

The importance of the anatomical variations in life

Ceren Gunenc Beser

Beser CG. The importance of the anatomical variations in life. *Int J Anat Var.* 2018;11(2): 50.

Variation is the range of possible alteration for any characteristic of the species. Variations are inherent, and necessary to provide the diversity within the species, and to maintain the survival of the species. Human beings have a higher degree of variation than most other species and this variability is attributed to a combination of environmental and genetic sources. These variations may be caused by local, inherited or developmental factors. The line between the variation and the defect is not certain (1,2).

Each human being is a unique organism. In anatomy, when we talk about "normal" it means "within the normal range of variation" (3). In the literature, there are terms like "normal variation", "anomaly", "abnormal" and "malformation". Anomalies or malformations are considered as synonymous for structural abnormality (4). Many anatomists in history gave importance to anatomical variations such as Vesalius, Eustachius and Galen (5).

Since its first edition in 2007, International Journal of Anatomical Variations has provided a media for the novel and clinically significant anatomical variations. Anatomical variations are very common, especially vascular structures are highly variable. The highest rated classes of variations included in the curriculum are arterial (76%), venous (68%), followed by organs (64%) (6).

Many of these variations are still being reported for the first time. Some of these variations are clinically important and some are not. These variations may require treatment or they may be a variant of normal presentation and thus therapeutic activity may not be necessary. The presence of the variations may affect routine clinical procedures or important and complex surgeries. Anatomical variations may cause tendency to some diseases, may affect the symptoms, diagnosis and the course of the diseases (7). For example, an additional head of a muscle may cause pain syndromes (soeding), multiple tendons of a muscle of the forearm or the presence of a septum may cause stenosing tenosynovitis (de Quervain's) (8-10).

The variations are mostly important in surgeries. An additional branch of an artery, a different origin of a muscle or a distinct relation between a duct and a nerve may change the accomplishment of the surgery. The imaging techniques help the surgeons to be aware of the anatomical variations of a patient before surgery but all of the variations cannot be seen by these methods. The surgeons must be aware of the variation possibilities of the region he is working on. It is well known that the ignorance of these variations may cause clinical malpractices that may end up with morbidity or mortality of the patient. For example, the variations of cervical or brachial plexus may cause malpractices during ultrasound-guided regional anesthesia (11).

Anatomical variations have an embryological background and they are important for medicine and other sciences in life to understand the morphological properties of the human body. In the literature, it is reported that about 10% of clinical malpractice is because of the ignorance of the anatomical variations (12). In conclusion, variations present the anatomical differences between people and the physicians and surgeons must be aware of the variations for the patient safety.

REFERENCES

1. Cunningham DJ. The significance of anatomical variations. *J Anat Physiol.* 1898;33:1-9.
2. Ogeng'o J. Clinical significance of anatomical variations. *Anat J Africa.* 2013;2:57-60.
3. Moore KL. Meaning of "normal". *Clin Anat.* 1989;2:235-9.
4. Holmes LB. Congenital malformations. *N Eng J Med.* 1976;295:204-7.
5. Sanudo JR, Vazquez R, Puerta J. Meaning and Clinical Interest of the anatomical Variations in the 21st Century. *Eur J Anat.* 2003;1:1-3.
6. Raikos A, Smith JD. Anatomical variations: How do surgical and radiology training programs teach and assess them in their training curricula? *Clin Anat.* 2015;28:717-24.
7. Willan PL, Humpherson JR. Concepts of Variation and normality in morphology: important issues at risk of neglect in modern undergraduate medical courses. *Clin Anat.* 1999;12:186-90.
8. Thwin SS, Fazlin F, Than M. Multiple variations of the tendons of the anatomical snuffbox. *Singapore Med J.* 2014;55:37-40.
9. Zheng-Yu Gao, Hao Tao, Hao Xu, et al. A novel classification of the anatomical variations of the first extensor compartment. *Medicine (Baltimore).* 2017;96: e7875.
10. Freeman AJ, Jacobson NA, Fogg QA. Anatomical variations of the plantaris muscle and a potential role in patellofemoral pain syndrome. *Clin Anat.* 2008;21:178-81.
11. Soeding P, Eizenberg N. Review article: anatomical considerations for ultrasound guidance for regional anesthesia of the neck and upper limb. *Can J Anaesth.* 2009;56:518-33.
12. Cahill DR, Leonard RJ. Missteps and masquerade in medical academe: clinical anatomists call for action. *Clin Anat.* 1999;12:220-2.

Department of Anatomy, Faculty of Medicine, Hacettepe University Sıhhiye, Ankara, Turkey.

Correspondence: Dr. Ceren Gunenc Beser, Department of Anatomy, Faculty of Medicine, Hacettepe University Sıhhiye, Ankara, Turkey, Tel: +90-312-3052355, Fax: +90-312-3107169, e-mail: cngnc5er@gmail.com

Received: March 16, 2018, Accepted: March 29, 2018, Published: April 09, 2018



This open-access article is distributed under the terms of the Creative Commons Attribution Non-Commercial License (CC BY-NC) (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits reuse, distribution and reproduction of the article, provided that the original work is properly cited and the reuse is restricted to noncommercial purposes. For commercial reuse, contact reprints@pulsus.com