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Case Report

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High Origin and Superficial Course of Ulnar Artery: A Case Report

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ABSTRACT

Variations in the arterial system of the upper limb are well documented. During routine dissection of the right upper limb of a 60-year-old female cadaver, a superficial ulnar artery was noted. The ulnar artery had a high origin from the brachial artery in the middle of the arm and proceeded superficially in the forearm but had a normal termination in the hand. The common interosseous artery arose as a terminal branch of the brachial artery at the level of the neck of the radius. Reports of high origin of ulnar artery have been cited in the literature but what made this case different from others was its association with normal musculature in the forearm. Superficial position of the ulnar artery make them more vulnerable to trauma and to haemorrhage but at the same time more accessible for cannulation, if need be. Embryological basis and significance of such an origin has been explained. *©2006, Fırat Üniversitesi, Tıp Fakültesi*

Key words: *Superficial ulnar artery, human: arterial variations, anomalous origin, cardiac catheterization, arterial grafting*

ÖZET

Yüksek Orijinli Yüzeysel Seyirli Ulnar Arter: Olgu Sunumu

Üste ekstremite arteryel varyasyonları sıkça bildirilmiştir. Rutin diseksiyon çalışması sırasında sağ üst ekstremite de 60 yaşında bir kadın kadavrada yüzeysel unlar artere rastlanmıştır. Bu unlar arter kolun orta kısmında brakial arterden yüksek orijinli olup, ön kolda yüzeysel seyrederek elde normal lokalizasyon da sonlanmaktaydı. İnterossöz arter radius boynu hizasında brakial arterin terminal dalı olarak ortaya çıkar. Yüksek orijinli unlararter literatürde bildirilmiştir, olgumuzu nadir kılan bu arterin ön kol normal kas yapılarıyla olan ilişkisidir. Yüzeysel ulnar arterler travmalara ve kanamalara karşı hassas yapılardır ancak gerektiğinde kanül yerleştirilmesi kolaydır. Bu tip bir orijinin embryolojik temeli ve önemi açıklanmıştır.*©2006, Fırat Üniversitesi, Tıp Fakültesi*

Anahtar kelimeler: *Yüzeysel unlar arter, insan,arteryel varyasyonlar, orijin anomalisi, kardiak kateterizasyon, greftleme*

Morphologic variations in the arterial pattern of the upper extremity bear considerable significance from the surgical point of view in relation to the procedures in this area. Incidences of major arterial pattern variation as high as 18.53% have been reported. The high origin of ulnar artery from brachial artery has been reported in 1.33%of cases (Mc Cormack et al 1953). Although the developmental processes that underlie the etiology of arterial variations are not clear, persistence and degeneration of axial artery have a major role to play (Collins 1995). Normally the median nerve crosses the artery from lateral to medial side at the middle of the arm. At the cubital fossa, the artery is crossed by the bicipital aponeurosis. It ends at the level of the neck of the radius by dividing into radial and ulnar arteries (Datta AK 1997). Ulnar artery may arise proximal to the elbow, in which case it is usually superficial to the forearm flexors (Gabella 1995). Incidence of high origin of ulnar artery ranged from 0.67% (Weathersby 1956) to 9.38% (Devansh 1996). Herewith we present unusual occurrence of superficial artery and abnormal origin of common interosseous artery from the brachial artery.

CASE REPORT

An anomalous superficial ulnar artery was found in the right arm of a 60-year-old female cadaver during routine dissection. It originated from the brachial artery approximately 10 cms above the medial epicondyle. The artery coursed superficially in the cubital fossa forming its medial most content (Figure 1). Passing superficial to the muscles of the forearm but lying deep to the ante brachial fascia, this artery finally continued as the superficial palmar arch in the hand. Coexisting with this was an anomalous origin of common interosseous trunk that seemed to be a terminal branch of brachial artery at the level of the neck of the radius. The median nerve was posterior to the artery in the upper arm and crossed medially lying on its posterior side. No other visible anomaly of the muscle or artery and muscle of the contralateral limb was noticed.

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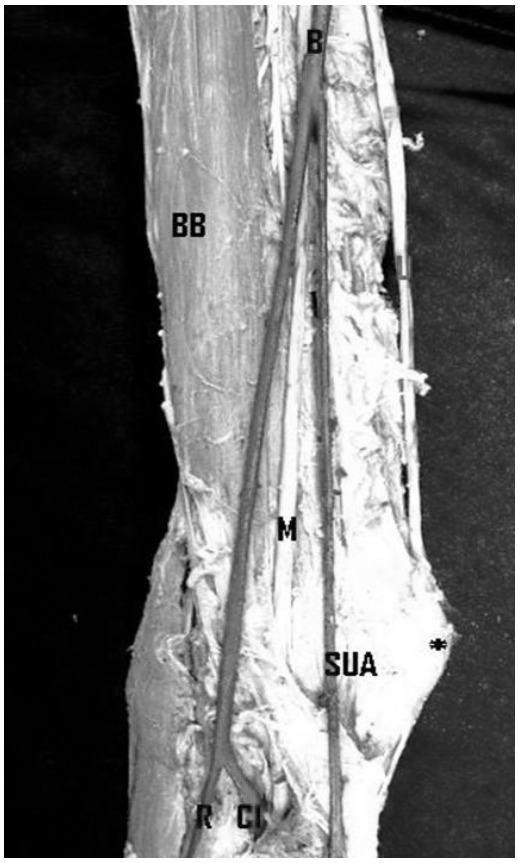

Figure 1. Anterior view of the Right upper extremity.B-Brachial Artery, BB- Biceps Brachii, U- Ulnar Nerve, M- Median Nerve,

SUA- Superficial Ulnar Artery, R- Radial Artery, CI- Common Interosseous Artery, *- Medial Epicondyle.

DISCUSSION

A case of occurrence of superficial ulnar artery along with retrobrachial median nerve has been reported previously (Latha VP et al 2002). However, the present case differed from the previous in that the ulnar artery has a high origin and a caliber much smaller than that of the normal artery in the contralateral limb. The termination of the brachial artery into radial and common interosseous artery is a similarity between these two cases. This arterial variation along with absence of any muscular abnormality makes it one of its kinds. Such an artery may present a superficial pulse and a hazard to venipuncture (Hazlett 1949).

Development of arteries of upper limb in 5 stages has been proposed (Senior 1926 and Singer 1933). An axial system represented in the adult by axillary artery, brachial artery and interosseous artery develops first while other branches develop later from the axial system. In stage 2, median artery branches from the anterior interosseous artery, while the ulnar artery branches from the brachial artery in stage 3. Formation of a superficial brachial artery from axillary artery and its continuation as radial artery marks the stage 4. Regression of the median artery and an anastomosis between the brachial artery and superficial brachial artery with regression of the proximal segment of the latter gives rise to definitive radial artery.

The present anomaly can be explained by the persistence of embryological vessels, which may be due to hemodynamic persistence of superficial system over deep system at the origin of ulnar artery. Genetic influences are deemed to be prevalent causes of such variation, although factors like fetal position in utero, first limb movement or unusual musculature cannot be excluded.

Variation in the branching pattern of the brachial artery is of significance in cardiac catheterization for angioplasty, pedicle flaps, or arterial grafting.

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