Editorial

ANATOMICAL SCIENCES AT THE CROSSROADS: INTERSECTION, CONTINUITY AND INTEGRATION WITH OTHER DISCIPLINES

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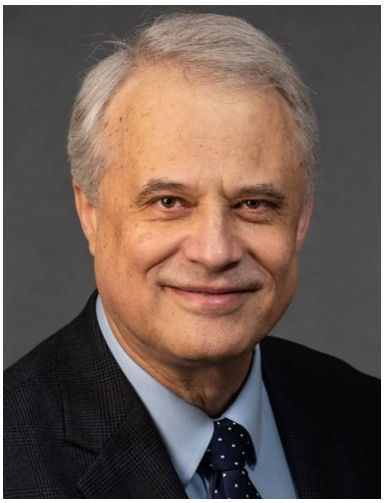

Within the curriculum, the anatomical sciences have traditionally occupied an early and often extensive place in the schedule of students preparing for a career in the healthcare professions. Although the total number of hours allocated to these disciplines has been gradually and to a variable extent reduced in many institutions, they still represent a clear landmark, an intensive instructional component, and a stepping stone in the instructional process.

From one generation of teachers and learners to another, it has been rightly advocated and generally agreed that the anatomical sciences represent the prerequisite for studying other areas of basic sciences and then successfully advancing into the clinical clerkships/undergraduate clinical courses, postgraduate training, and finally long-term professional practice. At least theoretically, the same view remains valid in our days. In reality, how much time and effort should be devoted, when and how it should be devoted, and what means to master the anatomical sciences in preparation for a successful career in all branches and specialties of health care sciences are aspects placed more and more under a visible or inconspicuous question mark (directly or indirectly, explicitly or implicitly, and at individual or collective level).

This perception is influenced by teaching and especially by the testing focus, timing and methodology. For instance, learners may not realize that anatomy is significantly tested in different exams and circumstances, in different formats, and at different levels. However, this is not done in the rather descriptive manner that was mainly used in the past. Despite creating a false sense of “fairness” regarding an exam and/or good scores/personal achievement in a particular course, tests based on pure memorization of anatomy (including fragmented clinical correlations) proved to be neither helpful nor rewarding on a long term basis. On the other hand, without a clear understanding of anatomy, the study of other disciplines (e.g. physiology, pathophysiology, pathology, medical imaging, etc.) would sometimes rely mainly on pure memorization of facts in those disciplines and therefore would result in a limited applicability.

Meanwhile and in direct conjunction with all of the above, the term anatomy (or its subdivisions including gross anatomy, development/embryology, histology and neuroanatomy) increasingly became accompanied on bookshelves and in

reference to curricula by a variety of denominators. Leaving aside the defined denominators focused on a certain field (e.g. surgical, radiological, dental, pathological, kinetic, etc.), other denominators have been by far less specific. For instance: basic; general; fundamental; essential; functional; applied; clinical; medical; illustrated; concise; instant; pocket; translational; holistic; and the list continues.

These terms certainly look attractive, promising and/or legitimate. Nothing wrong with them or their use for books or courses. However, as a principle, labels are not enough and do not offer any guaranty. Moreover, none of them fully and singularly captures the attributions of anatomical education, which is so critical for an adequate preparation of the learner/user of anatomy regarding current and future tasks. These denominators neither exclude each other, nor imply/ensure their synchronicity/compatibility with other denominators.

For instance, what exactly demarcates essential from non-essential, clinical from non-clinical, and so on? Could applied occur without clinical or clinical without applied? Are the qualities of basic, fundamental or essential automatically incorporated into clinical? Could essential and concise be dissociated from each other? On the other hand, what would be the meaning of essential without being clinical? In addition, as any textbook in our days is illustrated (although it depends in which manner and to which extent), how would such a description influence the selection of this title?

Regardless of how the course may be labelled, the main educational tasks relate these days not only to the time and format allocated to convey the anatomical knowledge. Instead, they should focus on how to select and make this material more relevant, while being less fragmented and disconnected from the rest of the curriculum. That means to outclass the spotty intersections between a merely descriptive approach and its clinical relevance by evolving towards a true comprehension of the complexity of the human body structure and function in health and disease with implications on prevention, therapeutic options, reflection on life, suffering and death, and many aspects linked to professionalism.

The well-known trend to move from Neuroanatomy to Neuroscience courses represents a good example. Although, even under these circumstances, the level of content, integration and comprehension offered by such courses largely differ from one academic setting to another, this approach has already created a much needed step forward in medical education. Many institutions have also moved lately to curricula based on units or blocks related to various systems, which follow the same concept, with the purpose to bring together, integrate and consolidate anatomical sciences, physiology, pathology, pharmacology, imaging, clinical skills, etc. The success in achieving these goals on a short or long-term basis may of course vary, especially regarding the “in vitro” vs. “in vivo” results, i.e. between what is planned/intended and what really happens in the direct instructional environment.

While the anatomical knowledge per se may or may not significantly change during time, the ways this knowledge is structured, presented, perceived, retained and applied induce continuous changes in the mind of every user/learner. The process is influenced by a multitude of factors including context, association and motivation. Beyond and above getting the information, the learner/user evolves and hopefully matures in approaching the knowledge, seeing its implications and predicting the outcome. This transition from novice to various levels of expertise encompasses not only a progression regarding the power of observation, categorization, prioritization and pattern recognition but also determines how solutions are sought, weighted, selected, implemented and evaluated. Other benefits consist in an increase in the awareness and self-awareness regarding potential bias, “blind spots”, cliché responses or dissociation between knowledge, procedural skills, attitudes and empathy.

No matter how neat and tidy advertised, presented or conducted, separate and occasional paragraphs, boxes or sessions labelled with terms such as “clinical” or “applied” anatomy are far from being either sufficient or efficient. Discussing the clinical significance of any topic does not constitute a nice seasoning served on the side of a main dish. They have to be embedded into the dish and in the larger perspective of the entire menu at all stages: i.e. in the way a topic was planned, prepared, presented, served, correlated with others, received, ingested, digested, absorbed, transformed and, as a result, the way all of the above steps influence the thinking of the learner on a long-term basis.

Anatomical sciences, after all, represent a continuity: be it within the human body, along the lifespan or the course of a disease, or as part of the entire field of biological and medical sciences. Subsequently, the time and effort dedicated to a deep understanding of anatomy should not be viewed as competing or coming into conflict with the time and effort dedicated to other disciplines and areas of study. Instead, all of them should be seen as harmoniously merging, supporting each other, and evolving together. In medical

education, just as in the case of the circulatory system, the arrangements in parallel and in series coexist and each of them has its own role and benefits. At the same time, the failure of one system would create the premises for the failure of other or all systems linked in parallel with it.

A number of key general driving forces are capable of facilitating this sustained integrative approach at undergraduate and postgraduate level and surpass many uncertainties and obstacles on the way. The driving forces include the interest and ability to instill, stimulate, encourage and maintain intellectual curiosity, right motivation, and a genuine desire to gain knowledge and use the accumulated knowledge and skills in the service of humanity seen both as a whole and at individual level, one person at a time.

The discussion of any anatomical concepts should therefore represent an active immersion into a saga, into a flow of identifying, interpreting and following its deep meanings and then learning how to use these meanings to decipher other questions and puzzles that would be encountered along the way, in familiar and unfamiliar situations. That could occur in the next instructional activity planned as part of the same course, in another section/sequence of the curriculum, or in specific situations related to clinical or research work at any time in the many years to come.