed films were data sources for mathematical and physical formulas of the voices.

Method and Materials

The software "Glottis Analysis Tools" (Erlangen, Germany) included acoustical measurements, and data sources included the Glottal Area Waveform (GAW) and Phonovibrogram (PVG), in part based on high speed film. High speed film data were captured with high speed camera and software from Wolf Ltd, Germany.

Results

Data with statistical significant difference between 12 healthy voices and 12 patients with complaints of hoarse voices in a prospective case/control study are presented. The commonly used acoustical parameters showed no statistical difference between the normal persons and the persons with complaints of hoarseness for more than two weeks.

Discussion

This suggests that evidence in this field is insufficient. Focus should be upon the new methods on the market – for example Overtones/harmonics, Optical Coherence Tomography and Narrow Band Imaging.

The "Glottis Analysis Tools" analysis program is the most advanced voice analysis program and an interesting supplement of voice analysis, as it operates on vocal fold level in comparison with acoustical analysis on high speed films.

Conclusion

The acoustical measures of voices do not show statistical differences between 12 normal persons and 12 patients with complaints of hoarseness in our prospective case control study. This seems to further establish that voice measures till now are not clinically evidence based as such. Some glottal area waveform measures are of interest. Randomized studies are lacking. The new methods on the market should be focused upon: Overtones/ harmonics, Optical Coherence Tomography and Narrow Band Imaging.

Diagnosis and treatment aspects in children dysphonia

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Purpose of the study

The challenge consists of varied etiology that manifests itself through a single symptom: hoarseness. The aim of this paper is to develop a guide for child dysphonia evaluation and treatment, having in mind low child compliance to evaluation and treatment.

Materials and methods

Working with children of different ages (3 to 18 yo) requires protocol changes in order to prevent multiple impediments.

The new technology allows easier examination of children suffering of voice disorders. Evaluation through direct laryngoscopy, fiber optics laryngoscopy, stroboscopy, psycho-acoustic voice analysis, audiological examination, and last but not least psychological evaluation, are all available to the clinician.

The first line of therapy consists of vocal therapy, surgery being reserved only for serious cases, when the child cannot make himself/herself understood.

Results

A diagnosis of certainty allows a multidisciplinary approach for established a case-by-case individual sequenced therapeutic protocol with morpho-functional assessments periodically done during the rehabilitation program. The family and the psychologist are included in the therapeutical process.

Conclusion

As a clinician, one must always recall that a child is not a little adult and his/her wishes and motivations may change as he/she develops and matures.

Voice disorders have a high impact on quality of life and communication, the most frequent cause being vocal abuse.

A protocol well accomplished adapted to the proper methods of investigation, diagnosis and developing a treatment plan is customized to solve the phoniatic pathology.

Reversing Age Related Changes of the Laryngeal Muscles by Chronic Electrostimulation

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In a rapidly ageing society, voice problems will become a major challenge within the near future. The population aged 65 years or over will account for 28.7% of the EU-28's population by 2080, compared with 18.5% in 2014. Age related atrophy of the laryngeal muscles -mainly the thyroarytenoid muscle (TAM)- leads to a glottal gap and consequently to a hoarse and dysphonic voice that significantly affects quality of life. The aim of our study was to reverse this atrophy by inducing muscular hypertrophy by unilateral functional electrical stimulation (FES) of the recurrent laryngeal nerve (RLN) in a large animal model using aged sheep (n = 5). Suitable stimulation parameters were determined by fatiguing experiments of the thyroarytenoid muscle in an acute trial. For the chronic trial an electrode was placed around the right RLN and stimulation was delivered once daily for 29 days. We chose a very conservative stimulation pattern, total stimulation time was two minutes per day, or 0.14% of total time. Overall, the mean muscle fiber diameter of the stimulated right TAM was significantly larger than the non-stimulated left TAM ($30\mu\text{m}\pm 1.1\mu\text{m}$ vs. $28\mu\text{m}\pm 1.1\mu\text{m}$, $p<0.001$). There was no significant shift in fiber type distribution as judged by immunohistochemistry. The changes of fiber diameter could not be observed in the posterior cricoarytenoid muscle (PCAM). FES is a possible new treatment option for reversing the effects of age related laryngeal muscle atrophy.

Voice disorders in primary school teachers

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Previous reports focusing on the high prevalence of voice disorders in teachers have suggested that vocal loading might be the main causal

factor. The aim of our study was to assess the prevalence of voice disorders in a sample of primary school teachers and evaluate possible

cofactors. Our sample was composed of 157 teachers (155 females, mean age 46 years). Participants were asked to complete two selfadministrated

questionnaires: one with clinical data, and the second an Italian validated translation of VHI (voice handicap index). On the

same day they also underwent a laryngostroboscopic exam and logopedic evaluation. The results were compared with those of a control

group composed of accompanying individuals. Teachers presented a higher rate of abnormalities at laryngostroboscopic examination than

the control group (51.6% vs. 16%, respectively). Among these, 7.1% presented nodules. In our sample, vocal fold disorders were not correlated

with years of teaching, smoking, coffee consumption, or levels of anxiety. Our findings are in agreement with previous reports on

the prevalence of pathologic disorders among teachers; nonetheless, the prevalence of nodules was lower than in previous investigations,

and voice loading was not correlated with laryngostroboscopic findings. Current Italian law does not include any guidance regarding voice

education and screening in subjects with high vocal loading. Our work stresses the need for such legislation.

Autoimmune systemic diseases in patients with a voice disorder

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Abstract

Autoimmune system diseases are characterized by multiorgan failures and other clinical implications. One part of these implications are voice disorders. Dysphonia often can be the first and only one symptom of an autoimmune disease. For example, for 50 % patients with larynx trauma, larynx pathology is the only one implication of a rheumatoid arthritis. The research study of larynx pathology in patients with autoimmune disease is a challenging topic in phoniatics.

Aim

To explore the larynx pathology in patients with autoimmune disease.

Patients and methods

The Phoniatics department of Federal Research Clinical Centre of otorhinolaryngology of Russian Federation Ministry of public health has 9 patients (10-67 years old) from 2014 with different autoimmune diseases of a connective tissue such as Sjogren disease (1 female), Sjogren syndrome (1 female), systemic lupus erythematosus (4 females), rheumatoid arthritis (1 female), Behcet's disease (1 female), not clarified autoimmune disease (1 female). All patients are female and the main complaints in all cases are hoarseness and voice disorders. The examination included videolaryngostraboscopy and acoustical analysis.

Results

2 Patients with systemic lupus erythematosus, 1 female with Sjogren disease, 1 female with Sjogren syndrome and a female with a not clarified autoimmune disease have bamboo nodes of vocal folds. 1 female with systemic lupus erythematosus was diagnosed with chronic hypertrophic laryngitis. A patient with rheumatoid arthritis has spindle-shaped nodes of mucosal coat in subglottic region of a larynx. A patient with a Behcet's disease has been diagnosed with ulcerous-necrotic damage of mucosal coat of a mouth cavity and a larynx.

Conclusions

Larynx pathology in autoimmune diseases is characterized by its diversity. One of a rare implication of autoimmune diseases are bamboo nodes of vocal folds. All patients with autoimmune diseases need a case follow-up of an otorhinolaryngologist – phoniatician including the examination of larynx and pedagogical correction. The examination of larynx should include modern visualization techniques. The research of clinical implications of autoimmune systemic diseases in larynx is contributing to the diagnostic opportunities of clinicians.

Diffuse idiopathic skeletal hyperostosis and Forestier's disease: a clinical case report

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Purpose of the study: Diffuse idiopathic skeletal hyperostosis is a non-inflammatory disease in which there is calcification of the anterior longitudinal ligament of the spine. The clinical manifestations of this disease including dysphonia, dysphagia and upper airway obstruction are termed Forestier's disease. The authors illustrate these radiologic and clinical entities, respectively, with a clinical case of substantial severity.

Clinical case: A 70 year old male with a past medical history of hypertension, type 2 diabetes, dyslipidemia, obesity and obstructive sleep apnea was admitted to the emergency department of a tertiary hospital with a two week history of dysphonia and dyspnea. On examination he was dysphonic and dyspneic showing stridor. Blood tests revealed leukocytosis and elevation of inflammatory markers. Fiberoptic laryngoscopy revealed bulging of the posterior and left wall of the hypopharynx and larynx and edema of both arytenoids; glottic lumen was not observable. CT scan of the neck showed ankylosis of the cervical spine with hyperostosis and calcification of the anterior ligament between C2 and C6 leading to obstruction of the upper airway. Other causes of dyspnea and foci of infection were excluded and the patient was submitted to a tracheostomy and admitted to the Otolaryngology department under antibiotic coverage. During hospitalization he developed dysphagia leading to nasogastric intubation. Both decannulation and extubation were not possible due to persisting airway obstruction on laryngoscopy and liquid aspiration during oral feeding after discharge. Fiberoptic swallowing study revealed aspiration despite swallowing rehabilitation therapy. He was referred to the Neurosurgery outpatient clinic but a surgical approach was not indicated due to the patient's comorbidities. A percutaneous endoscopic gastrostomy was proposed to the patient.

