RESULTS

In the GAW analysis, global minimum area was positively correlated with shimmer (p=0.0275) and APQ (p=0.0127)(Figure 1). Correlations were also seen between minimum opening at the midpoint of the glottis and jitter (p=0.044), PPQ (p=0.017), shimmer (p=0.0152), APQ (p=0.008), and HNR (p=0.0117). In the KEA analysis, a negative correlation was found between the minimum opening of the anterior membranous vocal cord and PPQ (p=0.038), shimmer (p=0.038), and APQ (p=0.0153)(Figure 2). In the posterior membranous vocal cord, negative correlations were found between the dominant amplitude of the opening variation of the left vocal fold (but not of the right vocal fold) and PPQ (p=0.0475) and HNR (p=0.059).

CONCLUSIONS

Vocal cord vibration parameters from high-speed digital recording and acoustic analysis parameters are thought to be closely related. With the exception of HNR, acoustic parameters can evaluate oscillation. Monitoring of vibratory characteristics is expected to be useful in the diagnosis of larynx disease.

CONTACT

Kiyoshi Makiyama, MD, PhD
Otorhinolaryngology-Head Neck Surgery
Nihon University Hospital
1-8-13 Kandasurugadai, Chiyoda, Tokyo 101-8309 JAPAN
mak@med.email.ne.jp

Poster Design & Printing by Genigraphics® - 800.790.4001

ABSTRACT

Objective: Laryngeal sound is produced by vibration of the vocal cord mucosa. Disturbances of voice can therefore affect the voice wave profile, and changes may be observed between the two. In recent years, HSV observation has become possible with high-speed video, and vocal cord observation has become possible with high-speed video (HSV) recording. A close relationship between the vocal cord vibratory parameters obtained from images and acoustic analysis is hypothesized. To demonstrate this, we compared the two parameters.

METHODS AND MATERIALS

Using HSV recording, we conducted acoustic analysis for 13 patients with laryngeal disease. Of these 13 patients, adequate voice samples were obtained from 10, who were then taken as the subjects for analysis. Those 10 comprised 2 patients with carcinoma of the vocal cords, 2 with vocal cord polyps, 3 with sulcus vocalis, 2 with vocal fold nodules, and 1 with adductor spasmodic dysphonia. (Table 1)

CONCLUSIONS

Vocal cord vibration parameters from high-speed digital recording and acoustic analysis parameters are thought to be closely related. With the exception of HNR, acoustic parameters can evaluate oscillation. Monitoring of vibratory characteristics is expected to be useful in the diagnosis of larynx disease.

Relationship between HSV imaging and acoustic parameters

Kiyoshi Makiyama, Ryoji Hirai, Hitokota Yoshihashi, Nao Sakuma, Minoru Ikeda
Nihon University, Otorhinolaryngology-Head Neck Surgery, Tokyo, Japan

INTRODUCTION

Laryngeal sound is produced by vibration of the vocal cord mucosa. Disturbances of voice can therefore affect the voice wave profile, and changes may be observed between the two. In recent years, HSV observation has become possible with high-speed video, and vocal cord observation has become possible with high-speed video (HSV) recording. A close relationship between the vocal cord vibratory parameters obtained from images and acoustic analysis is hypothesized. To demonstrate this, we compared the two parameters.

Table 1. Subjects.

<table>
<thead>
<tr>
<th>Age</th>
<th>Gender</th>
<th>Diagnosis</th>
<th>GPRAS score</th>
</tr>
</thead>
<tbody>
<tr>
<td>80</td>
<td>Male</td>
<td>cancer</td>
<td>G3R1B2A1S1</td>
</tr>
<tr>
<td>40</td>
<td>Female</td>
<td>Paralysis*</td>
<td>G2R2B2A0S0</td>
</tr>
<tr>
<td>77</td>
<td>Male</td>
<td>Paralysis*</td>
<td>G3R2B3A0S1</td>
</tr>
<tr>
<td>73</td>
<td>Male</td>
<td>Sulcus**</td>
<td>G2R0B2A1S0</td>
</tr>
<tr>
<td>89</td>
<td>Male</td>
<td>Sulcus**</td>
<td>G3R0B3A2S0</td>
</tr>
<tr>
<td>27</td>
<td>Female</td>
<td>Nodule</td>
<td>G3R3B2A0S0</td>
</tr>
</tbody>
</table>

