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## ACTUALIZACION SOBRE EL DIAGNOSTICO Y TRATAMIENTO DE LA DISFONIA

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La investigación cuantitativa en laringología brindó la posibilidad de diagnosticar y tratar a los pacientes con disfonía sobre la base de los hallazgos científicos. La combinación de videostroboscopia digitalizada y, especialmente, glotografía, junto con otros parámetros acústicos y fisiológicos posibilitó dilucidar aspectos funcionales y de la mucosa.

### UPDATES IN LARYNGOLOGICAL RESEARCH ON DYSPHONIA



Autor:

[Mette Pedersen](#)

Columnista Experta de SIIC

Institución:

[Medical Centre, Copenhagen, Dinamarca](#)

[Artículos publicados por Mette Pedersen](#)

Aprobación: 9 de Agosto, 2006

Recepción del artículo: 27 de Julio, 2006

Primera edición: 14 de Mayo, 2007

Published in SIIC Salud

#### Abstract

The voice is a current topic of focused research in the field of otorhinolaryngology. There are, however, no evidence-based studies focusing on the diagnosis and treatment of dysphonia - particularly of non-organic dysphonia (with or without small swellings of the vocal cords). Qualitative measurement methods have been well-established among laryngologists, but quantitative methods which would facilitate documentation of treatment effects in prospective, randomized clinical trials with follow-up are lacking. New quantitative measurement options are discussed.

#### Key words

[laryngology](#), [videostroboscopy](#), [acoustics](#), [mucosa](#), [functional aspects](#)

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#### Resumen

La voz es un tema de investigación actual en el campo de la otorrinolaringología. Sin embargo, no hay estudios basados en hallazgos científicos que se centren en el diagnóstico y tratamiento de la disfonía, especialmente la disfonía de causa no orgánica (con tumefacción leve de las cuerdas vocales o sin ella). Los métodos de investigación cualitativa están bien establecidos entre los laringólogos, pero se carece de métodos cuantitativos que posibiliten la

documentación de los efectos terapéuticos en ensayos clínicos, prospectivos y aleatorizados con un seguimiento adecuado. En este artículo se analizan las nuevas opciones de investigación cuantitativa.

▀ **Palabras clave**

laringología, videoestroboscopia, acústica, mucosa, aspectos funcionales

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▀ **Enviar correspondencia a:**

Mette Pedersen, Medical Centre, Copenhagen, Dinamarca

**Full Text**

## UPDATES IN LARYNGOLOGICAL RESEARCH ON DYSPHONIA

### Medical treatment of dysphonia

In 2004, we published a study on the medical treatment of dysphonia.<sup>1</sup> The study suggests that physicians should be more involved in the diagnosis and treatment of voice disorders. Most objective scientific measurement tools in laryngology are new. The reason for this is similar to the situation in audiology one generation ago; namely, the technical solutions, which are the basis of natural science, were not previously viable for voice phenomena.

In the clinical treatment of the upper airway mucosa, the larynx is rarely mentioned. The lungs, pharynx, nose, sinuses, ears and Eustachian tubes are given consistent and careful consideration.<sup>2</sup> Claims concerning the function of the larynx are accepted without scientific evidence.

### Singing

Everyone with knowledge of the art of music knows which singer best fits a specific role. The historic-evidence-based reference of truth for art is not enough in the natural sciences. Even for musicality, there will be so-called biological testing – e.g., for cochlear implant patients.<sup>3-5</sup>

### Verbal communication

The many-faceted aspects of laryngology include verbal communication. Here, peer reviewing – a “flawed process at the heart of science and journals” - has probably been the single biggest hindrance to the sound development of the field.<sup>6</sup> The author’s most recent article on musicality of clinicians evaluating patients with voice disorders was not accepted to a journal of otorhinolaryngology on the argument that the average otolaryngologist was unlikely to read it. The article was based on a presentation at the 2005 World Conference of Ear-Nose-Throat Disorders<sup>7</sup> and was one of the first to make a quantitative attempt to define more or less musically-gifted clinicians evaluating the GRBAS (a scored test of voice impairment in which

scores are not usable statistically).