Conclusion: Forestier's disease due to cervical spine hyperostosis must be considered in the differential diagnosis of upper airway obstruction and dysphagia. Conservative therapy is the mainstream treatment although surgical procedures may be considered. Despite best medical treatment in a referral hospital, this case remained with no successful treatment.

Self-Perception of Swallowing-Related Problems in Laryngopharyngeal Reflux Patients Diagnosed with 24-Hour Oropharyngeal pH Monitoring

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Background and Objectives: Swallowing difficulty is considered one of the nonspecific symptoms that many patients with laryngopharyngeal reflux complain of. However, the relationship between laryngopharyngeal reflux and swallowing problems is not clear. The purpose of this work is to explore correlation between swallowing-related problems and laryngopharyngeal reflux (LPR) in a group of patients diagnosed with oropharyngeal pH monitoring and to study the effect of laryngopharyngeal reflux on the patients' self-perception of swallowing problems. **Methods.** 44 patients complaining of reflux-related problems were included in the study. Patients underwent 24-hour oropharyngeal pH monitoring and were divided into positive and negative LPR groups based on the pH monitoring results. All patient filled out the Arabic Dysphagia Handicap Index (A-DHI) and Arabic Reflux Symptom Index (A-RSI) questionnaires. Comparison was made between the positive and negative LPR groups regarding the results of the DHI and RSI ratings. Also, correlation between DHI scores, RSI scores, and pH monitoring results was studied. **Results:** Significant difference was reported between positive and negative LPR groups regarding DHI scores, RSI scores, and overall rating of swallowing difficulty. There was significant correlation demonstrated between DHI scores, RSI scores, and 24-hour oropharyngeal pH results. **Conclusion:** Laryngopharyngeal reflux appears to have a significant impact on patients' self-perception of swallowing problems as measured by DHI.

Voice Problems among Laryngopharyngeal Reflux Patients Diagnosed with Oropharyngeal pH Monitoring

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Background and Objectives: There is a lack of consensus regarding the clinical presentation and diagnosis of laryngopharyngeal reflux (LPR). The aim of this study was to explore voice-related abnormalities in a group of LPR patients, diagnosed with a 24-hour oropharyngeal pH monitoring. **Patients and Methods:** Eighty-two patients with voice-related problems participated in the study. Diagnosis of LPR was made using a 24-hour oropharyngeal pH monitoring. Patients were divided accordingly into positive and negative pH groups. Comparisons between the two groups were done, including results of clinical presentation, Voice Handicap Index-10 (VHI-10), reflux symptom index (RSI), reflux finding score (RFS), and acoustic measurements. The correlation was conducted between Ryan scores and other variables including VHI-10, RSI, and RFS. **Results:** Significant differences were found between the two groups for RSI and VHI-10. No significant differences were found between the two groups regarding clinical presentation, RFS or acoustic measures. Significant positive correlations were found between the Ryan composite measurements and both severity ratings (VHI-10, RSI). **Conclusion:** LPR clinical presentation appears to be non-specific in terms of symptoms and laryngeal findings. LPR appears to have an effect on the patients' self-perception of voice problems. Further studies are needed to clarify the effect of LPR on acoustic measurements.

A new set of parameters for a clinical approach to the biomechanics of vocal folds.

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Purpose of the study:

What is most relevant in the study of the voice is to know how the vocal folds are moving and the difficulties they encounter in order to achieve effective closure. For this, it is essential to approach the analysis of the voice from a biomechanical approach, obtaining parameters that contribute relevant information on this dynamics.

The present work uses a set of biomechanical parameters and analyses the results obtained comparing them with the findings of imaging the vocal folds.

Materials and methods used:

For the study, a total of 36 patients were used, differentiated into four groups according to their pathology: a) patients with mass effect on the vocal folds (nodules, polyps, cysts), b) patients with altered mucosal wave (increased / decreased), c) patients with altered glottal closure (hyperfunctional / hypofunctional), d) patients with lack of glottal closure (GAP, closure defect as the main feature). All the patients were adults. All were submitted to a stroboscopic image study to confirm the diagnosis.

For the recording of the signal and analysis, the Online Lab® tool marketed by Voice Clinical Systems® was used.

The results were analysed by evaluating the information provided by a set of 20 parameters, classified according to the nature of the information provided:

1) Harmony in the movement of the edge, 2) Phases of the cycle, 3) Muscular tension and stress, 4) Sufficiency of the closure, 5) Tension with instability, 6) Separation between edges, 7) Mucosal wave and oedema correlates, 8) Mass correlates.

Results:

The results showed that it is possible to extract relevant information from the biomechanics of the vocal folds without filtering the signal.

The parameters used showed a high degree of consonance with the findings identified during the stroboscopic examination.

The information provided by this set of parameters was crucial to know the dynamics and tension of the vocal folds, providing information that cannot be extracted from a laryngoscopic image study.

Conclusion:

As conclusion, it is established that this type of studies allows to have a close knowledge of the dynamic pattern that the patient uses during the phonation, which is essential to establish therapeutic strategies and to control the evolution of the patient before, during and after a surgical or rehabilitative treatment.

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Analysis of acoustic parameters to objectively reflect the change of voice quality before and after surgery in benign vocal fold mucosal disorders

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Purpose of the Study: The aim of this study was to compare between preoperative and postoperative voices by subjective auditory perceptual evaluation and objective acoustic analysis. The study also analyzed the acoustic parameters that best reflected the auditory perceptual characteristics in laryngeal microsurgery. **Materials and Methods:** The records of 49 patients who had been diagnosed as benign vocal fold mucosal diseases and had undergone laryngeal microsurgery were retrospectively analyzed. Preoperative and postoperative voices were assessed by auditory perceptual evaluation using the GRBAS scale and acoustic analysis using Multi-Dimensional Voice Program (MDVP) and Analysis of Dysphonia in Speech and Voice (ADSV). Correlation between auditory perceptual characteristics and acoustic parameters was analyzed. **Results:** Auditory perceptual evaluation showed that the patients' voices were improved after the operation. Several acoustic parameters of MDVP related to short-term and long-term variability showed significant improvement. Also, there were significant differences in several cepstral/spectral parameters of ADSV after operation. In the correlation analysis, the overall grade (G) of the GRBAS scale showed highest correlation with the cepstral spectral index of dysphonia (CSID) ($r=-0.700$). The roughness (R) of GRBAS scale was correlated with the smoothed amplitude perturbation quotient of long-term variability of MDVP ($r=0.468$), breathiness (B) with cepstral peak prominence ($r=-0.703$) and strain (S) with CSID ($r=0.650$) ($p<0.01$). **Conclusion:** Our results showed that the acoustic parameters were related to the long-term variability of MDVP, and the parameters of cepstrum/spectrum were useful for the objective assessment of voice quality in patients who received laryngeal microsurgery. These parameters were also useful for the quantification of voice quality and abnormality of phonation.

PH-VA-03

Clinical voice acoustics with the program Praat

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Analysis of acoustic voice signals is common practice in voice clinics for diagnostic purposes, documentation of the patient's voice and tracking of vocal status and outcomes across treatment. Such analysis includes determining markers related to fundamental frequency, sound level, phonatory range, tremor, and spectral and cepstral configuration. All of this can be done with the free-downloadable program Praat (Paul Boersma and David Weenink, Institute of Phonetic Sciences, University of Amsterdam), especially when having implemented so-called scripts for automating signal processing, analysis algorithms and numerical and graphical output. First, this course will start by listing the most important conditions for acoustic voice assessment to provide sufficient signal-to-noise ratio. Second, clinically relevant facets of the acoustic voice signal will be addressed and it will be shown how to retrieve all this information in the program Praat. Third, regarding the custom Praat scripts: their utilization for automated voice analysis will be discussed and their output will be interpreted during a live demonstration. Special attention will go to the Acoustic Voice Quality Index (i.e., AVQI; Maryn et al., 2010), next to scripts for measuring vocal fundamental frequency, vocal sound level, vocal range estimation, spectrography and cepstrography. Focus will be on clinical interpretation instead of technical background. Finally, both advantages and disadvantages of this set of acoustic methods will be presented.

