Overtone measures in the clinic

Mette Pedersen MD. Students: Anders Jønsson, Sanila Mahmood, Bilal Hussain Akram, Mohammad Shezad Mahmood, Anne Alexius Agersted
Voice Unit, Medical Centre, Ørestergade 18, 1, 1100 Copenhagen, Denmark
m.f.pedersen@dadlnet.dk

Introduction: So far voice analysis has not produced any sufficient evidence based clinical diagnostics effect (1, 2, 3) and many voice measures have little significance to pathology. Voice measures are difficult to quantify but overtone analysis software seem promising. The goal of this presentation is to evaluate the possibilities of overtone analysis in pathology (4).

Methods: Twelve normal persons had overtone analysis carried out with “Sygyt Ltd.” on the market and the older “Vocevista” (2008). These methods were compared with the acoustical measures of high speed films by “Glottis Analysis Tools”, (Videos made with Wolf Endocam 5562 Setup from Erlangen, Germany). A problem in pathology was solved in the way that the fundamental frequency F0 was systematically used for overtone measures.

Results: A normal material for use in our clinic has been made. Comparable results were found with the three methods for formants from 1000-5000 Hz, up to 25% variation. Interestingly when “Sygyt Ltd.” was compared to “Vocevista” in the same milisecond the variation shrunk to 0% and 7%, which suggests use of the same formulas, (figure 1, 2). Acoustical analysis software measures of the vocal fold movements does not seem to correlate well with the overtone measures.

Variation of 3 formants 1000-5000 Hz from high speed films, (figure 3):

Conclusions: Overtone analysis softwares proved to be comparable for “Vocevista”, “Sygyt Ltd.” and acoute measures on High speed films with Glottal Analysis Tools. Further video analysis measures might be needed to yield better results. The implication in pathology of the results and future has many perspectives. Evidence based diagnostics of the human voice are needed. Overtones might be useable combined with High speed films.

References