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THE ROLE OF SPECT BONE SCAN IN UNILATERAL CONDYLAR HYPERPLASIA: IS IT MEASURING THE CONDYLE SIZE?

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BACKGROUND: The use of Tc-99m SPECT bone scan has been recommended as the assessment tool for patients with unilateral condylar hyperplasia. A condyle is generally regarded as active if the scintigraphic activity difference is 10% greater than the contralateral side. However, there was little information regarding the association between the bone scan uptake and the histopathological features of the hyperactive condyle. AIM: The aim of this study is to check the association between the SPECT bone scan uptake and the dimension of the mandibular condyle in patients with mandibular asymmetry caused by condylar hyperplasia. *Material and Method*: 27 patients with mandibular asymmetry caused by condylar hyperplasia were recruited. The clinical records, dental casts, SPECT and cone-beam CT data were used for the analysis. The clinical records and serial dental casts were used to check the activity of asymmetry . The cone-beam CT data were imported for building the virtual mandibular model for the 3-dimensional analysis of the hyperactive and contralateral condyles. 3-D cephalometric analysis was performed to measure the linear dimension of condyle and ramus. Pearson correlation analysis was used to check the association of the percentile difference between the SPECT scan and (i) condylar dimensions including x, y and z-axis, (ii) dimensions of mandibular ramus and body. RESULT: Among the 27 patients, only 2 patients showed active asymmetry from clinical and model analysis plus cone beam CT superimposition. The mean percentile difference between the right and left condyles in the remaining 25 patients showing inactive asymmetry was 12.05%. 12 patients (48%) having percentile differences > 10 %. Correlation analysis revealed linear association in the percentile difference of condyles between the SPECT scan uptake and (i) the linear dimensions of the condyle (R ranged from 0.68-0.83), (ii) surface area of the condyle (R=0.80), (iii) vertical ramus height (R=0.81) and (iv) mandibular body length (R=0.85). CONCLUSIONS: There was strong association between the condyle dimension and the SPECT uptake. Patients with inactive mandibular asymmetry caused by condylar hyperplasia could have the percentile difference greater than 10%.