Correlations between Acoustic Voice Quality Index and perceptual voice evaluation

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INTRODUCTION: Voice disorders are relatively common, affecting 6–9% of the general population. Automated analysis of voice signals is the most used diagnostic instrument to identify voice disorders in clinical practice and research. To make an objective voice assessment to be robust and ecologically valid, the acoustic measure ideally should be calculated using voice signals based on recordings of both speaking patterns - sustained phonation and running speech.

OBJECTIVE: The aim of the present study was to investigate the feasibility and robustness of Lithuanian version of Acoustic Voice Quality Index (AVQI-LT) for dysphonia quantification and it's correlations with auditory-perceptual judgment.

METHODS. The AVQI-LT scores were calculated using the mixed gender database of voice recordings containing 184 digital voice recordings (normal voices 46; pathological voices 138) of 3-sec portion of sustained phonation of the vowel sound /a/ and 13 syllables Lithuanian sentence. Both speech tasks were concatenated, and perceptually rated for dysphonia severity by five voice clinicians. They rated the Grade (G), Roughness (R), and Breathiness (B) from the Grade Roughness Breathiness Asthenia Strain (GRBAS) protocol and the overall severity from the Consensus Auditory-perceptual Evaluation of Voice protocol with a visual analog scale (VAS). The average scores (Gmean, Rmean, Bmean and 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. In subgroup of 153 subjects the correlations among AVQI and parameters of auditory-perceptual judgment of voice quality were calculated.

RESULTS. Both auditory-perceptual judgment procedures showed sufficient strength of agreement between five raters. The results achieved significant and marked concurrent validity between both auditory-perceptual judgment procedures and AVQI-LT. The diagnostic accuracy of AVQI-LT showed for both auditory-perceptual judgment procedures comparable results with two different AVQI-LT thresholds. The AVQI-LT threshold of 2.97 for the Gmean rating obtained reasonable sensitivity = 0.838 and excellent specificity = 0.937. For the VAS rating, an AVQI-LT threshold of

3.48 was determined with sensitivity = 0.840 and specificity = 0.922. Strong and statistically significant correlations ($r = 0.71 - 0.87$) between AVQI-LT and all factors of auditory-perceptual voice assessment (including G, R and B) were achieved.

CONCLUSIONS. The AVQI-LT scores strongly correlates with auditory-perceptual voice assessment and is considered to be a valid and reliable tool for automated quantification of dysphonia in Lithuanian-speaking population

Importance of vocal rehabilitation in treating preschool and school children with vocal nodules

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Introduction: Hoarseness as a symptom can affect all age groups, from children's age, adolescent to adults. One of the most common causes of hoarseness in children are lumps (nodules cantatorii) of the vocal folds. With this study we investigated the age of children, environmental impact, types of etiological factors that lead to the formation of nodules in children and the importance of early prevention and treatment of voice in children.

Materials and methods: The sample included 30 patients with vocal nodules aged 3-17 diagnosed at ENT Clinic of University Clinical Centre Banjaluka in the period of 2013 - 2015. After taking medical history, general ENT, phoniatric examination, Endo-videostroboscopy, subjective voice assessment and various voice examination tests, applied a direct vocal therapy and respiratory kinesiotherapy.

Results: Out of 30 tested patients 63% were female and 37% were male. 90% of patients came from urban areas, whereas 10% lived in rural areas. 17% of the patients were preschool and 83% were in school age. One of the most frequent causes of voice disorders were: loud speaking (32%), uncontrolled yelling (29%), extracurricular activities (singing, acting, sports) (26%) and fast talking (13%).

Conclusion: We can conclude that after four months of vocal therapy, the patients had improvement of basic voice parameters.

Is there a correct timing to perform voice assessment in recurrent respiratory papillomatosis?

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Purpose of the study: recurrent respiratory papillomatosis (RRP) requires frequent surgical procedures because exhibits a high incidence of recurrences; repeated surgeries risk to damage the delicate structure of the vocal cord resulting in voice impairment. We would quantify the impact of surgery and positive effects of speech rehabilitation on the speaking voice quality in patients with RRP.

Materials and Methods used: we present the case of a nineteen Indian man affected by RRP underwent six previous surgeries, who came to our attention with severe dysphonia and mild dyspnea. Endoscopy demonstrated a voluminous polypoid lesion causing reduction of the respiratory space and glottic failure during phonation, and a second small lesion on the false left vocal cord. The main lesion originated from the inferior surface of the right vocal cord, going from the vocal process of the arytenoid to the anterior commissure. We performed a debulking of the right cord lesion and then a type I cordectomy with vocal ligament preservation using CO2 laser. The lesion on the left false cord was then removed. Lesions were positive for HPV 11. The patient was addressed to the speech therapist for the speech rehabilitation.

Vocal assessment was performed the day before surgery, four days after it and after three months of speech rehabilitation. Perceptual vocal assessment, acoustic analysis, spectrographic voice analysis and voice handicap index (VHI) questionnaires were performed and compared with the literature.

Results: the grade of hoarseness, breathiness and strain worsened four days after surgery and improved after three months of speech rehabilitation; voice instability remained constant; roughness and asthenia persisted in the second analysis but disappeared after rehabilitation. The percent jitter, shimmer and fundamental frequency lowered. Our patient's postoperative scores were in line with those reported in previous literature. Post-rehabilitation VHI score was 16.

Conclusion: surgeons facing laryngeal papillomatosis have to find a balance between the surgical radicality and the attempt to maintain a good voice. Surgery alone can not guarantee a good functional outcome thus a close collaboration with speech therapists is crucial to voice optimization. An immediately post operative voice quality recording although with an obviously worse quality, could have a double aim: the drawing of a tailored rehabilitation program, and a psychological and educational role on patients in motivating to perform immediately post-operative speech treatment.

LAX-VOX THERAPY IN ORGANIC AND FUNCTIONAL DYSPHONIA

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Introduction

The pathology of the voice is a multidisciplinary field where the ENTs, phoniatriests, speech therapists and singing teachers join together with the purpose of obtaining the best possible voice within the anatomical and physiological capacities of each patient. Recently, a holistic technique for vocal rehabilitation has been developing, the Lax Vox (LV), which is based on the relaxation of the buccopharyngeal muscles and the reinforcement of the ventilatory support; it emerges as an alternative to conventional speech therapy techniques (VR.)

Material and methods

We performed an observational, descriptive and retrospective study which included all of the patients evaluated in the voice consultation during 2015. Two groups were determined: those who used the LV technique after receiving indications by an ENT at the voice consultation, and another group who were treated using conventional speech therapy at our center. The patients were distributed according to their type of voice pathology in: organic, functional and organic-functional dysphonia. All of the patients were explored through videoendoscopy and their voices were subjectively evaluated using the GRBAS scale during the first consultation and the follow up after the treatment.

We evaluated and compared the clinical results and particular costs of each technique.

Results

We obtained a total of 55 patients (LV =28; VR= 27) with an average age of 49 and 38 years old respectively, observing a normal distribution sample.

Most of the patients who received LV as the treatment technique presented functional dysphonia (41,8%); as for the VR group the most common pathology observed was functional-organic dysphonia (30,9%).

Statistically significant differences were found when comparing the total GRBAS scale punctuations obtained before and after both of the treatments (Wilcoxon test $Z= 4.420$, $p=0.001$), however we did not obtain differences among the GRBAS scale punctuations when comparing the two of the rehabilitation techniques ($X^2= 0.49$ con $p=0.826$).

The average number of VR group sessions was 35 plus at least 2 ENT consults. The LV group only attended to 2 ENT voice consultations and acquired the Lax Vox Tube Kit ® in most cases. The Incremental cost-effectiveness analysis reveals that LV is approximately 26.783,39 Euros cheaper than RV, both of them being equally effective.

Discussion and conclusions

The LV is a cheap and effective vocal rehabilitation technique which is comparable to conventional speech therapy. Its simplicity makes it a useful tool for the immediate approach to the voice pathology in those patients treatable through vocal rehabilitation.

Lithuanian version of Speech Handicap Index (SHI-LT)

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INTRODUCTION: Subjective evaluation is important when assessing speech impairment conditions, treatment and rehabilitation. There are several subjective and objective methods of patient's speech evaluation. Objective measures include acoustical and aerodynamic analyses and imaging techniques. Subjective methods consist of various scales, indices, questionnaires. There are over one thousand self-rated questionnaires in different languages. However, most of them include a limited number of items on speech problems.

