

Electroglottography In Dysphonics

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As majority of phonatory dysfunctions are associated with normal vibrations of the vocal cords, analysis of the vibration of the vocal cords in terms of different parameters constitute an important aspect to be considered in the diagnosis and differential diagnosis of voice disorders.

Several direct and indirect, methods have been developed with the object of studying the movements of the vocal cords, one of them is Electroglottograph. E.G.G. has many advantages over the other techniques.

In this study 40 dysphonic subjects (31 males and 9 females) were studied using Electroglottograph (Kay Elemetrics Corporation) and Computer (PC/XT with Speech interfacing unit Wipro, and voice & speech systems).

The measurement of the following parameters were obtained during the phonation of /a/, /i/ and /u/.

- 1) Open Quotient (OQ)
- 2) Speed Quotient (SQ)
- 3) Speed Index (SI)
- 4) "S" Ratio (SR)
- 5) Jitter Ratio J(R)
- 6) Shimmer Ratio S(R)

The data obtained was compared with normative data given by Bhattacharya, (1991) on E.G.G. parameters using the same instruments and procedures.

The statistical analysis using Mann-Whitney 'U' Test was carried out to find out the significance of difference between normals and dysphonics (as a group) and dysphonics (with particular kind of vocal cord pathology) in all the six E.G.G., parameters.

The results indicated that male dysphonics

as a group showed significant difference from normal males in terms of 1)open quotient, 2) speed index, 3) jitter ratio, 4) Shimmer ratio.

- Dysphonics with chronic laryngitis differed from normals on 1) Open quotient, 2) Speed Quotient, 3) Speed index, 4) Jitter ratio, 5) Shimmer ratio.
- Dysphonics with vocal cord paralysis were significantly different from normals in terms of 1) Open quotient, 2) Jitter ratio, 3) Shimmer ratio.
- Dysphonics with vocal nodules showed significant difference in terms of 1)open quotient, 2) jitter ratio, 3) shimmer ratio than normals.
- Dysphonics with Glottic chink differed from normals on 1) open quotient, 2)"S" Ratio, 3) Shimmer ratio.
- Dysphonics with functional high pitch voice were significantly different from normals in terms of 1) Speed quotient, 2) Speed index, 3) "S" ratio, 4)Shimmer ratio.

This suggests that male dysphonic subjects (as a group) and also in different sub-groups differed from normals on different parameters of E.G.G., thus permitting the differential diagnosis of dysphonias in males using E.G.G.

The results indicated that female dysphonics

- as a group showed significant difference from normals in terms of 1) Open quotient, 2) Jitter ratio from normals.

- _ Dysphonics with chronic laryngitis were significantly different from normals in terms of 1) Open quotient, 2) Speed quotient, 3) Jitter ratio.
- Dysphonics with vocal cord paralysis differed from normals on 1) Speed quotient, 2) Speed index, 3)"S"ratio, 4) Jitter ratio 5) Shimmer ratio.
- Dysphonics with Glottic chink were significantly different from normals in terms of 1) Open quotient, 2) Jitter ratio.

This suggests that the female dysphonic subjects as a group and also different subgroups differed from normal females on different E.G.G. parameters, thus permitting the differential diagnosis of different dysphonic conditions

in females, using E.G.G. Similar reports have been made by other investigators by making use of one or more of the EGG parameters for the purpose of clinical diagnosis of dysphonics. Collection of more data on these lines would be useful in confirming the results of the present study. Further studies are suggested to verify the results obtained in the present study and also to reveal more about specific pathological conditions not considered in the present study.

Thus the study of Open Quotient, Speed Quotient, Speed Index, "S" Ratio, Jitter Ratio and Shimmere Ratio parameters of EGG have shown that it is possible to differentiate different laryngeal pathologies based on glottal waveforms.