Title:

INCREASE IN THE PHONOTRAUMA LEVEL IN PRESENCE OF AN ORGANIC GLOTTIC LESION: PILOT STUDY ON EXCISED HUMAN LARYNGES

Presenter(s):

A. Lagier[1,2], T Legou[2], F Silva[3], P Champsaur[4], A Giovanni[2]

[1]CHU de Liège, Liège, Belgium,
[2] Laboratoire Parole et Langage, Aix-en-Provence, France,
[3] Laboratoire Mécanique et Acoustique, Marseille, France,
[4] Laboratoire d'anatomie, Aix-Marseille Université, Marseille, France
aude.lagier@chu.ulg.ac.be

Abstract:

Objective: The force of collision between the vocal folds is one of the components of the phonotraumatism. The objective of this experimental study on excised human larynges was to compare the level of collision force between vocal folds during phonation on a healthy larynx and on a larynx with bilateral edema (Reinke edema).

Material and methods: A healthy larynx and a larynx with Reinke edema (both females) were collected within 24 to 48 hours after the death of persons who gave their bodies to science according to the ethical laws in France. They were placed in phonatory position and placed on an experimental bench allowing the controlled supply of phonatory airflow and the synchronous collection of acoustic, electroglottographic and aerodynamic measurements, and the measurement of the collision force between the vocal folds as well.

Results: Both larynges were subjected to physiological subglottic pressure ramp (between 0 and 0.15 kPa). The phonatory threshold pressures were 0.058 kPa for the healthy larynx and 0.23 kPa for the pathological larynx respectively. The mean fundamental frequency was 296 Hz for the healthy larynx and 106 Hz for the pathological larynx. The mean level of the collision force was 12 kPa for the healthy larynx and 158 kPa for the pathological larynx.

Conclusion: The results obtained were compatible with normal and pathological data known from the literature concerning acoustic and aerodynamic parameters. The level of collision between the vocal folds of the pathological larynx was more than ten times higher as in the healthy larynx. This finding may give a physiological explanation for the existence of the contact lesions located on the controlateral vocal fold to lesion.