Speech Handicap Index (SHI) developed in 2008 originally in the Dutch language by Rinkel RN et al. was the first specific questionnaire for self-assessment of speech impairment. SHI was validated into four languages (Dutch, English, French and Chinese). Good psychological properties of all versions of SHI were confirmed by studies. Until now there was no subjective speech evaluation questionnaire for Lithuanians.

OBJECTIVE: to validate Lithuanian version of the SHI.

METHODS: 30-item Lithuanian Speech Handicap Index (SHI-LT) was translated, adapted and validated following the international recommendations. The score of SHI-LT ranged from 0 to 120 points. The highest score meant the most severe speech disability. The final version of the SHI-LT was filled out by 60 healthy adult individuals (control group) and 109 patients with different speech impairment causes (patient group). There were 3 subgroups in the patient group: neurologic disorders (n=21), articulation disorders (n=56) and phonation disorders (n=45). Discriminative power, cut-off value, diagnostic sensitivity and specificity were evaluated.

RESULTS: There was a statistically significant difference ($p < 0.001$) between the mean scores of the SHI-LT of the control (5.8 ± 6.6 points) and speech-impaired patient groups (45.2 ± 31.9 points). Statistically significant differences were also detected between different patient subgroups ($p < 0.001$). The phonation disorders subgroup (post partial or total laryngectomy, unilateral vocal fold paralysis) had the highest SHI values (65.9 ± 27.4 points). The Receiver Operating Characteristic test indicated that the SHI-LT score >17 points distinguishes patients from healthy controls with sensitivity of 95.4% and specificity of 95.0%.

CONCLUSION: The SHI-LT is reliable, sensitive and specific self-assessment questionnaire useful for quantitative evaluation of speech impairment in Lithuanian speaking patients.

Nasalance Changes After Endoscopic Modified Lothrop Procedure

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Purpose: The aim of the study was to evaluate the effect of endoscopic modified Lothrop procedure (EMLP) on resonance by using objective assessment techniques via nasalance.

Materials and methods: Twenty-five patients with 15 males and 10 females were included in this study from November, 2012 to August, 2016. All of them were diagnosed with chronic refractory frontal rhinosinusitis and/or frontal sinus neosteogenesis, and then subsequently underwent EMLP. The patients were assessed with nasometry before the operation (the morning of the operation), 2 weeks and 3 months after the operation. The test materials for nasalance included nasal words and sentences.

Results: Total of 25 patients, aged 28 to 71 years (medium 48 years), were enrolled in this study. The nasalance scores of nasal words were 63.8 ± 7.7 , 67.3 ± 6.7 , 67.7 ± 6.8 before surgery, 2 weeks and 3 months after surgery, respectively. The nasalance scores of nasal sentence were 67.2 ± 8.1 , 70.0 ± 6.2 , 71.5 ± 5.6 before surgery, 2 weeks and 3 months after surgery, respectively. The nasalance scores of nasal words and sentences both increased significantly at 2 weeks and 3 months post-surgery when compared with pre-surgical scores ($p < 0.05$, paired t-test). There were no significant differences between 2 weeks and 3 months intervals.

Conclusions: Our findings indicated that EMLP has a significant impact on nasalance in individuals with chronic refractory frontal rhinosinusitis and/or frontal sinus neosteogenesis.

Neuromuscular electro-phonatoric stimulation of larynx as voice improvement in teachers

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The purpose of the study was to explore the possibilities neuromuscular electro-phonatoric stimulation (NMEPS) of the larynx in improving the endurance and resistance of voice to the considerable vocal loading for teachers.

Materials and methods. The research included 10 teachers 38 to 52-years old from the same public school in Russia, all women with average workloads of 24.5 hours per a week. Teachers have been subjected by NMEPS with vocaSTIM®-Master unit (Germany) mode procedure a day during 10 days. NMEPS is combination of optimal functional voice exercises and electrostimulation of larynx according individual accommodation quotient. Our monitoring was carried out in 3 visits: T0 - before treatment, T1 - after 10 days of treatment, T2 - after 2 months. During each visits the teachers' voice quality was evaluated through the computerized voice analysis (average fundamental frequency, maximum phonation time, jitter, DSI, intensity, frequency range, dynamic range and voice stress test (VST). VST included the continuous reading of the text for 30 minutes with voice intensity of 65 dB, 80 dB and 65 dB for 10 minutes each.

Results. 8 teachers from 10 demonstrated significant improvement the voice characteristics after 10 days of NMEPS, which showed absence of fatigue and adverse changes in voice after speaking load. We did not find any statistically significant dynamics of the acoustic parameters of the voice exception of voice amplification intensity, increase frequency range and changing VST parameters. The average intensity of a voice in the 30-minute reading of the text increased from 73,4 dB to 76,8 dB ($p<0,02$). The parameter "bellow" has decreased from 26,8% to 14,7% ($p<0,02$). On the visit T2 all voice parameters remained stable, despite the considerable vocal load experienced by the teachers almost every day for 2 months after NMEPS.

Conclusion. Professions associated with an increased load of voice, of course, have a negative impact on the voice, including on his stamina. The findings of our study data showed that NMEPS of larynx may be one of the methods that is able to ensure the preservation of the stability of the teacher voice to numerous adverse effects, inevitably accompanied by his professional activity.

Objective dysphonia measures in the program Praat: acoustic voice quality index

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Introduction: Over the past several decades, many acoustic parameters have been studied as sensitive to and measure dysphonia, however, current acoustic measures might not be sensitive measures of perceived voice quality. A meta-analysis which evaluated the relation between perceived overall voice quality and several acoustic-phonetic correlates, identified measures that do not rely on the extraction of the fundamental period such the measures derived from the cepstrum can be used in sustained vowel as well as continuous speech samples. A specific and recently developed method to quantify the severity of overall dysphonia is the Acoustic Voice Quality Index (AVQI) that is a multivariate construct that combines multiple acoustic markers to yield a single number that correlates reasonably with overall vocal quality. **Methods:** This research is based on one pool of voice recordings collected in two sets of subjects: 60 vocally normal and 58 voice disordered participants. A sustained vowel and a sample of connected speech were recorded and analyzed to obtain the six parameters included in the AVQI using the program Praat. **Statistical analysis** was completed using SPSS for Windows version 12.0. **Results:** Correlation between perception of overall voice quality and AVQI: A significant difference exists ($t(95) = 9,5$; $p < 0,000$) between normal and dysphonic voices. **Conclusions:** the findings of this study demonstrate the clinical feasibility of the AVQI as measure of dysphonia severity.

Selected acoustic voice measures with mobile communication devices: yes or no?

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Background. Recording system as well as ambient noise level are known to infect acoustic analyses on voice recordings. With mobile communication devices (i.e., MCD; smartphones and tablet computers) strongly penetrating both commercial markets (e.g., respectively 58.3% and 68.5% in Flanders, Belgium) and clinical settings, increased use of such appliances for clinical voice analysis purposes can be anticipated. However, their mobility may induce differences in microphone-to-sound source distance and utilization in noise-loaded environments, and may therefore also influence the reliability of acoustic voice examinations. This study was therefore undertaken to assess the differences between a representative set of MCD's and reference clinical recording equipment.

Methods. Continuous speech plus sustained vowel of 50 subjects with various laryngeal pathologies were radiated in anechoic conditions and re-recorded with five MCD's (i.e., iPad 2, Google Nexus 9, iPhone 5S, Samsung Galaxy S5, and Nokia Lumia 520) and a high-quality voice recording equipment. Smoothed Cepstral Peak Prominence (i.e., CPPS) and Acoustic Voice Quality Index (i.e., AVQI) from the program Praat were determined on these 300 experimental tokens. Differences between the MCD's and the reference system were assessed with non-parametric Wilcoxon signed-rank tests with Bonferroni correction ($\alpha=.01$).

Results. For CPPS, only the Samsung Galaxy S5 did not show a significant difference with the reference recording system ($p=.019$). For AVQI, no significant difference emerged between the reference recording system and the iPad 2 ($p=.064$) as well as the Samsung Galaxy S5 ($p=.551$). All other differences were significant.

Discussion. Except for the non-significant differences, it is clear that MCD voice recording result in higher CPPS and AVQI. Caution is therefore warranted regarding implementation of MCD's as clinical recording methods, especially when comparing data from different data acquisition systems, when working with varying mouth-to-microphone placement and environmental noise, and thus also when using acoustic data as treatment outcomes measures.

SNOT 20 QUESTIONARY TEST IN RELATIONSHIP WITH VOICE ANALYSYS

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INTRODUCTION: The voice is the principal communication way between humans and the nasal structures contribute in the voice resonance, a difference in the nasal airway produce voice changes. The aim was correlate the nasal obstruction degree using a SNOT-20 questionnaire and the voice acoustic analysis.

