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A Brief Review on the Clinical Applications of Anatomy

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***Abstract**: Anatomy has its own diverse applications in medicine, surgery and dentistry which is made possible through its various forms like surface anatomy, gross anatomy and osteology, embryology, histology, radiological anatomy and cytogenetics. These various subsets of anatomy amalgamate into various other medical and surgical disciplines and provide a platform for innovative surgical research, which has been highlighted by the authors in this article*
***Keywords**: anatomy, research, applications*

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I. Introduction

Anatomy, as a subject, is not just a piece of literature but includes a vast genesis of surgery in its entirety. In its true form, anatomy is said to predate surgery and was considered to be the predecessor of surgery at one point of time in history, until it's surgical counterpart deviated away from it due to the necessitating advancements in medical science and technology(1-4). However the research oriented nature of anatomy has retained its true form even to the present day(3-5). Though a lot has been said that the value of anatomy has decreased owing to its teaching focussed nature, there is still a lot of potential in it as a research primed subject which can extend its wings to any branch of medicine or surgery whenever an in-depth mechanism based study needs to be done, either at the molecular level or at the surface level(1-3).

II. Brief Review

Anatomy can be applied to any field of medicine, surgery or dentistry through its various wings that include- surface anatomy, osteology, gross anatomy, radiological anatomy, histology, embryology and cytogenetics(4-7). Surface anatomy includes the marking and dilineation of points or lines over the external surface of a cadaver for the purpose of locating vital structures within the body which will be of great help to the surgeon or physician in performing practical therapeutic or diagnostic procedures(4,5). Osteology includes not only the study of the structure of bones per se, but also the typing of bones based on their age, sex, and racial patterns(3,4). A sound knowledge in osteology will give the anatomist an extra edge over his domain to interpret even the differences between the age or gender of various bones in medico-legal cases. However, this method of osteological evaluation has still not been utilised up to its fullest extent in many countries but it needs to be realised that anatomists can be of vital importance to a forensic expert in matters related to the age and gender determination of bones. Gross anatomy encompasses a vast field wherein the structures are appreciated either through cadaveric dissections or through prosected specimens or through three dimensional computer imaging. This gross anatomy can be studied either region wise or systemically(3,4). Radiological anatomy involves the interpretation of images obtained through various imaging techniques primarily for research purposes but it's impetus in serving as a guide to diagnostic imaging is still undermined(3-5). Embryology that deals with the development of a human being from the time of conception till birth, is a vital keystone for an anatomist. This is because embryology is an essential part of the anatomy syllabus and all anatomists are fairly equipped with the understanding of the development of not only the embryo but also the various systems of the embryo in detail. Because of this, anatomists can be of great help to an obstetrician in timing the events of pregnancy and determining the outcomes of every week of antenatal care(3-5). However, this agenda has also been largely undermined, owing to the perception by many that the knowledge of embryology possessed by the anatomist is of relevance only for teaching purposes, which by far is largely false.

Histology in anatomy, not only includes the study of tissues but also the ways and techniques by which these tissues are prepared and studied. There is a slight overlap between histology and pathology, however, a knowledge of normal histology of tissues may help the pathologist in properly understanding the disease process. Histology not only deals with tissues at the surface level but also with individual cells and their components at a molecular level that is aptly dealt with in cytology, which in turn is a part of histology(3-7). At the level of the nucleus, an apt understanding of the number of chromosomes and their abberations through

karyotyping, and the structure of the nucleoid through electrophoresis techniques like the comet assay are all dealt with in cytogenetics, which essentially is a part of anatomy(6,7).

Having so many clinical applications, human anatomy can no longer be said that it's just a teaching modality, but rather it is a major research "junction box" with all the necessary tools required for a systematic clinical study, thus serving as a clinical guide apart from teaching.

References

[1]. Lavelle CL. Letter: Anatomy in the future. Can Med Assoc J. 1976 Jul 17;115(2):109. PMID: 1277069; PMCID: PMC1878578.

[2]. Habbal O. Anatomical Research: Misconceptions and opportunities. Sultan Qaboos Univ Med J. 2017 Feb;17(1):e1-e2. doi: 10.18295/squmj.2016.17.01.001. Epub 2017 Mar 30. PMID: 28417020; PMCID: PMC5380403.

[3]. Standring, S., Borley, N. R., & Gray, H.. *Gray's anatomy: the anatomical basis of clinical practice*. 2008 40th ed., anniversary ed. [Edinburgh]: Churchill Livingstone/Elsevier.

[4]. Standring S. A brief history of topographical anatomy. J Anat. 2016 Jul;229(1):32-62. doi: 10.1111/joa.12473. PMID: 27278889; PMCID: PMC5341593.

[5]. Standring S. Evidence-based surface anatomy. *Clin Anat*. 2012;25(7):813-815. doi:10.1002/ca.22133

[6]. Gunasekarana V, Raj G V, Chand P. A comprehensive review on clinical applications of comet assay. J Clin Diagn Res. 2015 Mar;9(3):GE01-5. doi: 10.7860/JCDR/2015/12062.5622. Epub 2015 Mar 1. PMID: 25954633; PMCID: PMC4413081.

[7]. Susai S, Chand P, Ballambattu V B, Hanumanthappa N, Veeramani R. DNA Damage Analysis in Children with Non-syndromic Developmental Delay by Comet Assay. J Clin Diagn Res. 2016 May;10(5):AC06-8. doi: 10.7860/JCDR/2016/19578.7806. Epub 2016 May 1. PMID: 27437200; PMCID: PMC4948375.

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