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Diagnosis of Nasopharyngeal Obstruction by Lateral Cephalometric Radiography

H. Ravanmehr, M.H. Toodeh Zaeim, B. Golestan

Abstract:

Statement of Problem: Nasopharyngeal obstruction by adenoid enlargement is one of the main causes of mouth breathing. Diagnostic indices of nasopharyngeal obstruction by lateral cephalometric radiography are controversial. Purpose: The purpose of this study was to diagnose the nasopharyngeal obstruction by means of lateral cephalometric radiography. Materials and Methods: In this research two groups, (study and control), of 6 to15 years old were studied. In the study group, 46 mouth breathers were clinically examined by an orthodontist and an Otolaryngologist to confirm the nasopharyngeal obstruction. Control group was also comprised of 46 nasal breathers within the same age groups. A lateral cephalogram in centric occlusion was obtained for each patient. After tracing, following 7 nasopharyngeal variables were measured: 1- pp (palatopharyngeal depth). 2- Ad.Pmp (nasopharyngeal airway depth). 3- Air area (nasopharyngeal airway area). 4- NP area (bony area of nasopharynx). 5- Ba.Pmp (bony depth of nasopharynx). 6- d (bony depth of nasopharynx). 7- h (bony height of nasopharynx). Statistical t-test was conducted following calculating the mean, standard deviation and p-value of parameters. Discriminant function analysis was employed subsequent to the t-test for the significant variables, in order to find a method by which the values for several variables could be used simultaneously to determine whether obstruction exists. Qualitative variables of sex and age groups (6-10, 11-12, and 13-15 years old) were also used in discriminant analysis. Results: In the study group, mean value of pp, Ad.pmp, air area, Np area and Ba.pmp were significantly decreased, whereas mean of d and h variables were not considerably lessened. After performing analysis stage, the following discriminant function equation with critical point of 3.88 and correct classification of 94.57% was determined: $D=0.345 (pp) +0.064 (Ad.pmp)-0.001(NP\ area) + 0.03(Air\ area) +0.505(Age1)$. If a person's age is between 6 and 10 years old, we use one instead of Age 1 and if the age is between 11 and 15 years old, we consider zero in place of Age 1. Conclusion: If discriminant score is less than 3.88, the patient has nasopharyngeal obstruction with 94.57% probability.

Keywords:

Adenoid . Mouth breathing . Nasopharyngeal . Airway obstruction

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