METHODS: A cross study design on a third level hospital. Fifty eight non-smokers without laryngeal pathology volunteers were included. The demographic data: age and sex were registered. The volunteers answer laryngeal- esophagic reflux and the SNOT 20 questionnaires IN SPANISH and voice acoustic analysis was made.

We used a Jitter, Shimmer, intensity and Pitch to compare with the SNOT questionnaire results as a quantitative. We performed another analysis, we separate in two groups: SNOT-20 score less than 10 points and the second group with 10 points or more. Descriptive statistics were used for patients parameters (mean, range, standard deviation). A bivariate descriptive analysis, Shapiro-Wilk test analysis for normality was used. Quantitative variables were analyzed using Student "t" and Percentages, x² was used.

RESULTS: . Fifty eight volunteers was included; 25 female (43%) and 33 males (57%)The age mean was 22 years (± 1.7). The average of SNOT 20 was 15.8 (± 11.8). There is no statistic difference between the SNOT-20 with jitter, fundamental frequency, shimmer and voice intensity ($p = > 0.01$). When the groups were analyzed there were no differences in the gender groups and SNOT-20 points groups and the voice acoustic analysis.

CONCLUSIONS: There is no relationship between the nasal obstruction measured by SNOT-20 and the voice acoustic analysis. More studies to evaluate the relation between voice acoustic analysis and nasal obstruction are needed.

The guitarist - singer's voice: the effect of musical instrument - posture on MDVP and spectrogram.

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Purpose of the study. Previous studies put in evidence that so defined myofascial chains, according to postural modifications, may lead to changes in the voice output.

The aim of this study was to assess the association of the posture required in the playing guitar in respect to the voice output quality.

Materials and methods. 15 guitar players/singers (F. 8 - M. 7; average age: 28 years), without evidence of laryngeal diseases assessed by fiberoptic laryngoscopy, participated in this study. All subjects are guitarists (4 singing students; 2 singing teachers and 9 professional singers). All subjects were assessed by Multidimensional Voice Program (MDVP), spectrogram and osteopathic assessment in 2 singing situations, with and without playing guitar.

Results. In 15 studied subjects: 11 showed the voice turbulence index (VTI) increase in MDVP's parameters; 12 showed singer's formant decrease; 2 showed a singer's formant total decrease and 7 showed a formant total decrease at 4000 Hz. In 12 subjects with spectrogram's changes were observed 8 subjects that showed a left rotation of spine while playing.

Conclusion. The guitarist's posture influence the voice output, decreasing the closing rate power and increasing VTI rate. These changes induce, during the vocal performance, the voice penetrance lowering.

Variations of mucosal wave after autologous fascia graft

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Purpose of the study: To evaluate the recovery of the mucosal wave in a patient submitted to an autologous fascia graft as treatment to solve a closure defect generated by a scar or a sulcus vergeture.

Materials and methods used: We analyzed a series of 9 cases with more than 6 months of follow-up, that had an unilateral autologous fascia graft to solve a closure defect secondary to a scar or sulcus vergeture. We compare the mucosal wave between the two vocal cords, and glottic closure, at one week, one month, three months and six months after surgery.

Results: a week after surgery, most patients present a mucosal wave present, but with an amplitude less than 25% of that shown by the contralateral cord, and in three of them the wave was absent. After a month, we recovered the mucosal wave in all the patients, being in 6 of them of at least half of the amplitude of the contralateral cord. At three months, the mucosal wave was at least 75% of the contralateral wave in all but one patient. At 6 months after surgery in all patients, the mucosal wave was symmetrical to the contralateral one and in 2 of them of greater amplitude than the non-operated one. The closure defect, from the postoperative month, a complete closure was achieved in most patients, and at 3 and 6 months after surgery, a complete closure was achieved in 7 of the 9 patients.

Conclusion: The effect of the autologous fascia graft, provides a progressive improvement of the elasticity of the vocal cord and the mechanics of the mucosal wave from the postoperative month, being optimal results from the six postoperative months.

Authors and their affiliations.

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Videokymographic examination of voice in clinical practice

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This instructional course will be devoted to the fundamentals of videokymographic imaging and to the application of videokymography in clinical practice.

Videokymography is a high-speed videolaryngoscopic examination method, which allows obtaining detailed information of the vibratory behavior of the vocal folds and surrounding tissues. In contrast to the standard strobovideolaryngoscopic methods, which work properly only on regular voices and do not allow detecting irregularities, the high-speed imaging does not suffer from this limitation and allows detecting real vibration of the vocal folds.

Videokymography differs from the other high-speed videolaryngoscopic methods in that it uses a special videokymographic camera which provides two images simultaneously – in the left half it shows the standard laryngoscopic image (50 or 60 images per second), in the right half it provides the kymographic image showing the vibratory behavior of a selected part of the vocal folds in high speed (7200 line images per second). The high-speed kymographic images are available immediately, which makes the method friendly for use in busy clinical practice. Research on videokymography in voice disorders identified over 30 vibratory features which reveal on various causes of vibration disorders of the vocal folds .

In clinical practice, videokymography allows detailed diagnosis of vibration disorders of the vocal folds in small developing lesions, which are difficult to detect using other methods. It enables an early detection of cancerous vocal fold tissue. It helps detecting organic basis of damaged vocal fold tissue, such as tiny scarred areas, increased stiffness of the mucosa and of the submucosal tissues, in cases which have otherwise been considered to be functional disorders.

The course will demonstrate the basics of videokymographic examination and show case examples of characteristic pathologic conditions, which were diagnosed thanks to videokymographic findings.

Instructors: Jitka Vydrova, Jan G. Svec

Research supported by the Technology Agency of the Czech Republic project no. TA04010877

Videokymographic Visualization of Phonasthenia: a Non-Organic Voice Disorder

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Background: Phonasthenia or vocal fatigue is a voice disorder where the larynx looks essentially normal and dysphonia isn't heard, but rather felt by the patient. This study aims to explore some subjective and quantitative changes associated with such a unique voice disorder.

Methods: 68 subjects (37 phonasthenic patients and 31 normal subjects) were subjected to a detailed data collection including analysis of subjective complaints, Videokymographic (VKG) quasi- objective parameters, maximum phonation time (MPT) and acoustic analysis [baseline evaluation] and then loaded their voices through prolonged loud reading for 45 minutes. A second evaluation [experimental] was done after the loading task.

Results: before vocal loading, patients had significantly more symptoms in all questionnaire questions and maximum width difference in kymography than controls. When pre- and post-loading values were compared, both study groups experienced more symptoms after loading (significant in most of questions) while the pre- and post-VKG parameters didn't show significant differences neither in patients nor controls.

On comparing their percent change, the only statistically significant difference between the two groups was in the questionnaire's total score, where the control group displayed a significantly greater change.

Conclusion: results showed that phonasthenia patients had more vocal fatigue symptoms and more amplitude asymmetry between left and right vocal folds than normal subjects.

VOICE DISORDERS IN TEENAGERS DURING VOICE MUTATIONS

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One of the most critical periods in the development and formation of the voice is a mutation period. The mutation - a physiological process, during which occur most often organic and functional dysphonia.

According to various authors, the prevalence of voice disorders in mutation period is from 6 to 24%.

The purpose of research - to develop a scientifically based integrated model for the prevention of exposure correction dysphonia during the mutation on the basis of in-depth study of the functional characteristics of the voice, personality characteristics of adolescents and the use of biofeedback.

Materials and Methods - 64 adolescents aged 11-16 years, the city of Almaty, students of music schools surveyed in the period from September 2015 to May 2016.

For the study of objective indicators of the functional state of the vocal apparatus was used to study the intensity, pitch, spectral acoustic analysis of voice, "the definition of the field of voice," maximum phonation time, data from clinical trials (laryngoscopy, videolaryngoscopy). Studies were performed in dynamic (at the first treatment and after treatment, both before and after the dosage of voice load).

Results: As a result of studies on the aggregate score of four groups of children were allocated depending on the severity of voice disorders:

- The rate (children who have received such an assessment, don't needs further correction)**
- 1 type of violation (easy)**
- 2 type disorders (mean)**
- 3 type of disorder (severe)**

Violations voice mutation in the period were often caused by social and psychological factors.

Thus, the students conducted a survey, we identified "risk groups", which was sent for in-depth clinical and pedagogical survey for ENT doctor and Phoniatics. This group included 22 students, representing 34.4% of the surveyed children and adolescents aged 11 to 16 years. Among the surveyed girls - 34, 30 young men. It was found that more smoothly mutation occurs in girls, but dysphonia were detected more frequently in them rather than in boys.

