

Anatomy – Cinderella in the Medical Curriculum?

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Introduction

I watch with dismay as retrogressive changes are made in the courses for undergraduate study in our medical colleges. One would imagine that those at the helm of medical education would act in the best interests of academic medicine and of medical students. Instead, we are witness to decisions based on political and other extraneous considerations.

One such recent change affects the teaching of anatomy.

This essay discusses the importance of anatomy in the making of a doctor and the need for intensive training in this branch of the medical sciences.

History

We owe our understanding of the wonderful structure of man to the many selfless and dedicated pioneers in this field who often worked under very difficult circumstances. Sushruta's forebears, colleagues and successors obtained bodies or parts for dissection only after considerable effort. Even so, extant social mores dictated that they could only study bodies that had been immersed in running water for some days. Dissection thus involved peeling away of layers of sodden tissue off the putrefying corpse. It is to the credit of this great school of medicine that under these conditions they were able to identify structures such as the recurrent laryngeal nerve.

For centuries, students of anatomy in Europe depended on bodies or parts stolen from the gallows on either side of the main entrances to the city or from graveyards. These thefts were carried out at the risk of losing their own lives. Even after the bodies had been thus obtained, conditions were far removed from those in modern dissection halls. There were no means for preserving the body from putrefaction or storing it. Anatomists hid them under their own beds or elsewhere within their homes, took them out in the dead of the night and dissected by candle or lamp light. It is under such conditions that the great masters ranging from Andreas Vesalius and Leonardo da Vinci to Robert Knox and John Hunter studied and taught the science. We stand on their shoulders as we attempt to further our understanding.

Blessed, as we are, with ready availability of bodies for dissection thanks to the Anatomy Act, it is especially sad that 'educationists' advocate reduction of the time spent by medical students in the dissection hall.

Importance of anatomy in the medical curriculum

The entire edifice of medicine rests on our understanding of the four foundations, listed in descending order of importance:

- the structure of man
- the function of the human body
- disease processes that ravage structure and function
- means for preventing or treating disease.

To understand function, we must first comprehend structure. We cannot hope to unravel the effects of disease processes without first learning the structure and function of man. Finally, our success in treating the patient is directly proportional to our mastery of the other three elements.

Duration of the course in anatomy

It must be evident even to the simplest mind that to be a good doctor, one must drink deeply at the fountains of anatomy (structure) and physiology (function). This is why the far-sighted founders of our medical courses allotted eighteen months of a course spread over five-and-a-half years to the study of these two subjects.

I learn that the time allotted to the study of anatomy has now been reduced to twelve months. What is the sense behind this shrinkage of the course? Since there has been an explosion in our understanding in all branches of medical sciences – and anatomy is no exception – it would seem logical to expand courses, and, if necessary, the total duration of the undergraduate medical curriculum.

Instead, we are told that many aspects of the basic sciences are now irrelevant and must give way to the clinical sciences. Such thought flies in the face of basic principles.

Anatomy remains vital to the understanding of man. The techniques used to impart instruction in it can be profitably modified. The teaching of the structure of man can and must be integrated into the understanding of disease and therapy. Such measures will, inevitably, mean spending time on improving the student's understanding. Shortening the course will result in omission of vital linkages in the student's mind and leave him ill-equipped to understanding subsequent subjects.

Is dissection relevant in the electronic era?

Reverence for life has prompted soul-searching into the methods we use for the study of physiology. Is it correct to sacrifice a dog to teach medical students the process by which food is digested? Is it correct to sacrifice frogs to enable students to see the beating heart? The availability of facilities for recording sights and sounds on moving film, video-cassette or the compact disc has inspired some teachers to use these for repetitive teaching, eliminating the need to kill animals each time a new batch of students enters the laboratory. Others have gone a step further. They plead for teaching students on live human beings, using such wondrous tools as cine-radiology, sonography, computerised tomography, radioisotope scanning, angiography and magnetic resonance imaging.

So far, so good.

Logic, however, yields to short-sightedness when it is suggested that dissection in anatomy too can be dispensed with, the teacher screening video-films to teach students. The stupidity of such a suggestion is evident from a parallel in the history of anatomy.

For over fourteen hundred years after the death of Claudius Galen, the understanding of anatomy stagnated and its teaching was riddled with such errors as the insistence on the presence of the *rete mirabile* in man or that our livers are multilobulated. The persistence of these misconceptions followed the failure of teachers and students to dissect and verify anatomical facts for themselves. And so it is today. The student must verify for himself the structure of the human body and learn, along the way, of anomalies and malformations that can, if missed, lead to misdiagnoses and ill-directed treatments.

How else, other than by dissection, can the student get the feel of a vein as against that of an artery, a nerve as against a tendon or a duct? How else can the relationships of various structures be engraved in memory?

I have encountered a statement that prompts grave disquiet in my mind. 'Surgeons alone need to master anatomy. Let them dissect during their postgraduate training.'

Our finest radiologists (Dr. Pheroze E. Billimoria is an example) have always taught that there can be no interpretation of the shadowy films without a deep and intimate understanding of anatomy. Barriers have crumbled and cardiologists, gastroenterologists, radiologists and others 'invade' a variety of vessels, ducts and organs and manipulate or alter them for the benefit of the patient. Lacking a solid foundation in anatomy, such therapy will, almost certainly, result in disaster.

Those arguing against dissection perform a grave disservice. The real tragedy lies in the fact that these senior teachers will lose nothing themselves. The loss will be that of generations of students who will be forced to learn a pale imitation of anatomy that will ill-equip them to tend to their patients.