Unusual Terminations of the External Jugular Vein and Cephalic Vein: Case Report

Vena Jugularis Externa ve Vena Cephalica'nın Olağandışı Sonlanma Şekilleri

Kadir DESDİCİOĞLU,[a]
Kübra ERDOĞAN ÖZTÜRK,[a]
Mehmet Ali MALAS[a]

[a]Department of Anatomy,
İzmir Katip Çelebi University
Faculty of Medicine, İzmir

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Yazışma Adresi/*Correspondence:*
Kadir DESDİCİOĞLU
İzmir Katip Çelebi University
Faculty of Medicine,
Department of Anatomy, İzmir,
TÜRKİYE/TURKEY
kdesdici@yahoo.com

ABSTRACT During the routine cadaver dissection we performed in the dissection laboratory of our department, it was observed that on the male adult cadaver aged 60, the different termination patterns of external jugular vein in the left neck region and cephalic vein in the upper left extremity were different. It was monitored that of external jugular vein in the left neck region of the cadaver joined with suprascapular vein from the left scapular region, that they constituted a common venous trunk and that this common venous trunk communicated with the left venous angle. Separately, cephalic vein in the upper left extremity was determined to end in of external jugular vein in the neck region, instead of axillary vein. We are of the opinion that having the knowledge of these variations that we have described about external jugular vein and cephalic vein will be of use to the surgeons, radiologists and anesthetists involved in this region.

Key Words: Cadaver; veins

ÖZET Anabilim dalımız diseksiyon laboratuarında yaptığımız rutin kadavra diseksiyonu sırasında 60 yaşlarında erişkin erkek kadavranın sol boyun bölgesindeki v. jugularis externa'nın ve sol üst ekstremitesindeki v. cephalica'nın sonlanma şekillerinin farklı olduğu gözlendi. Kadavranın sol boyun bölgesindeki v. jugularis externa'nın sol skapular bölgeden gelen v. suprascapularis'le birleşerek ortak bir ven kütüğü oluşturduğu ve bu ortak ven kütüğünün angulus venosus sinister'e açıldığı izlendi. Ayrıca sol üst ekstremitedeki v. cephalica'nın v. axillaris yerine boyun bölgesinde v. jugularis externa'ya açıldığı tespit edildi. Kadavranın sağ boyun bölgesindeki v. jugularis externa'nın ve sağ üst ekstremitesindeki v. cephalica'nın seyri normal olarak tespit edildi. Daha önceki literatürleri incelediğimizde v. jugularis externa ve v. cephalica ile ilgili değişik çalışmalar tanımlanmıştır. V. jugularis externa ve v. cephalica ile ilgili tanımladığımız bu varyasyonlarının bilinmesinin bu bölge ile ilgilenen cerrahlara, radyologlara ve anestezistlere faydalı olacağını düşünmekteyiz.

Anahtar Kelimeler: Kadavra; venler

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External jugular vein is formed by the junction of the posterior division of retromandibular vein with posterior auricular vein within parotid gland.[1-3] This vein collects the greater part of the venous blood in the exterior part of the cranium and in the deep parts of the face.[1] External jugular vein arises from within the parotid gland on a level with the angle of the mandible. Then, by running down perpendicularly, it crosses the sternocleidomastoid muscle superficially in the way that it will run between the superficial and deep fascia. It ends in the subclavian vein

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by perforating the deep fascia on the middle section of the clavicle.[1,2] External jugular vein usually receives the anterior jugular, transverse cervical, suprascapular and occipital veins.[1]

Cephalic vein, the longest superficial vein of the upper extremity, commences from the lateral side of the dorsal venous arch.[1,4,5] After passing superficially along the anatomical snuff box, it revolves around the lateral side of the forearm and crosses over the frontal side of it. Then it runs up all the way to the lower edge of pectoralis major muscle below the superficial fascia. Here, it perforates the deep fascia and extends over deltopectoral groove. Then, by perforating the clavipectoral fascia in deltopectoral triangle, it runs to axillary fossa, ending in axillary vein here. Cephalic vein links up with basilic vein through median cubital vein in the cubital fossa.[1,4,5]

It is stated in several studies that external jugular vein is a variational vessel.[1,2,6] Furthermore, it is also stated by Satheesha and Soumya that the initial section is more variational than the terminating one.[1] Many researchers identified diversified variations in regard to cephalic vein.[4,7] Among these variations, those related to the non-existence of cephalic vein or its thinness, its state of being an appurtenance, its distinct course and termination patterns are identified.[4]

In our study, we aimed to identify the variations regarding external jugular vein and cephalic vein, which we believed to be different.

