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Evaluation of styloid process by 3- dimensional computed tomography in Iraqi sample

A thesis

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Abstract

Background: Several imaging modalities have been used for diagnosis of styloid process. Superimposition of several osseous structures, distortion and magnifications secondary to angulations are the potential disadvantages of conventional radiographs, in particular, panoramic radiographs (Ferrario *et al,* 1990).

Three dimensional computed tomography images reformatted from the raw data obtained from a spiral scanner provide all the information about the styloid process, including its length, direction and anatomical relations (Nakamaru *et al,* 2002).

The aims of the study: To measure the length and the anterior angulations of the styloid process, and to study its morphology by 3 – dimensional computed tomography reconstruction.

Materials and Methods: This study included 90 Iraqi patients (38 females and 52 males) who were admitted to Ibn AL –bitar hospital for cardiac surgery in Baghdad city to have scan by using Siemens Soma tom plus 4 CT scanner between 12th of November 2007 to the 26th of June 2008. Those patients underwent Para nasal CT evaluation for different reasons, none of them had any complaints related to elongated styloid process or calcified stylo-hyoid ligament.

The length and anterior angulations of styloid process measured and its morphology was evaluated on 3- dimensional reconstructed images which were obtained from those patients. The measurements were recorded separately for each side since there were some differences between the right and left sides. All patients were in supine position and

all scans were performed in the axial plane and the scan angle was 30˚, the scans were obtained in the coronal plane (supine – sinuses position) with 1-mm slice thickness without sedation or contrast medium.

The data were subjected to a discriminative analysis using the SPSS package program (Version 13).

Results: The discriminative analysis showed that: according to the length measurement, styloid processes were longer in males than females and the right styloid processes were longer than the left styloid processes in both genders. For both sides and gender its length ranged from 0.9 cm to 6.2 cm. regarding the age grouping; it was shown a non statistical significant difference among the four age groups for both sides and gender.

According to angle measurement, the total of the right and left sides, difference of angle measurements revealed a statistical high significant difference. Regarding gender difference, both right and left styloid processes angle were significantly higher in males and females.

According to the morphological evaluation of the styloid process, 180 styloid processes were seen in the scan of the 90 patients. Absence of the styloid process was not seen in this study.

The total percentage of fragmented styloid processes was less in males than females for both sides at different age groups, and the total percentage of the fragmented styloid processes in males and females for both sides at different age groups were less than the total percentage of non –fragmented styloid processes. There was no statistical significant difference among the three length groups for both sides among morphology (fragmented and non-fragmented).

The total percentage of regular styloid processes in male on the right side was more than that in female group while the total percentage of

regular styloid processes in male on the left side was less than that in female group. The total percentage of irregular styloid processes in males on right side was less than that in females while the total percentage of irregular styloid processes in males on left side was more than that in females.

Conclusion: Three-dimensional images reconstruction obtained with computed tomography were a reliable method in obtaining abases line data for evaluation of the styloid process, including its length, angulations, and the anatomical variations. These findings may therefore be of clinical importance as a reference of the styloid process data for further studies.