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Introduction

• The larynx is subject to sex steroid hormonal influence (as Estrogens and progesterone sex hormones).
• Oral hormonal contraceptives (OCPs) were developed over 40 years ago as an effective, immediately reversible contraceptive.
• In the time being, it is not clear whether the ingestion of oral contraception affects vocal quality differently from the physiological menstrual cycle or not.
Objective

• To compare voice parameters in users of combined oral contraceptive pills versus non users, and establishing whether the use of OCPs impacts voice or not.

Methods

• Subjects: 100 non-smoker women allocated into 2 groups:
  • Group I (cases, n=50): on OCP’s (Gynera®), for at least 6 months,
  • Group II (controls, n=50): not on any contraception.
• These subjects had no formal singing or voice training, they had no hormonal imbalances and no history of pregnancies, and no history of neurological problems, no history of voice complaints voice abuse or surgeries in the larynx. They had no other speech, language problems.
Methods

• All cases were subjected to computerized acoustic analysis using Multidimensional voice program software Model 5105.
• The analyses of the vocal parameters was carried out with the sustained /a/ vowel, with elimination of the irregularities in the beginning and end of utterance.
• The studied acoustic parameters were:
  ➢ The fundamental frequency f0.
  ➢ Shimmer in dB.
  ➢ Jitter absolute.
  ➢ The noise/harmonic ratio (NHR).

Results

• The mean age of the cases was 32.50 ± 4.74 years and 30.30 ± 5.83 years for the controls.
Results

• The mean average fundamental frequency for the cases group was lower than the controls though this was not significantly different.

<table>
<thead>
<tr>
<th>Average fundamental frequency</th>
<th>Cases</th>
<th>Control</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean ± SD</td>
<td>228.64 ± 33.21</td>
<td>253.15 ± 48.04</td>
<td>1.327</td>
<td>0.201</td>
</tr>
</tbody>
</table>

t: Student t-test

Results

• Though the cases showed smaller jitter shimmer and noise/harmonic ratio (NHR) values, this difference was not significant.

<table>
<thead>
<tr>
<th>Absolute Jitter</th>
<th>Cases</th>
<th>Control</th>
<th>Z</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean ± SD</td>
<td>31.41 ± 13.40</td>
<td>33.82 ± 38.66</td>
<td>0.681</td>
<td>0.496</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Shimmer in dB</th>
<th>Cases</th>
<th>Control</th>
<th>Z</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean ± SD</td>
<td>0.48 ± 0.25</td>
<td>1.35 ± 1.23</td>
<td>1.209</td>
<td>0.226</td>
</tr>
</tbody>
</table>

Z: Z for Mann Whitney test
Results

• Though the cases showed smaller jitter shimmer and noise/harmonic ratio (NHR) values, this difference was not significant.

<table>
<thead>
<tr>
<th></th>
<th>Cases</th>
<th>Control</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noise to harmonic ratio</td>
<td>0.06 ± 0.05</td>
<td>3.17 ± 6.53</td>
<td>1.512</td>
<td>0.131</td>
</tr>
</tbody>
</table>

| Mean ± SD                | 0.06 ± 0.05 | 3.17 ± 6.53 |       |      |

: Student t-test

• Lower perturbation values and smaller variance, as found in the cases group, are typically associated with a healthier voice. This can be explained by the stable and more unified hormonal balance in women who ingest contraceptive pills.
Conclusions

• The results suggest that oral contraceptives might increase voice stability associated with smaller hormonal changes.

• The inclusion of computerized acoustic analyses makes the vocal assessment more accurate and less subjective, thus representing an important tool for vocal screening, for it is a simple, fast and reliable method.

5. Well-Connected (webpage). What is Female Contraception? Lycos Health with WebMD 2000; Available at: http://webmd.lycos.com/content/dmk/dmk_article_4461594.
Thank You