Conclusion: presented qualitative scoring system for assessing the vocal apparatus of functional characteristics, breathing, voice and personality characteristics of adolescents during puberty, which provides differentiated diagnosis and allows to predict the effectiveness of corrective action.

Violations of votes during the mutation variability of nature and severity depend on the personal psychological characteristics of adolescents.

PH-VSE-01

Cervical osteophytes and dysphagia:a case report

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Objectives : Dysphagia is a common complaint of patients . Such patients may present to physicians in a wide variety of fields, including family

practice, gastroenterology, otolaryngology, orthopaedics , neurology, rheumatology, psychiatry, cardiology and pulmology .

Cervical bony outgrowths or osteophytes are common and usually asymptomatic . In some cases, they may be associated with dysphagia, dysphonia , dyspnea and pulmonary aspiration. The most common causes of cervical osteophytes are osteoarthritis, ankylosing spondylitis and ankylosing hyperostosis or Diffuse Idiopathic Spinal Hyperostosis (DISH), also known as Forestier's Disease. Other causes are hypoparathyroidism, trauma, acromegaly, ochronosis and fluorosis.

Method and results : We reported a 52 year old female patient with a 2 years history of dysphagia. Clinical , radiographical findings, endoscopy computed tomography were presented.Osteophytes were found in segment c5/6/7. Immediate relief of the symptoms was accomplished by surgical excision of the hyperostosis through an antero-lateral approach .

Conclusion: Clinical , radiographical findings (including barium oesophagogram and computed tomography) and endoscopy should be carefully performed to rule out additional pathology in such patients. Conservative care is the initial treatment of choice, whereas surgical excision of the hyperostoses is reserved for difficult cases.

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PH-VSE-02

Continuum Theory – Presbyphagia to Dysphagia. Is It a fact? Functional assessment of swallowing in the elderly.

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OBJECTIVES: We are looking for predictors to determine if there was dysphagia among older adults and tried to determine the continuous trend from presbiphagia to dysphagia.

Method: This is an observational cross-sectional study. A total of 100 healthy-adults (58 females and 42 males) aged 60-95 years (average 73.2 years) recruited in social events answered a questionnaire regarding cough, choking, and throat clearing symptoms and underwent a fiberoptic endoscopic evaluation of swallowing (FEES).

Results: None of the symptoms (cough, choking, and throat clearing) were significantly associated with stasis of saliva or food, increased number of swallows, or correlated with penetration and aspiration.

Patients with penetration better correlated to food stasis than saliva alone. Those who aspirate had penetration ($p = 0.007$), and saliva stasis ($p = 0.003$).

Stasis prevalence was 39 +9.6 % for food while 6 +4.7 %f or saliva. There were no saliva and food stasis in 64.9%, but 35.1% of subjects with food stasis without saliva stasis.

Conclusions: Saliva stasis may predict dysphagia. However, absence of saliva stasis does not exclude it. Our data on food stasis during FEES diagnoses mild cases of dysphagia and suggests continuous trend from presbyphagia to dysphagia. All three symptoms isolated or combined were insignificantly associated with dysphagia. FEES brings valuable predictors in healthy socially active elderly, whose dysphagia would have been undiagnosed.

Detection of voice changes due to penetration/aspiration via acoustic voice analysis

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Detection of voice changes due to penetration/aspiration via acoustic voice analysis

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Abstract

Penetration/Aspiration (P/A) can occur during swallowing. Ingested materials may enter the larynx and remain on the vocal folds. Wet or voice change is one of the indicators for identifying the P/A in clinical evaluation. The present study was to investigate the feasibility of identifying P/A via acoustic voice parameters. 165 patients referred to a videofluoroscopic swallowing study (VFSS) were included in the study. The patients were divided into two groups based on the results of VFSS. P/A group that had the ingested materials on or below the vocal folds was 59 patients (42 males, 17 females). Non_P/A group that did normal swallowing was 106 patients (49 males, 57 females). The major cause of swallowing disorders was stroke in the groups. A sustained vowel /a/ for at least 3 seconds was recorded before and after VFSS. Ten acoustic voice parameters were measured using PRAAT, including fundamental frequency (F0), standard deviation of F0, Jitter, relative average perturbation (RAP), Shimmer, amplitude perturbation quotient (APQ), harmonic-to-noise ratio (HNR), noise-to-harmonic ratio (NHR), number of voice breaks (MDVP calls it NUV), and degree of voice breaks (MDVP calls it DVB). Changes of each acoustic voice parameter before and after VFSS between the two groups were compared with repeated measures mixed ANOVA. There were no significant differences in ten acoustic voice parameters before and after VFSS, whereas RAP was a significant difference before and after VFSS according to the two groups ($P=0.030$). The RAP of P/A group decreased from 0.649% before to 0.520% after VFSS. However, The RAP of Non_P/A group increased from 0.311% before to 0.393% after VFSS. Our results suggest that acoustic voice analysis can detect voice changes after penetration/aspiration (P/A) during swallowing

Keywords :

Swallowing disorders, voice, acoustic analysis, videofluoroscopic swallowing study

PH-VSE-04

Dysphagia in hospitalized patients.

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Purpose : The aim is to show the presence of dysphagia in hospitalized patients in a general hospital, with different comorbidities, evaluate an alternative nutritional support, and the clinical diagnosis of pneumonia, the presence of tracheostomy and speech therapy.

Method(s) : Retrospective review of medical records of patients evaluated in Samaritano Hospital, São Paulo, Brazil, from 2009 to 2015, identifying the presence of dysphagia by Fiberoptic Endoscopic Evaluation of Swallowing (FEES), an alternative nutritional support, tracheostomy, the presence of pneumonia and speech therapy.

Result(s): Our sample consisted of 164 patients, age ranged 24-103 years.

FEES was performed in 144 patients. The findings were saliva stasis in 34,75%, stasis of food in 76,82%, laryngeal penetration in 53,65%, aspiration in 39,02%, oropharyngeal dysphagia in 84,75%, vocal palsy in 17,07%. The patients fed through a NET were 59,14%, and 16,43% by gastrostomy (PEG), 62,19% had alternative supply via . Current pneumonia was found in 46,34% and past pneumonia in 26,82%. The need for tracheostomy was showed in 17,68% patients. Speech therapy was applied in 92,07% patients.

Conclusions: Oropharyngeal dysphagia is a prevalent risk factor in hospitalized patients and may be responsible for the installation of alternative supply routes as well as the cause of pneumonia, and need of respiratory support by tracheostomy. We should be emphatic that speech therapy is essential for the clinical management of these patients.

Dysphagia in patients in the Intensive Care Unit (ICU)

E.De lima alvarenga*(1)

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Purpose-The aim is to show the presence of dysphagia in ICU patients with different comorbidities, evaluate an alternative nutritional support, and the clinical diagnosis of pneumonia. The presence of tracheostomy and speech therapy.

Method - Retrospective review of medical records of patients evaluated in Samaritano Hospital ICU, São Paulo, Brazil, from July 2009 to August 2015, identifying the presence of dysphagia by Fiberoptic Endoscopic Evaluation of Swallowing (FEES), an alternative nutritional support, tracheostomy, the presence of current or past pneumonia and speech therapy.

Results - Our sample consisted of 88 patients, 46 (52,7%) females, age ranged 24-103 years (75,65).

From the total sample, five patients did not have indication for evaluation of swallowing, 10 patients showed suggestive signs of oral and/or oropharyngeal dysphagia (stasis, penetration and/or aspiration of saliva), and one septic patient with naso-enteral tube (NET) and tracheostomy was not evaluated with FEES because the exam would not modify the conduct at that time.

FEES was performed in 71 patients.

The findings were stasis of food in 60/71 (83,3%), laryngeal penetration in 40/71 cases (56,33%), aspiration in 28/71 pacientes (39,43%). The aspiration was present in 34/87 (39,08 %) and oropharyngeal dysphagia in 75/88 (85,22%) patients. .

The patients fed through a NET were 56 (63,63%), and five (5,68%) by gastrostomy (PEG), 79% had alternatively supply via . Current and/or past clinical diagnosis of pneumonia was found in 46/88 (52,27%) . The need for tracheostomy was showed in 23 patients (26.13%) . Speech therapy was applied in 84 (95.45%).

Conclusions –Oropharyngeal dysphagia is highly prevalent in ICU patients and may be responsible for the installation of alternative supply routes as well as the cause of pneumonia, and need of respiratory support by tracheostomy. We should be emphatic that speech therapy is essential for the clinical management of these patients.

Evaluation of the Pharynx and Upper Esophageal Sphincter Motility using High-Resolution Manometry with Parkinson's disease

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Purpose of study

Dysphagia is a common symptom of Parkinson's disease(PD).