CASE REPORT

During the routine cadaver dissection we performed in the dissection laboratory of our department, it was observed that on the male adult cadaver aged 60 years, the termination patterns of external jugular vein in the left neck region and cephalic vein in the upper left extremity were different. It was also seen that external jugular vein in the left neck region of the cadaver was formed by the junction of the posterior division of retromandibular vein with posterior auricular vein (Figure 1). Afterwards, it was determined that external jugular vein, after crossing the sternocleidomastoid muscle superficially, joined with cephalic vein, approximately 1-2 cm. above the clavicle, and after a short course, converging with suprascapular vein running from the left scapular region, it constituted a common venous trunk (Figure 1). Also this common venous trunk was monitored to have ended in venous angle by proceeding transversely along the superficial part of anterior scalen muscle (Figure 1). In the measurements we performed, the length of external jugular vein, up to the point where it joined with cephalic vein, proved to be 8 centimeter (cm), and 5.45 millimeter (mm) in diameter; its length between the point where it joined with cephalic vein and the point at which it linked up with suprascapular vein was 2.5 cm, and 7.82 mm in diameter, and the length of the common venous trunk formed by the convergence of external jugular vein with suprascapular vein up to venous angle, on the other hand, was measured as 4.5 cm, and 9.92 mm in diameter. Separately, the diameter of suprascapular vein running from the left scapular region was determined to be 7.34 mm. During the dissection, it was observed that cephalic vein in the upper left extremity progressed within the duct between deltoid muscle and pectoralis major muscle, and by passing along the posterior upper region of the clavicle, it ended in external jugular vein in the neck region (Figure 1). The courses of external jugular vein in the right neck region and cephalic vein in the upper right

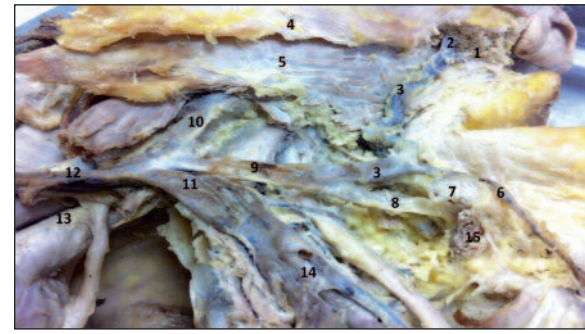

FIGURE 1: The picture of the unusual of external jugular vein and cephalic vein, 1: posterior auricular vein, 2: posterior division of retromandibular vein, 3: external jugular vein, 4: platysma, 5: sternocleidomastoid muscle, 6: cephalic vein, 7: clavicle, 8: suprascapular vein, 9: common venous trunk, 10: internal jugular vein, 11: subclavian vein, 12: brachiocephalic vein, 13: subclavian artery, 14: axillary artery, 15: subclavius muscle.

extremity of the cadaver were ascertained to be normal.

DISCUSSION

Different variations were identified with respect to external jugular vein.[1,2,6] Furthermore, it is also stated by Satheesha and Soumya that the initial section of external jugular vein is more variational than the terminating section of it.[2] Gupta et al., in a dissection practice they performed on 89 adult human cadavers, state that facial vein ends in external jugular vein in 9% of the cases.[8] Satheesha and Soumya in a case study they published, point out that facial vein and cephalic vein links up with external jugular vein.[1] Moreover, in the studies carried out, the fact that external jugular vein exists in pairs is reported by the researchers.[2,6] In a study conducted on 50 adult cadavers in 1994, external jugular vein in 60% of the cases was reported to end in venous angle; in 36% of them, it was stated to end in subclavian vein, and in 4% of them, it was said to end in internal jugular vein.[9] In another study conducted in 1996, it is stated that external jugular vein ends in venous angle at a rate of 72%, while it ends in subclavian with 26% and ends in internal jugular with 2%.[10] The researchers identified different variations also for cephalic vein, which is the longest superficial vein of the upper extremity.[4,5] Among these variations are those related to the non-existence of cephalic vein or its thinness, its state of being an appurtenance, its terminating in basilic vein or internal jugular vein, its distinct course or termination patterns.[4,5] Kim and Han, in a study they published, state that cephalic vein and external jugular vein end subclavian vein and external jugular vein by constituting a common trunk.[4]

The variations related to the vessels in human body can be developmental, because as the embryo grows, so will the vascular and cardiovascular structures develop with it through the placenta in order to bring forth the oxygen and the nutrients from the mother, and as they develop, they will be able to build up various connections.[5] Thus, such an outcome sheds some light on the fact that different variations regarding the vessels occur in the human body. External jugular vein and cephalic vein are clinically significant vessels, since they are among the most commonly-used vessels in central venous access.[1,4,6.11.12] Separately, it is the most appropriate vessel utilized in cephalic vein pacemaker and defibrillator implantations and in urgent intravenous drug injections, and the its possibility to get injured is rather low compared to the other veins.[1,4,6,11,12] Besides, having the knowledge of the variations of the termination and the course of these veins is quite important for surgeons, radiologists, anesthetists and cosmetic surgeons.[1,4,6,13-15]

Consequently, we are of the opinion that it would be of great use to the surgeons, radiologists and anesthetists involved in this region (of the body) to have the knowledge of the variations we have described as to external jugular vein and cephalic vein.

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