METHODS AND MATERIALS

Using HSV recording, we conducted acoustic analysis for 13 patients with laryngeal disease. Those 10 comprised 2 patients with carcinoma of the vocal cords, 2 with vocal cord polyps, 3 with sulcus vocalis, 2 with vocal fold nodules, and 1 with adductor spasmodic dysphonia. (Table 1)

RESULTS

In the GAW analysis, global minimum area was positively correlated with shimmer (p=0.0275) and APQ (p=0.0127)(Figure 1). Correlations were also seen between minimum opening at the midpoint of the glottis and jitter (p=0.044), PPQ (p=0.017), shimmer (p=0.0152), APQ (p=0.008), and HNR (p=0.0117). In the KEA analysis, a negative correlation was found between the minimum opening of the anterior membranous vocal cord and PPQ (p=0.038), shimmer (p=0.038), and APQ (p=0.0153)(Figure 2). In the posterior membranous vocal cord, negative correlations were found between the dominant amplitude of the opening variation of the left vocal fold (but not of the right vocal fold) and PPQ (p=0.0475) and HNR (p=0.059).

CONCLUSIONS

Vocal cord vibration parameters from high-speed digital recording and acoustic analysis parameters are thought to be closely related. With the exception of HNR, acoustic parameters can evaluate oscillation. Monitoring of vibratory characteristics is expected to be useful in the diagnosis of larynx disease.

CONTACT

Kiyoshi Makiyama, MD, PhD
Otorhinolaryngology-Head Neck Surgery
Nihon University Hospital
1-8-13 Kandasurugadai, Chiyoda, Tokyo 101-8309 JAPAN
mak@med.email.ne.jp

Poster Design & Printing by Genigraphics® - 800.790.4001

ABSTRACT

Objective: Laryngeal sound is produced by vibration of the vocal cord mucosa. Disturbances of voice can therefore affect the voice wave profile, and changes may be observed between the two. In recent years, HSV observation has become possible with high-speed video, and vocal cord observation has become possible with high-speed video (HSV) recording. A close relationship between the vocal cord vibratory parameters obtained from images and acoustic analysis is hypothesized. To demonstrate this, we compared the two parameters.

METHODS AND MATERIALS

Using HSV recording, we conducted acoustic analysis for 13 patients with laryngeal disease. Of these 13 patients, adequate voice samples were obtained from 10, who were then taken as the subjects for analysis. Those 10 comprised 2 patients with carcinoma of the vocal cords, 2 with vocal cord polyps, 3 with sulcus vocalis, 2 with vocal fold nodules, and 1 with adductor spasmodic dysphonia. (Table 1)

RESULTS

In the GAW analysis, global minimum area was positively correlated with shimmer (p=0.0275) and APQ (p=0.0127)(Figure 1). Correlations were also seen between minimum opening at the midpoint of the glottis and jitter (p=0.044), PPQ (p=0.017), shimmer (p=0.0152), APQ (p=0.008), and HNR (p=0.0117). In the KEA analysis, a negative correlation was found between the minimum opening of the anterior membranous vocal cord and PPQ (p=0.038), shimmer (p=0.038), and APQ (p=0.0153)(Figure 2). In the posterior membranous vocal cord, negative correlations were found between the dominant amplitude of the opening variation of the left vocal fold (but not of the right vocal fold) and PPQ (p=0.0475) and HNR (p=0.059).

CONCLUSIONS

Vocal cord vibration parameters from high-speed digital recording and acoustic analysis parameters are thought to be closely related. With the exception of HNR, acoustic parameters can evaluate oscillation. Monitoring of vibratory characteristics is expected to be useful in the diagnosis of larynx disease.

CONTACT

Kiyoshi Makiyama, MD, PhD
Otorhinolaryngology-Head Neck Surgery
Nihon University Hospital
1-8-13 Kandasurugadai, Chiyoda, Tokyo 101-8309 JAPAN
mak@med.email.ne.jp

Poster Design & Printing by Genigraphics® - 800.790.4001