## **Statistics**

There can be no doubt about the necessity and importance of statistics. In the overall natural sciences, there are better or worse rules to be followed. Scores cannot be used the distance between single score values can be different. Another aspect to be considered is the power of the prospective randomized, double-blind study. A large pool of patients must be collected for such studies in order to ensure sufficient statistical power.<sup>8</sup> As with many other fields, the laryngological clinician must routinely possess basic knowledge of database use and statistical analyses. JMP, made by the SAS Institute, is both inexpensive and easy to use.<sup>9</sup>

## **Non-medical professionals**

The fear of change can be excused, to some extent, by “throwing out the baby with the bathwater”.<sup>10</sup> The status of non-medical professionals and practitioners in verbal communication *will* be reduced. There is little excuse, however, for non-medical practitioners having conducted little or no research on the larynx and the ensuing wrong (non-evidence-based) and misinterpreted psychological diagnoses given to patients.

## **Surgical interventions**

In some cases, dramatic surgical interventions on the vocal cords have been made.<sup>11</sup> No evidence of surgical intervention for benign disorders of the vocal cords was found using the Cochrane Collaboration rules of systematic review.

## **Cochrane review**

In our recent Cochrane review of acid reflux and hoarseness, no evidence of treatment was found.<sup>12</sup> This area is not one to be addressed solely by gastroenterologists and medical firms, but rather must be taken over by laryngologists – especially in the area of pressure and acid measurement in the upper esophagus.

## **Laboratories**

It cannot be emphasized enough that qualified researchers in laboratories studying evidence-based laryngology must receive sufficient funding to conduct large-scale studies on voice measurement, speech and singing. A directive for the European Union was suggested earlier.

## **Firms**

The medical firms attempting to document medication<sup>13</sup> merit respect; however, the overall problem will not be solved by such firms, due to the lack of evidence concerning inclusion

criteria. It might be unimaginable to them that the Mayo Clinic reports the same degree of uncertainty (namely 0.59) in expert evaluation of digitalized videostroboscopy films.<sup>14</sup>

### **Creating basic instrumentation**

Generally, we can say that dysphonia research has developed positively. One generation ago, the focus was on creating basic instrumentation based on Schönhärl's description of various disorders using stroboscopic pictures as the landmark.<sup>15</sup> Subsequently, the stroboscope was considered insufficient and not well-enough defined, which led to the development of synchronized stroboscopy with glottography (also called laryngography).<sup>16</sup> More recently, computerized phonetograms<sup>17</sup> have been used to describe voice development in young male and female choir singers.<sup>18-20</sup>

### **Differentiate between training and mucosal aspects**

The use of referred measurements opened the way to better define laryngeal infections, allergies, reflux, and environmental disorders and to differentiate between training and mucosal aspects. Dysfunction has been found to be primarily a consequence and not a course of dysphonia.<sup>1</sup>

### **Quantitative diagnostic aspects**

The refinement of clinical *quantitative diagnostic aspects* of digitalized videostroboscopy has involved comparison with running measurements of the jitter, shimmer and glottogram (the Spead Program by Laryngograph, Ltd.)<sup>21</sup> – especially the Qx%, the closed-phase duration of the vocal cords defined by the tangent in time of closing and opening. A statistical combined calculation of normal versus abnormal digitalized videostroboscopies and Qx% showed a significant standard deviation of less than 6.5 for normal voices for both sustained tone and reading of a standard text. A group of 338 abnormal digitalized videostroboscopies showed a significant standard deviation from the norm – 12.7 for the sustained/ah/ and 11.4 for reading of a standard text.<sup>22</sup>

### **Conclusion**

Quantitative research in laryngology has given us a better evidence-based tool to diagnose and treat patients. Combined digitalized videostroboscopy – and especially glottography, as well as other acoustical and physiological parameters – elucidate the mucosal and functional aspects.

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