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Anatomy

DETERMINATION OF SEX WITH THE HELP OF MANDIBLE IN COASTAL AREAS OF KARNATAKA

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ABSTRACT Bones are an important tool in establishing the identity of an individual and they also help in establishing the process of evolution, race and demographic profile. The accuracy of sex determination directly depends on the availability of the complete skeleton. It is 100% with a complete skeleton, 95% with pelvis and 90% with skull. The Mandible is the most durable and sexually dimorphic bone of the skull and resists post mortem changes too. The current study was undertaken to establish metric parameters in addition to morphologic parameters to determine sex from mandible as use of both is likely to improve the efficacy and accuracy of sex. This study helps in resolving medico-legal cases in Coastal Areas Of Karnataka. **Objectives:-** To assess the usefulness of mandibular ramus as an aid in sex determination. **Material and methods:-** The study was conducted on 100 mandibles from the department of anatomy of Karwar institute of medical sciences, Karwar. Measurements were taken by sliding caliper and Osteometric board. Data was noted and statistically analyzed. **Results:-** In the present study the mean of the male in all the three parameters considered was higher when compared to female. Standard deviation of male was higher in bigonial distance and the bicondylar distance and in female, standard deviation of mandible length was higher. **Conclusion:-** This study provides details Sex determination using the remains of the skeleton has more importance in forensic medicine and anthropology. The geometric and morphological parameters of mandible such as bigonial distance, bicondylar distance, and the mandible length are very useful to determine the sex of mandible.

KEYWORDS : Mandible, Sex, Bigonial Distance, Bocondylar Distance

INTRODUCTION:-

Bones are an important tool in establishing the identity of an individual and they also help in establishing the process of evolution, race1. The sex determination is most important because it reduces the possible matches by half and also, the other parameters i.e. age and stature are highly sex dependent.2,3. The accuracy of sex determination directly depends on the availability of the complete skeleton. It is 100% with a complete skeleton, 95% with pelvis and 90% with skull4. Mandible is the most durable and sexually dimorphic bone of the skull and resists post mortem changes too. The Sexual dimorphism is seen in stages of mandibular development, growth rates and duration4. By simple observation, clear difference in size, height, thickness and muscle markings can be noted5. Physical anthropologists traditionally study variations in the human skeleton with the use of metric and non-metric parameters. A long-standing controversy exists about the comparative utility of metric and non-metric traits as biological indicators in population studies6. Although, there have been previous studies to determine sex from the mandible, and they are more so qualitative. Important criteria for sex determination are the anthropology and the forensic science. Metric analysis can be done to determine the sex of an individual which helps to make the study very easy when compared with others. After the skull, the second most dimorphic structure present in the human body is the mandible. Mandible can be kept under preservation for a long time when compared to other bones. Hence the current study was undertaken to establish metric parameters in addition to morphologic parameters to determine sex from mandible.

MATERIALS AND METHODS:-

The study was conducted on 100 mandibles from the department of anatomy of Karwar institute of medical sciences, Karwar. Measurements were taken by sliding caliper and Osteometric board.

Damaged bones and pathologically deformed bones were excluded from the study. Bicondylar Length of each mandible bone was measured with the help of Osteometric board. Data was noted and statistically analyzed.

RESULTS

Morphologic Parameters to Differentiate Sex of the Mandible Parameter Male (n = 50) Female (n = 50) P Mean(cm) S.D. Mean (cm) S.D. Bicondylar distance 11.61 0.65 10.77 0.52 < 0.001 Bigonial distance 9.64 0.64 8.93 0.58 < 0.001

CONCLUSION

The present study proves that the adult mandible exhibits sexual dimorphism and can be used to identify both sex and population affinity with increased sensitivity and specificity. Since all the parts of the mandible studied i.e. body, bicondylar distance . The current study clearly demonstrates that all statistical techniques are individually as well as collectively effective in sex determination. It also establishes the morphological and morphometric criteria and recognizes a significant sexual dimorphism in the mandible.

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