In addition, controversy exists regarding the relationship between clinical disease and dysphagia severity. Therefore, the precise screening of dysphagia with PD patients is important.

Until now, videofluoroscopic swallowing study and video endoscopy have been widely used to analyze dysphagia in PD patients.

However, these screenings are qualitatively analyzing and a subjective indicator of the presence of deglutition problems.

Recently, high-resolution impedance manometry (HRIM) which evaluate swallowing pressure have been developed and used to investigate the dysphagia from pharynx to UES.

HRIM can give us more quantitative information, calculating swallowing pressure.

Our aim in this study was to evaluate the precise measures of dysphagia with PD patients, quantifying the swallowing pressure from pharynx to upper esophageal sphincter (UES), and confirm the relationship between swallowing pressure and the severity of PD.

Materials and methods used

HRIM (The Starlet HRM system Star Medical, Inc, Tokyo, Japan) is used for all data collection.

We performed HRIM on 51 patients with PD patients (31 males, 20 females, aged 54-88, mean 74.5 years). We measured the swallowing pressure (veropharynx, oropharynx, UES) by using HRIM.

We also evaluate PD patients clinically.

First, the clinical severity of PD patients is classified by using the H&Y staging scale.

Second, based on videofluoroscopic swallow study, we classified PD patients into two groups, one with aspiration and the other without aspiration.

Result

No significant differences were found between PD patients about sex and age. The clinical severity is not always related to the dysphagia and aspiration of PD patients.

But, in comparison of stage II and stage V, the subjects in stage V have larger UES pressure during resting and lower oropharyngeal pressure during swallowing than in stage II.

In addition, there is more significant difference of UES and oropharyngeal pressure between the aspiration group and no aspiration group.

Conclusion

We can obtain quantitative evaluation of dysphagia to use HRIM.

The swallowing pressure is strongly related to the risk of aspiration for PD patients. To analyze the swallowing pressure in more detail, we can skip the risk of aspiration pneumonia.

Furthermore, HRIM may be helpful for treatment of dysphagia in the PD patients.

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Furthermore, HRIM may be helpful for treatment of dysphagia in the PD patients.

FUNCTIONAL ENDOSCOPIC EVALUATION OF SWALLOWING (FEES) AND ITS CORRELATION WITH BODY MASS INDEX (BMI) IN ELDERLY.

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FUNCTIONAL ENDOSCOPIC EVALUATION OF SWALLOWING (FEES) AND ITS CORRELATION WITH BODY MASS INDEX (BMI) IN ELDERLY.

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Objective: evaluate and correlate the characteristics of swallowing and the body mass index (BMI) of institutionalized elderly individuals and older adults.

Method: cross-sectional study, composed of 58 individuals institutionalized (GI) and non-institutionalized (GII) who fed orally, aged over 60, sex and age matched. Submitted to functional endoscopic evaluation of swallowing (FEES) and classified according to BMI as underweight, healthy weight, overweight and obese. Excluded individuals with stroke sequelae, antecedents of head and neck surgery and radiotherapy.

Results: nineteen female and 10 male, 61-96 years (average 79). FEES

findings: GI: food stasis in 19 individuals (65.5%), laryngeal penetration in 4 (13.7%), aspiration in 2 (6,8%). Penetration and aspiration in 2 (6,8%).

Oropharyngeal dysphagia was present in 19 individuals (65.5%). The BMI was evaluated and 13,7% were classified as underweight, 48,2% as overweight or obese, and 37,9% as healthy weight. GII: food stasis in 12 individuals (41,3%),

laryngeal penetration in 2 (6,8%), no aspiration. Oropharyngeal dysphagia

present in 12 individuals (41,3%).The BMI evaluation was 3,4% as underweight, 51,7% as overweight or obese and 44,8% as healthy weight. No saliva stasis in both groups. No statistic difference was observed between groups considering dysphagia and BMI (chi-square test, Fisher test).

Conclusions: Oropharyngeal dysphagia is highly prevalent in institutionalized and non-institutionalized elderly individuals.

Overweight and obesity prevailed in this population.

There is no correlation among FEES findings and BMI.

interdisciplinary Protocol for Dysphagia assesment in acute stroke: Outcomes in survival and aspiration pneumonia improvement.

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Introduction: Oropharingea dysphagia (OD) is a very important symptom present in a lot of diseases. Acute stroke (AS) is the most common cause of OD and aspiration pneumonia (AP). The ENT specialist is the most qualified to study patients with dysphagia, since this problem is usually located in the oral and pharyngolaryngeal región. We collaborate with neurologists of Stroke Unit (SU) to follow a dysphagia management protocol and improve survival and aspiration pneumonia (AP) outcomes

We have established a integrated management protocol for DO in patients with AS and compare the incidence of AP before and after the implementation of a protocol for the integrated management of OD in the SU of the Hospital Universitario Rey Juan Carlos (HURJC) in Mostoles (Madrid).

Methods: We have established three study periods:

- Preimplantation period (PiP: September 2013 - February 2014), before starting the Protocol.
- Initiation period (InP: March 2014 - June 2014) take off of protocol.
- Consolidation period (CP: June 2014 - March 2015).

We clasify patients admitted to the SU in two groups. Patients with low risk of OD (TIA or mild stroke) in which the screening is done through an adaptation of NOD step-wise protocol of Ickenstein, performed by SU nursing, and Patients with moderate or high OD risk (moderate / severe or vertebrobasilar stroke), where the screening is performed by a trained nurse of Dysphagia Unit (ENT Unit). She asses patients with bedside evaluation and Volume-viscosity test (Clavé). This same nurse establishes the need for further invasive tests for the assesment of dysphagia like Fiberoptic assesment of swallowing (FESST) and / or Videofluoroscopy (VFSS). She also adapts individual diet characteristics and even provides indications of dysphagia rehabilitation.

Results: We included 420 stroke patients (PiP: 78 patients, InP: 100 patients and CP: 242 patients). The groups were comparable in clinics AND epidemiology. OD have some degree of 37.7% in the PiP, 36% on InP and 32% for CP. We found that AP prevalence was 32% in the PIP, 10% on InP (OR = 4.2; p = 0.0002) and 7% in the CPs (OR 6.6, p = 0.0001). Mortality rate was 16.6% in the PiP, 10% in the INP (p = 0.09) and 8.6 in CPs (p=0.001).

Conclusions: In our hospital, the implementation of a protocol for the integrated manegement of dysphagia has reduced the mortality and aspiration pneumonia rate in patients of Stroke Unit.

Morbidity and Mortality 30 Days Following Open Tracheotomy in the Elderly Population

S.Ovnat tamir*(1)

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Background: The first aim of our study was to investigate the morbidity and mortality within 30 days following surgical tracheotomy (ST) in the elderly population. The second aim was to examine a single institution's experience regarding ST in the elderly age in light of the scare information that exists regarding the safety of this procedure in the age group.

Materials and Methods: We retrospectively identified and reviewed charts of adult patients >18 years who had undergone a ST between January 1, 2010 and December 31, 2015. The data analyzed included age, gender, history of current disease leading to ST, past relevant medical and surgical history, timing of surgery (day of hospital admission was set as "day 0"), blood tests prior to surgery [i.e. hemoglobin (Hgb); white blood cell (WBC) count) level, partial thromboplastin time (PTT); international normalized ratio (INR)], surgical findings [i.e. type of tracheotomy performed; subjective impression of neck length; neck extension difficulties; presence of goiter], intra-operative complications [i.e. bleeding; difficulties in cannula insertion], post-operative complications [i.e. bleeding; wound infection; sepsis; re-cannulation; 30-day mortality] and cause of death were recorded. Patients with previous ST, patients who underwent percutaneous tracheotomies, and STs that were performed in trauma scenarios were excluded.

Results: 311 patients underwent ST were included. Twenty-two patients were in the early ST group (14 days from admission). The mean age was 72 (range 62-87) and 82 (74-88) years of age in the early and late ST groups, respectively. Main comorbidities such as skin disorders and COPD did not differ between groups, nor the use of anti-coagulation therapy nor high WBC count prior to surgery. Hemoglobin measurements were different between both groups (11.7 (9.1-13.45) vs 9.4 (8.6-10.6) g/dL, early versus late, respectively. Intra-operative and post-operative complications were similar for bleeding, difficulties in tracheotomy insertion, multiple cannula insertions, infection of tracheotomy site and sepsis. For all-cause mortality at 30 days post-tracheotomy, there was no difference between both groups (27.3 vs 29.1% early vs late, respectively).

Conclusion: ST in the elderly is a high risk procedure, and should be performed when deemed necessary as early as possible, in order to permit the best possible recuperation for the patient.

