Objectives

• Vocal fold nodules (VFNs) are the most frequent causes of dysphonia in childhood.

• The purpose of this study was to assess specific characteristics of vocal parameters in children with VFN. Furthermore, Half- to one-year follow-up was performed in each patient and sequential vocal changes were evaluated.

Methods

• In this study, we assessed 13 pediatric VFN patients (male, 10; female, 3). The age range from 4 to 10, and mean age was 7.5±1.4 yo. Mean follow-up period was 9.9±4.2 mo.

• Patients visited our hospital every half year, and underwent laryngeal endoscopy, acoustic vocal assessments (Jitter%, Shimmer%, NHR), and aerodynamic vocal measurements (MPT, MFR) at their every visit. Endoscopic images were video-recorded, and reviewed to grade the severity based on the glottal gap and size of the nodules.3

• We compared the values of each parameter measured at their first visits, with the values measured at their 2nd and 3rd visits.

Results

• Three sequential data analyses were possible in 6 patients, while 2 sequential data measurements were performed in 13 patients due to the short follow-up periods. (Table1)

• The mean values of MPT, MFR in this study showed abnormal values in comparison with the normal values in Japanese children reported before(MPT 12±1.4s, MFR 175±120ml/min).2) The normal values and range of Jitter, Shimmer, NHR in Japanese children are not reported before.

• Most of the patients were boys (10 of 13 patients) in our study.

• Compared with the values of multiple parameters measured at their first visits, relatively better values in grade (p=0.053) and shimer (p=0.063) were observed at their second visits. (Table 2)

• As for the consideration about the improved values in vocal measurements during half year between Grade1,2 Group and Grade3 Group, there was no significant differences in both groups; however MFR did show a trend towards significance (p=0.069). (Table3)

Discussion

• It was reported that the pediatric vocal fold nodules improved after puberty. Possible explanations for the improvement in the post-pubertal age include hormonal change related to puberty, improvement in vocal hygiene with maturation, or improved adherence to treatment recommendations. In addition, anatomical changes in vocal folds during adolescence may result in a change in the location of maximal shear stresses during phonation.35

• Furthermore, it was suspected that nodules are not gradually improved and relatively suddenly improved around puberty.4)

• Heather et al.3) have reported that a significant correlation was found between baseline VFN size and the rate of change in VFN grade over time during 25months follow-up period.

• In this study, no significant improvement of severity and vocal parameters were observed during half to 1 year follow-up. Furthermore, most of the patients incorporated in this study were young boys, and no patient reached puberty period during 1-year follow-up, and thus, there might have been no dramatic improvement observed in these patients.

Conclusions

• Our study investigated the progress of VFN children in Japanese.

• Although not detected in this study, there would be some specific time point in pediatric VFN to show significant improvement around puberty period.

• The studies with more cases and long follow-up period are required in the future.

Reference