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PREVALENCE AND CALCIFICATION PATTERN OF STYLOHYOID COMPLEX IN SOUTH INDIAN POPULATION USING DIGITAL ORTHOPANTOMOGRAM

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Conflict of Interest

The author declares that there was no conflict of interest in the present study.

Author's Contribution

Sowmya - Literature collection, Preetha - Framing the manuscript, Statistics approval, Approval of the manuscript, Lavanya Prathap - Final approval of the manuscript.

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Abstract

Background: Styloid process is a cylindrical, long and slender part of the temporal part. It measures 2 to 3 cm in length and lies antero-medial to the mastoid process. The aim is to assess the existence and calcification of the stylohyoid complex in the South Indian people. using digital Orthopantomogram.

Materials And Methods: The study involves 80 people who have been referred for orthopantomography. The age and gender of styloid processes larger than 30 mm were associated. The morphology was divided into 12 separate patterns. The data was analysed with the use of a statistical tool for social science. (SPSS).

Result: The study shows that in the South Indian people among 80 subjects prevalence and calcification of stylohyoid complexes is more with no pattern of 17.5% and less with pattern G, pattern H and pattern P of 1.25% in males and more with no pattern of 22.5% and less with no subjects in pattern G in females. The p value is 0.315 and 0.193 with respect to gender and age respectively.

Conclusion: The study concludes that the highest frequency of pattern was observed to be 'no pattern' in age group 0 - 20 when compared to other age groups. Results with respect to gender males have more calcification patterns when compared to females. KEYWORDS: Styloid process; Prevalence; Calcification; Stylohyoid complex; Digital orthopantomogram;Innovative technique.

Introduction

The bony styloid process is a protrusion situated just in front of the stylomastoid foramen.[1]. The tympanohyal, stylohyal, ceratohyal, and hypohyal cartilage segments make up the stylohyoid complex.[2]. The cause of extension is exactly not known[3]. Various anatomy theories reported the developmental process of stylohyoid complex. [4]. The length of the bony process varies from one person to the next, however it is usually between 20 and 30 mm in length.[2,4,5].

The styloid process was illustrated using a variety of imaging modalities, including a posteroanterior skull view, panoramic radiography, lateral cephalogram, Towne's view, lateral oblique mandible image, computed tomography, and magnetic resonance imaging. The digital orthopantomogram was used in this study. A digital orthopantomogram is a panoramic X-ray of the lower face that reveals all of the teeth in both the upper and lower jaw. It shows how many teeth there are, where they are, and how they are growing. The frame of teeth that have not yet erupted or emerged is also visible[6] [7] [8]. Our research and knowledge have resulted in high-quality publications from our team [9–23]

The aim of the study was to assess the prevalence and calcification of stylohyoid complexes in the South Indian population using digital orthopantomogram.

Materials And Methods

Total number of orthopantomogram involved in this study is 80 that is used to examine prevalence and calcification of stylohyoid complexes in the South Indian population. Totally 40 males (50%) and 40 females (50%) were taken in this study. Subjects with the history of facial injury, ectopic calcification of carotid artery, lymph nodes and phleboliths were excluded and high resolution panoramic radiographs were included in this study. The calcification pattern was classified based on the calcification centre different regions. The presence of the hyoid bone's smaller horn was not noted. The pattern based on the four zones was used to determine the symmetry. In circumstances where there was asymmetry, the most advanced pattern was used to describe the pattern for that patient. The following phrases were used in this report: calcification was "normal", "classical" "elongated styloid process", Patterns F to K[24]. The collected data were tabulated and analysed statistically using chi - square in SPSS software.

Result

The results shows prevalence and calcification of stylohyoid complexes in the South Indian population using digital orthopantomogram. Among 80 subjects 48 were found to have a calcified styloid process. The study shows that in the South Indian people among 80 subjects existence and calcification of stylohyoid complexes is more with no pattern of 17.5% and less with pattern G, pattern H and pattern P of 1.25% in males and more with no pattern of 22.5% and less with no subjects in pattern G in females. On enquiring subjects with elongated styloid processes, it was found that none of the subjects in our report had any clinical symptoms. The p value is not statistically significant for age and gender where p value is 0.315 and 0.193($p > 0.05$) respectively(Figure:1,2).

