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Laryngeal malignancy: diagnostics and treatment

Occupational cancer of the larynx: a review

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Introduction: WHO and IARC estimate that globally 2.5 to 8 % of all cancers are related to occupation. Probably the amount of laryngeal cancers of occupational etiology is largely underestimated. An exhaustive review is presented of the literature in order to clarify current knowledge about confirmed and suspected occupational carcinogens for the larynx.

Materials and methods: Systematic literature review.

Results: Schematically 3 categories can be defined, essentially on basis of epidemiological studies. Confirmed carcinogens for the larynx are asbestos and sulfuric acid mists. Probable carcinogens are cement, polycyclic aromatic hydrocarbons (PAH) and wood dust. Suspected carcinogens with currently insufficient evidence are: organic solvents, formaldehyde, coal dust, leather dust, cotton dust. Interpretation of epidemiological data is also presented from the point of view of insurance medicine.

Non-epithelial neoplasms of larynx and hypopharynx—epidemiologic and diagnostic evaluation.

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Introduction: Rare incidence and various histological origin of non-epithelial neoplasms (NEN) of larynx and hypopharynx may cause the diagnostic process difficult and delay the treatment.

Materials and methods: Retrospective analysis of patients with histopathologically confirmed NEN between 2001 and 2011 was performed. There was evaluated the epidemiology, diagnostic methods and performed treatment.

Results: NEN of larynx and/or hypopharynx were established in 18 patients (9 women, 9 men), mean age—60.3 years. 10 patients had malignant neoplasms and 7—benign tumors. Most commonly soft tissue neoplasms were diagnosed (n = 8). 4 patients had lymphoma, 4—chondrosarcoma and there was one case of laryngeal paraganglioma and malignant melanoma. Clinically neoplasms manifested as tumors covered by unchanged mucosa. Characteristic features were observed on computed tomography for certain cases of these neoplasms. The results of the tumor biopsy were in most of the cases not diagnostic.
more often than male teachers (68.2 % vs. 50.0 %, $\chi^2 = 6.006$, $p = 0.014$). Significant statistical correlation was found between subject specialization and voice disorders ($\chi^2 = 33.033$, $p = 0.017$). There are four groups of risk factors related to teachers’ voice disorders: wrong voice using habits, medical problems, inadequate physical environment of classrooms, and disadvantaged psycho-social conditions.

**Voice assessment in parkinson disease and multiple sclerosis patients**

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**Introduction:** The aim of study is to evaluate and to compare the subjective perception of the voice quality in patients with Parkinson disease (PD) and patients with Multiple Sclerosis (MS) by Voice Handicap Index (VHI).

**Materials and methods:** Patients with mild-to-moderate form of the PD (N = 22) and patients with Multiple Sclerosis (MS) by Voice subjective perception of the voice quality in patients with Parkinson disease (PD) and patients with Multiple Sclerosis (MS) by Voice.

**Results:** The average VHI in PD group was 19.1 ± 17.5 (CG:4.04, $p < 0.05$), and in MS group 16.6 ± 14.7 (CG:4.6, $p < 0.001$). The comparative analysis between the PD and MS showed similar subscores for emotional and functional subitems of the VHI and different subscore for physical subitem, higher for PD (10.8 vs. 7.4). In both groups male patients rated all three subitems higher, but with no significant difference.

**Progress in automated categorization of normal and pathological voices**

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**Introduction:** The aim of the present study was to evaluate the accuracy of the elaborated automated voice categorization system when classifying voice signal samples into the healthy and pathological classes.

**Materials and methods:** The effectiveness of ten different acoustic voice signal feature sets in the classification of voice recordings of sustained vowel sound/a/into the healthy and two pathological voice classes was investigated, and a new approach to building a sequential committee of support vector machines (SVM) for the classification was elaborated.

**Results:** A correct classification rate (CCR) of over 92 % when classifying into the healthy-pathological voice classes, and over 90 % when classifying into three classes.

**Conclusion:** A high CCR obtained by automatically discriminating classes of voice disorders allows the anticipation that future development of an automated voice categorization system will serve as a screening role in clinical applications.

**Videolaryngostroboscopy, perceptive, acoustic and voice handicap self-perceptive evaluation in adult patients with Parkinson’s disease**

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**Introduction:** Parkinson’s disease (PD) is considered a progressive neurodegenerative condition characterized by tremor, rigidity, postural instability and bradykinesia. PD can damage the larynx and cause vocal fatigue, dysphonia and is usually associated with laryngeal tremor.

**Objective:** To evaluate the laryngeal manifestations of PD by assessing videolaryngostroboscopy, perceptive, acoustic and self-perceptive evaluation.

**Methods:** A prospective study by evaluating 18 patients with PD in the period from March to September 2011. Patients were evaluated through videolaryngostroboscopy, perceptive analysis of the voice through the GRBASI scale, acoustic analysis of the voice and the measurement of voice handicap through the VHI (Voice Handicap Index) questionnaire. **Results:** Clinical complaints were referred to by 13 patients, mainly dysphonia (72.22 %) and vocal fatigue (33.3 %). The most frequent laryngoscopic finding was the laryngeal tremor (83.33 %). Nine patients presented vocal cords closing predominantly in open phase. Acoustic evaluation of voice and self-perceptive evaluation through VHI questionnaire were changed.

**The effects of phoniatric therapy on acoustic parameters in patients with vocal nodules**

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**Introduction:** The authors present the results obtained using acoustic vocal analysis before and after phoniatric therapy applied to a group of patients with vocal nodules.

**Materials and methods:** We studied a group of 12 patients aged between 20 and 43 years. The diagnosis was established by clinical and videostroboscopic examination of the larynx. The voice acoustic analysis was performed using fingWAVES – Voice Clinic Suite Pro before and after phoniatric therapy. We used Voice Disphonia Index counted before and after treatment as a subjective satisfaction parameter. As objective parameters in our study we registered F0 max, F0 min, J %, SH %, GNE, MPT and DSI. A complete registration of singing and speech voice profile was performed for each patient.

**Results:** All patients followed phoniatric treatment in the outpatient department, three times per week for twelve weeks. After this period of time we registered various improvement rates for F0max, J %, SH %, GNE and DSI in 8 out of 12 patients.