The senile functional evolution of the larynx after supracricoid reconstructive surgery

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Purpose of the study: The goal has been to evaluate functional outcomes, in a cohort of elderly patients previously underwent to supracricoid laryngectomy (SCPL), to look at the senile evolution of the laryngeal post surgical function comparing the amount of resection and grade of possible impairment of swallowing and phonatory parameters.

Material and methods used: Thirty-three patients underwent SCPL were recruited for a retrospective study. All the patients had three-monthly visits for a period up to 10 years (range 5–10 years), during which the functional parameters were recorded, analyzed and, at the end of the study, compared with baseline. The patient cohort was made up of 26 male (78.7 %) and seven female patients (21.3 %). The patients were treated with 17 CHEP and 16 CHP. The arytenoid cartilage on the tumor-bearing side was totally resected in 8 CHEP (+A) and 7 CHP (+A), respectively. At the time of the study baseline, i.e., at the end of the period of post-operative follow-up, the age of the cohort ranged between 63.2 and 67.5 years with a mean of 66.6 years. Exclusion criteria were: poor level of swallowing and/or phonation at baseline, pre and/or postoperative radiotherapy, salvage reconstructive surgery on previous partial surgery, laryngeal recurrences treated with laser excision, cognitive and neurological disease and pneumopathies with a reduction in vital lung capacity.

Results: The results suggested that long-term post surgical functional problems may develop also in the neolarynx where the effects of the reconstructive surgery, on speech and swallowing, are largely stabilized. The presence of arytenoid resection had significantly impacted on the occurrence of aspiration even if the overall number of dysphagic patients was not statistically significant compared to baseline ($P=0.082$). The number of patients who had partial arytenoid resection, adequately represented within the study group (45.4 %), presented a significant swallowing criticality in relation to a major surgical extension (CHP+A 4/7), showing a statistical significance in order of retention of bolus ($P = 0.047$) and laryngeal penetration ($P = 0.048$).

Conclusion: This data, in our view, while not supported by a large number of subjects considered dysphagic from baseline (27.2%), however, deserve etiopathogenetic consideration in the potential risk of dysphagia in this type of patient, suggesting that long-term post surgical functional problems may develop also in the neolarynx where the effects of the reconstructive surgery, on speech and swallowing, are largely stabilized.

Analysis of Dysphagia Patterns Using a Modified Barium Swallowing Test Following Treatment of Head and Neck Cancer

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Purpose: The purposes of this study were to evaluate specific dysphagia patterns and to identify the factors affecting dysphagia, especially aspiration, following treatment of head and neck cancer.

Materials and Methods: A retrospective analysis of 57 patients was performed. Dysphagia was evaluated using a modified barium swallow (MBS) test. The MBS results were rated on the 8-point penetration-aspiration scale (PAS) and swallowing performance status (SPS) score.

Results: Reduced base of the tongue (BOT) retraction (64.9%), reduced laryngeal elevation (57.9%), and cricopharyngeus (CP) dysfunction (47.4%) were found. Reduced BOT retraction was correlated with clinical stage ($p=0.011$) and treatment modality ($p=0.001$). Aspiration in 42.1% and penetration in 33.3% of patients were observed. Twenty-four patients had PAS values over 6, implying aspiration. Forty-one patients had a SPS score of more than 3, 25 patients had a score greater than 5, and 13 patients had a SPS score of more than 7. Aspiration was found more often in patients with penetration ($p=0.002$) and in older patients ($p=0.026$). In older patients, abnormal swallowing caused aspiration even in those with a SPS score of more than 3, irrespective of stage or treatment, contrary to younger patients. Tube feeders ($n=20$) exhibited older age (65.0%), dysphagia/aspiration related structures (DARS) primaries (75.0%), higher stage disease (66.7%), and a history of radiotherapy (68.8%).

Conclusion: Reduced BOT retraction was the most common dysphagia pattern and was correlated with clinical stage and treatment regimens including radiotherapy. Aspiration was more frequent in patients who had penetration and in older patients. In contrast to younger patients, older patients showed greater risk of aspiration even with a single abnormal swallowing irrespective of stage or treatment.

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Treatment of a vocal cord paralysis with hydroxyapatite v / s thyroplasty with gore-tex. Report of a case.

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PURPOSE OF THE STUDY: Paresis and paralysis in abduction of a vocal cord is a frequent condition. Treatment includes rehabilitation and surgical therapy. Within the latter there are multiple and varied options, including general and local anesthesia, percutaneous and transoral approach and use of permanent and temporary materials, depending on the choice of patient's needs and the experience of the surgeon. We introduce our experience in a patient with unsuccessful results with hydroxyapatite and his subsequent re-intervene with percutaneous surgery and goretex prosthesis.

MATERIAL AND METHODS: 41-year-old patient with a history of papillary thyroid carcinoma with postoperative left vocal cord paralysis. The fibroscopic examn shows a complete paralysis of the left vocal cord. It was decided use general anesthesia, transoral surgery and filling with hydroxyapatite of the vocal cord. The pacient shows an initial favorable response, but with a progressive loss of vocal quality. A year later, it was decided to Re-intervene with percutaneous surgery, local anesthesia and goretex prosthesis. It was evaluated the response to the treatment with the GRABS scale and the maximum phonatory time (MPT)

RESULTS: preoperative evaluation: G: 3, R: 2, A: 1, B: 3, S: 2 = 11, MPT: 7. Evolves favorably with an almost complete voice recovery. It´s re-evaluated one month later post-surgically, observing: G: 1, R: 1, A: 0, B: 1: S: 1 = 4, MPT: 20. The re-evaluation at 6 months does not show phonatory changes.

CONCLUSION: vocal cord paralysis produces a significant loss of quality of life. Choosing the right treatment, depending on each patient, is critical for a successful result.

Voice rehabilitation after laryngectomy. The role of multidisciplinary team

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Purpose of the study: to improve outcomes of post-laryngectomy rehabilitation.

Materials and methods: 243 voice prosthesis were installed after laryngectomy in P. Herzen Moscow Research Institute. In 85% voice rehabilitation was successful after prosthesis installation and speech therapists treatment, 15 % of patients had a spasm of pharynx constrictors muscles, which require myotomy as a next step.

The school for patient after laryngectomy was organized in P. Herzen Moscow Oncology Research Institute. Surgeons, speech therapists, attorney's, company representatives, who develop different types of voice prosthesis and tracheostomy tube, take part in this activity. It's regularly classes 1 times at month. From 10 to 25 patients regularly take part at this classes. On this classes patients can find answers for all main questions: how to take care for tracheostomy tube and voice prosthesis, how to solve all problems with this devices and with speaking production function. How to provide right rehabilitation at work place and home. How to solve all law aspects and troubles with voice prosthesis replacement. At this classes patients can not only find main information, they can be in touch with each other, find information about new investigations and new devices in this field.

Results: This school provide multidisciplinary approach in rehabilitation after laryngectomy, which prolonged time of voice prosthesis realization and provide better quality of life.

Conclusion: Better rehabilitation after laryngectomy provides better conditions for patients life and decreases treatment price.

Closing of dipnoous complex defects in patients with cancer of maxillofacial area

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Purpose of the study: to improve outcomes of functional and social rehabilitation in group of patients with maxillofacial area cancer after radical tumour resection.

Materials and methods: Reconstruction of maxilla-facial region was performed in 289 patients for 1992 to 2016 r. 37,5 % of patients had primary cancer. 35,0% had III stage, 60,0% - had IV stage. 76,8% had epithelial histological type of cancer T3 - 38,7%, T4 - 58,1%. 14% of patients had skull base resection. Single-step reconstruction was performed in 62%, tardy reconstruction was performed in 38%.

346 flaps were used: visceral - 40 gastro-omentum flaps, 13 colic omentum flaps, 32 omentum flaps; skin-musculo-costal flaps: 14 radial flaps, 19 iliac flaps, 30 tibial flaps, 124 musculo-rib flaps, 2 scapula flaps, 3 scapula-rib flap; 39 skin-musculo flaps 30 skin radial flaps . Tardy endoprosthesis replacement of TMJ was performed in 9 cases, endoprosthesis replacement and epiteses replacemets was performed in 43 cases.

Results: 25% of patients had post-operative complications. Mortality rate was - 2,8%. 5,1% of patients had flap necrosis. Functional rehabilitation was achieved in 83% of cases. Teeth implantation and prosthesis implantation was performed in 16% of cases.

Conclusion: Closing of complex defects with microsurgical reconstruction and maxillofacial orthopaedic rehabilitation provide better functional and social rehabilitation.