Editorial

WHAT DO WE DO WITH THE ANATOMY?

José Luis Bueno-López

Department of Neurosciences, School of Medicine and Dentistry, The University of the Basque Country (UPV/EHU), Leioa Campus, Leioa, Biscay, Spain

After 42 years of experience as professor at Spanish medical schools and visited many other European and American institutions, I have been witness to changes in the content and method of teaching anatomy. Let me highlight some of these experiences here. Not that I think the past was better, much less. Nor do I believe that change is always for the better. Any discussion will be welcome.

1. Reduction of anatomical content and decrease in time spent teaching anatomy during the degree in medicine and surgery / Increase of other contents.

Recent graduates say repeatedly that they perceive a lack of enough knowledge of anatomy, along with physiology and pharmacology, when they enter the residency. The hospital senior staff, in particular surgical attendings, highlights gaps in the anatomical knowledge of new residents.

This is sort of a Malthusian problem. On one hand, any teacher is eager to have as many opportunities to teach his/her discipline as possible. On the other, there is progressively more and more knowledge to be learned, increasingly consuming time and space. Yet time is finite. To make matters worse, the appreciation of anatomy has fallen in the minds of a number of colleagues, deans, rectors and patrons, who consider anatomy is dated, time-consuming and expensive.

I ask, however, should it be prudent to not devote all available time and effort into teaching reading and writing? Is reading and writing 'too simple', even outdated as a foundation to intellectual advancement? So to, we anatomists should explain that anatomy is part of the foundation upon which all of medical knowledge and expertise are laid. Not just because it is of our own interest, but because it is of interest to the medical profession and the population altogether.

2. The recent "Bologna process" in Europe. (Process of convergence to facilitate validation of qualifications between countries of the European Union)

The opportunity was lost, in my opinion, to reform the teaching of medicine and surgery in Europe in the style of the USA, with an entry-level degree in biology or chemistry (four-year college) with additional pre-requisites (“pre-med” courses), and four subsequent years at the medical school.

This reform would have allowed an increase in the time allotted to the teaching of classical medical disciplines such as anatomy. Other foundational subjects (biology, cell biology, biochemistry, biophysics, statistics, etc.) would not need as much time or no time in the four

years of medical school. The result would have been a clear improvement in undergraduate training of doctors and surgeons. This does not apply only to Europe but also to other countries with the exception of the USA and Canada.

This reform would have had the additional advantage that our students would be more emotionally mature, because they would enter medical school at age 22, rather than 18. One could argue that today students may have more general knowledge at their age than I had, but may be less independent in thought and action. I believe that guiding pupils by the hand for too long is detrimental to them. I honestly believe that the pedagogic advice that Jean Piaget described for childhood is not to be applied to young adults, unless one wishes that young adults fall back to their childhood, which also was pointed out by Jean Piaget.

Regarding the age of acceptance to medical schools, we should reflect as well on its possible influence on school failure rates. A good number of failures could be attributable to poor choice of studies at an early age, but often these failures are attributed only to the institution. The undesirable but inevitable result is pressure to lower standards, I am afraid.

3. Dissection of human cadavers.

Dissection enables students to acquire knowledge, skills and professional attitudes. The human cadaver serves as the student's first "patient". As they unravel the intricacies of human anatomy they do so, not only by visualizing interconnected body parts, but by touching and feeling them with scalpel, forceps and hands. It is their first opportunity to not only experience the frailty and geometrical association of human anatomy, but also to learn to respect the sacrifice that their "patient" made for his/her education. Similar "sacrifices" will be experienced throughout one's career in the practice of medicine. The unfortunate truth being that patients face complications or adverse outcomes that serve to "teach" physicians in the form of experience. This is a truth that is experienced and should be pointed out first hand by us as professors of anatomy. While the cadaver is a lifeless, motionless example of what is to come, one could argue that it can become the foundation even of the doctor-patient relationship. It is, for some, both an educational and spiritual experience.

Dissection also allows students to become familiar with the scientific method. With dissection, students interpret what they see and compare it to what others saw either with similar techniques (dissection, anatomy atlases and books) or other (e.g., imaging techniques).

4. Body donation programs for medicine and other health sciences.

The step between collecting unclaimed bodies and establishing programs of informed consent and altruistic donation by people with proper mental faculties intact is essential to have enough material for learning anatomy before graduation, in residency training and in continuing education courses. Any effort in this direction will be welcomed by society if is well explained and organized. I draw on my experience as a founder of a body donation program at my university 35 years ago. Do not forget to ask for additional consent if the body, or any part thereof, might be exhibited for scientific or educational purposes.

5. On the use of examples of anatomical clinical application.

I think we have to be extremely careful with clinical/pathological examples given to students in order to enhance and stimulate the learning of anatomy. In my experience, such examples are useful if they are very simple and understandable to the novice; but they discourage and confuse if the student does not have enough clinical knowledge to understand them.

6. Breaking the Aristotelian division between theory and practice.

Teaching in small groups, sort of teacher/pupil tutorial style is certainly the best in my contention. Unfortunately, the number of students who come annually to medical teaching institutions, especially in the early grades is overwhelming in most institutions. And yet, you need to train enough doctors to serve the population at large. How do we complete the circle? I think the only way is to increase the funding of educational facilities and faculty. Money and reform (as was noted in point 2 above) are needed desperately.

7. Teaching anatomy

I do think of it as unfortunately necessary, to specialize our study of anatomy, because we teachers have to fulfill teaching assignments as well as research; both are essential parts of our responsibilities as a University professor. Although whenever possible I do prefer the continuity engendered in the teaching of anatomical subjects as a whole, in line with the comments of point 6. I began my career by doing so; and I have returned to it for the past six years. A small group of students (no more than twenty); I teach them all the anatomy (embryology, morphogenesis and fetal development, gross anatomy, neuroanatomy). I have never been happier and I think they are also more satisfied.

8. Teaching is a science as a whole or in each of its branches, but the teaching job is a profession

(it is root in the science, it goes without saying that the practice of medicine is similar).
I have the impression that sometimes we forget the boundary between science and profession. A teacher can do research in education or in clinical/developmental anatomy or neuroanatomy etc., yet what we all have to have is a solid foundation in the knowledge essential for our trade. Moreover, we establish this foundation by acquiring that knowledge from masters of the subject matter, that in kind are master teachers. In research, you may complete many doctoral courses but above all you must learn technique from a good master in a good laboratory. Overall, as with any profession, I suspect that the initiative and passion of each individual candidate for teaching as well as science is an over arching principle that will ultimately determine the quality of the teacher above and beyond what I have outlined.
I thank you for reading this short manifesto, and I thank my good friend, Dr. Susana Biasutto for the opportunity she has given me in order to express myself with candor.