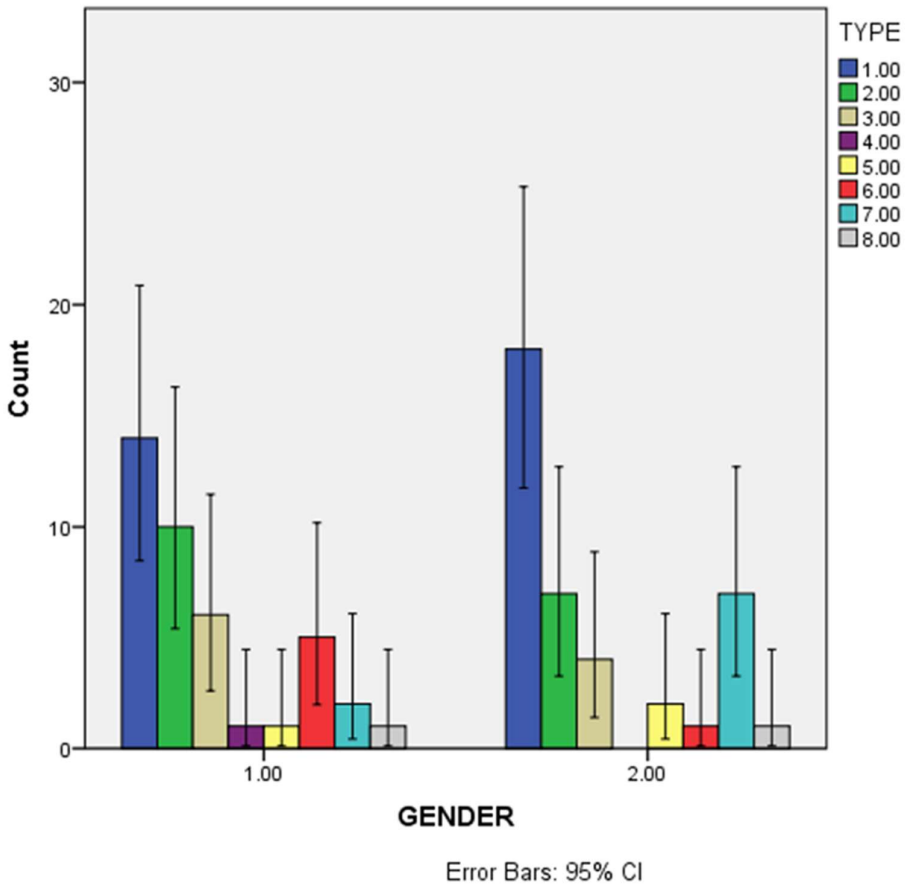

Figure.1: Represents gender and the types of calcification patterns in the samples. X axis represents the gender where 1 denotes males and 2 denotes female and Y axis represents the number of samples. Blue denotes no pattern, green denotes pattern-E, sandal denotes pattern-F, purple denotes pattern-G, yellow denotes pattern-H, red denotes pattern-J, light blue denotes pattern-N, grey denotes pattern-P. In this graph high frequency is found to have no pattern in females when compared to males, p value is 0.315 ($p>0.05$), which is not statistically significant.

