



Dissection in neuroanatomy: an experience report

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Abstract

The dissection belongs to the medical teaching-learning process since ancient times. However, due to the generalization of the practice, the demand for corpses increased so that control of their origin was lost several technological tools are used in the learning of human anatomy, such as anatomical tables and 3D printed organs, which are complementary to a good practice in the field of health. This study report an experience of four medical students performing a practical dissection immersion in neuroanatomy, as well as their perceptions about the evolution of knowledge of the brain structural characteristics. In a maximized perception, it was felt the need to combine ways to teach neuroanatomy in order to unite the theory with the real perception of the organs, enabling an anatomical and physiological understanding close to reality. The use of anatomical atlases in drawings or photographed images is the most traditional study tool and with technological development, digital tools have been gaining ground in this educational scenario. However, the oldest way to study anatomy, visual exploration and dissection of the human body, will always make a great contribution to the study of neuroanatomy. Nonetheless, access to biological materials, for well-founded ethical reasons, is becoming increasingly rare, that is why students who experience these experiences are able to transform the knowledge obtained from unique opportunities into teaching materials accessible to academics in the health area.

Keywords: Neuroanatomy. Dissection. Neurology. Medical education. Learning.

Introduction

The dissection belongs to the medical teaching-learning process since ancient times, having reached its splendor during the Renaissance, when it gained such a relevance to the point of being exhibited at the public events, conquering many followers. However, due to the generalization of the practice, the demand for corpses increased so that control of their origin was lost, a period in which the regulation of anatomical dissection became more rigid, aiming to avoid the commercialization and the banalization of the bodies [1]. Despite going through controversial ethical periods, it has remained an effective tool to correlate the anatomical characteristics of the human body with clinical and surgical practice [2].

In this context, several technological tools are used in the learning of human anatomy, such as anatomical tables and 3D printed organs, which are complementary to a good practice in the field of health [3]. Learning in the area of human anatomy is a challenge, which requires the exploration of various cognitive activities to succeed. During medical graduation, the neuroanatomy area is stigmatized for its complexity, especially for the difficulty of understanding the deep structures of the human brain in all its dimensions [4]. It is expected that the anatomical recognition, through the dissection of brain structures, enables medical students to develop, understand and consolidate previously acquired theoretical contents. In this way, it is understood that anatomical knowledge contributes to the reduction of errors in medical practice due to lack of structures and systems knowledge [5].

This study report an experience of four medical students performing a practical dissection immersion in neuroanatomy, as well as their perceptions about the evolution of knowledge of the brain structural

characteristics.

Experience report

At the end of 2020, four third-year students of the Medicine Course at FACERES were invited to participate in a neuroanatomy dissection course, held at the Federal University of Uberlândia, under the guidance of Profa. Dr. Karina do Valle Marques. Initially, the students were introduced to the Laboratory of Experimental Surgery and Microsurgical Techniques Dr. Agd Roquette and had contact with the surgical materials to be used in the course and the dissection techniques applied in neuroanatomy. On the second day, the students manipulated the human brains that belong to the institution's collection. Using human anatomy atlases, both printed and digital, the students studied and recognized the main anatomical structures present on the surface of the brain.

On the third day, they performed some cuts applied in the study of neuroanatomy, followed by identification of the sections and correlations with diagnostic imaging exams. On the fourth day, they reviewed the anatomical structures observed during the week and, using different colors pins, marked the structures and documented them photographically. Using the images obtained in this dissection process, students intend to create a photographic atlas applied to the study of neuroanatomy, sharing the experience of a small group, in a tool that helps other students. At the end of the dissection practices, the undergraduates report that the initial contact with the human brain was a privileged, demanding respect in carrying out the studies, highlighting the impact of the emotional component on the learning process. In addition, the students report that dissection had a great effect on understanding and recognizing the three-dimensional structure of the brain.

Over the days of immersion, the undergraduates gained notions of handling surgical instruments, developed motor skills necessary for medical practice, and identified structures in the dissected brains. Furthermore, the course made it possible to observe the existing anatomical variations between biological parts, the separation of recognition of brain lobes and other anatomical structures based on colors and images drawn in traditional human anatomy atlases. From this, students report, in consensus, that learning through visual exploration and physical contact with real brains, as well as the application of dissection techniques, presented an effective increase in knowledge about the anatomy of the central nervous system.

Reflection

Through immersion, students realized the

impossibility of providing biological material similar to that offered in the large-scale course for the study of health sciences academics, in view of respect for human life and current legislation. Unrestrained distribution could induce an irresponsible and illegal process of access to bodies, as it once happened in history [6-8]. Thus, fulfilling their ethical obligations and acting with social commitment, the academics who had the opportunity to access this material are responsible for producing ways to disseminate this knowledge, turning a private experience into a tool for public access. Therefore, the experience served as a parameter to perceive the structural reality of biological pieces when compared with resin pieces and graphic illustrations, a fact that back the limitations of anatomical comprehension generated by the color stereotypes in the literature [9,10].

Conclusion

In a maximized perception, it was felt the need to combine ways to teach neuroanatomy in order to unite the theory with the real perception of the organs, enabling an anatomical and physiological understanding close to reality. The use of anatomical atlases in drawings or photographed images is the most traditional study tool and with technological development, digital tools have been gaining ground in this educational scenario. However, the oldest way to study anatomy, visual exploration and dissection of the human body, will always make a great contribution to the study of neuroanatomy. Nonetheless, access to biological materials, for well-founded ethical reasons, is becoming increasingly rare, that is why students who experience these experiences are able to transform the knowledge obtained from unique opportunities into teaching materials accessible to academics in the health area.

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Data sharing statement

No additional data are available.

Conflict of interest

The authors declare no conflict of interest.

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