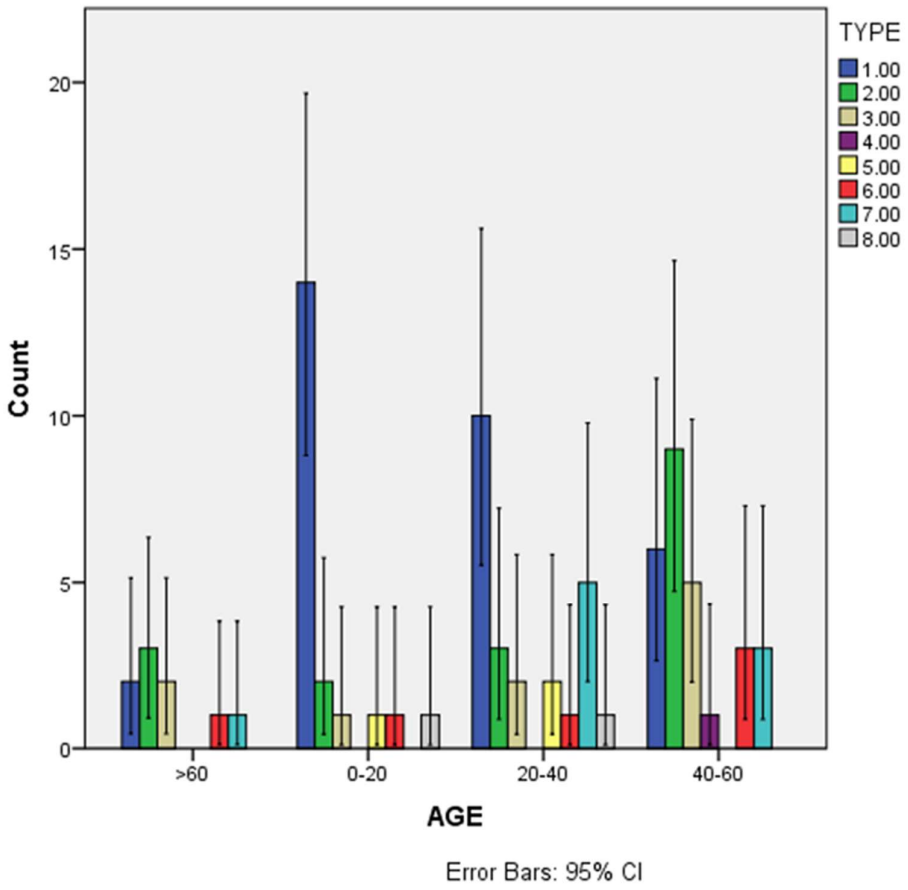

Figure.2: Represents the association between age and the types of calcification patterns in subjects. The X axis represents the age and the Y axis represents the number of samples. Blue denotes no pattern, green denotes pattern-E, sandal denotes pattern-F, purple denotes pattern-G, yellow denotes pattern-H, red denotes pattern-J, light blue denotes pattern-N, grey denotes pattern-P. In this graph it is found to have high frequency with no pattern in age group 0 - 20 when compared to other age groups, p value is 0.193 ($p>0.05$), which is statistically not significant.

Discussion

Males exhibit more calcification patterns than females, according to the current study. The styloid process is a clinically important anatomical feature that is poorly understood. A stylohyoid chain mineralization is seen in radiographic data in 2-28 percent of the general population.[25],[26]. Deep neck ache, pain when tilting the head, and a foreign particle in the throat are all signs of elongated styloid processes.[27],[28].

Various classification techniques are used to assess the stylohyoid complexes[24][29,30][31]. In this study, the stylohyoid complexes were calcified into four basic patterns. As with O'Carroll's calcification, this type of calcification system has a stylohyoid complex that forms one of 12 anatomic configurations.[32].

The calcification found in females are as follows 45% of the males found to have no calcification pattern, 17.5% of the females have calcification pattern-E, 10% of the females have calcification pattern-F, 0% of the females with calcification pattern-G, 5% of the females with calcification pattern-H, 2.5% of the females with calcification pattern-J, 17.5% of the

females have calcification pattern-N and finally 2.5% of the females have calcification pattern-P among 50% of the subjects examined are females[32,33].

In the previous study the prevalence and calcification was examined in the north west part of India that is found to have more calcification patterns in males[34]. Similarly, we discovered that males have more calcification patterns than females in this study. The sample size is usually the study's restriction. In the future, to make the context clear and reliable, the study should be conducted with a larger sample size to make the results definitive..

Conclusion

The study concludes that the highest frequency of pattern was observed to be no pattern in age group 0 - 20 when compared to other age groups. Results with respect to gender males have more calcification patterns when compared to females. The digital orthopantomogram is useful in detection of the calcification pattern of stylohyoid complexes with or without symptoms. As a result, long-term follow-up studies can be conducted in the future to establish more substantial results linking elongated styloid processes to patients' overall health.

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