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The topography of the superficial veins of the hind leg in the baboon *Papio anubis* in comparison with the superficial veins of the lower limb in humans

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Our studies were carried out on 8 male and 2 female baboons Papio anubis *cadavers. We examined a total of 20 hind legs. The vessels of the hind leg were filled with coloured latex. Afterwards we prepared the superficial and deep veins and accompanying arteries. We paid attention to the location, diameter and the course of the long and short saphenous veins. We found many differences between the system of superficial veins in the baboon hind leg and that in the human lower limb. First of all, the long saphenous vein in the baboon* Papio anubis *presented as two similar trunks that ran together with a concomitant artery. The saphenofemoral junction was also duplicated. The distance between these outlets was about 4 mm and their location was different from that in humans. Neither trunk exceeded 2.5 m in diameter.*

Some human-like features were noticed in the system of the short saphenous vein in Papio anubis*. The diameter of the short saphenous vein and its course and the location of the saphenopopliteal junction were very similar to those in humans. On the other hand, the short saphenous vein was the main superficial venous channel of the hind limb of* Papio anubis*.*

Key words: baboon, *Papio anubis*, superficial veins, long saphenous vein, short saphenous vein

INTRODUCTION

The superficial veins of the lower limb in humans are well known. Generally there are two main superficial veins that receive the blood of the lower limb, the great saphenous vein and the small saphenous vein. However, there are many abnormalities in their course, diameter, the location of their junctions with the deep veins [1, 3, 5, 8] and also in their pathology. Varicose veins, for example, are not observed in animals such as monkeys and apes [3, 8].

These facts encouraged us to find out if the anatomy of the superficial veins of the lower limbs in humans and in monkeys are similar or are indeed different. As we had cadavers of baboons *Papio anubis* available and in view of the fact that we were unable to find any evidence of research on this in baboons, we decided to find out whether there are any important differences between the superficial veins of their hind legs and the superficial veins of the lower limbs in humans.

MATERIAL AND METHODS

Our material consisted of the 20 hind legs of the cadavers of 8 male and 2 female baboons *Papio*

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anubis. The vessels of the hind leg were filled with coloured latex. Afterwards we prepared the deep and the superficial veins and their accompanying arteries in the traditional manner using microsurgical tools. We exposed the course of the long and short saphenous veins and also the saphenofemoral and the saphenopopliteal junctions. We then photographed the specimens.

RESULTS

In all the baboon *Papio anubis* specimens examined the long saphenous vein presented as two similar trunks with the same diameter that ran, together with the accompanying artery, along the medial surface of the hind leg (Fig. 1). These three vessels ran in the same fascial sheath (Fig. 2). Both trunks began near the medial ankle and ended about 5 cm above the knee at the saphenofemoral junctions. In each specimen there were two saphenofemoral junctions and the distance between them was less than 4 mm (Fig. 3). The location of these junctions varied from 4 to 6 cm above the knee. In 4 cases they happened to lie 5 cm above the knee, in 10 cases 6 cm above the knee, and in 6 cases 4 cm above the knee. The external diameter of the trunks in 10 specimens was 2 mm; in 4 cases it measured 2.5 mm and in 6 specimens 1.5 mm.

However, the course and the diameter of the short saphenous vein appeared similar to the small saphenous vein in a human lower limb. The vein began near the lateral ankle and opened into the saphenopopliteal junction above the popliteal fossa. It ran as one trunk, without an accompanying artery (Fig. 4). The location of the saphenopopliteal junction varied from 2 to 3.5 cm above the line of the knee-joint. The junction was 2 cm above the line of the knee-joint in 8 cases, 3 cm above it in 4 cases and 3.5 cm above it in 8 cases. The diameter of the saphenopopliteal junction was about 4 mm (± 1 mm) in all specimens (Fig. 5). The short saphenous vein was the main superficial venous channel of the hind limb of *Papio anubis*.

DISCUSSION

A review of the scientific literature did not, unfortunately, reveal any work concerning the veins of the hind leg of *Papio anubis,* although studies have been made of the superficial veins in the macaque and the gorilla [2, 7, 10, 11].

Our comparison of the superficial veins of baboons and the superficial veins of humans was based on the material examined and our previous study on the types of outlet of the great saphenous vein in humans [8]. It was also based on the literature concerning the superficial veins of the lower limbs in humans [1, 3, 5, 6, 9]. By comparing the superficial vein system of the hind leg of baboons and the lower limb of humans we were able to demonstrate the differences

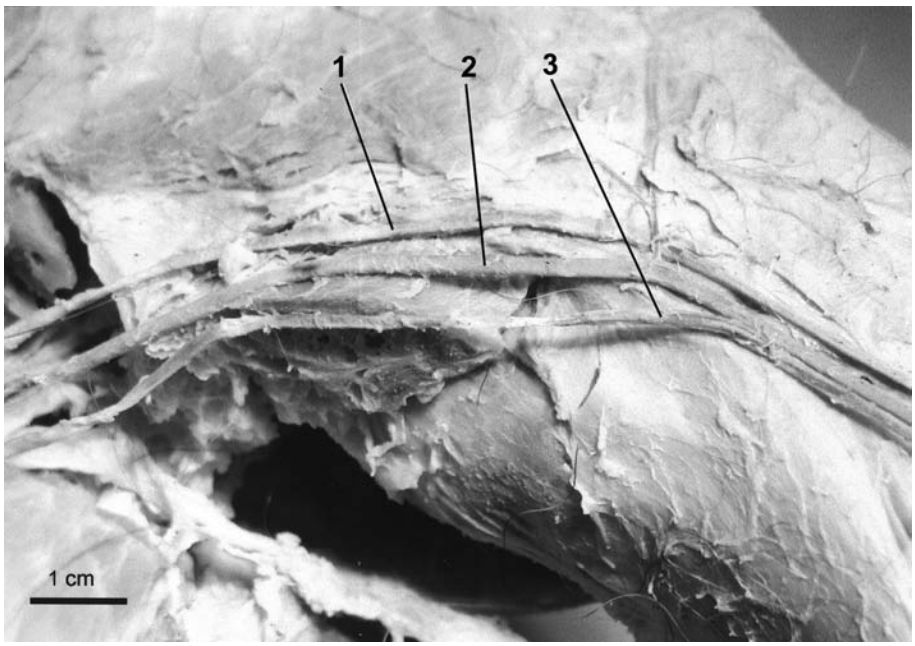

Figure 1. Medial view of the left hind leg of the baboon at the level of the knee-joint. Two trunks of the long saphenous vein and the accompanying artery. Bare 1 cm; 1 — lateral trunk of the long saphenous vein, 2 — accompanying artery, 3 — medial trunk of the long saphenous vein.

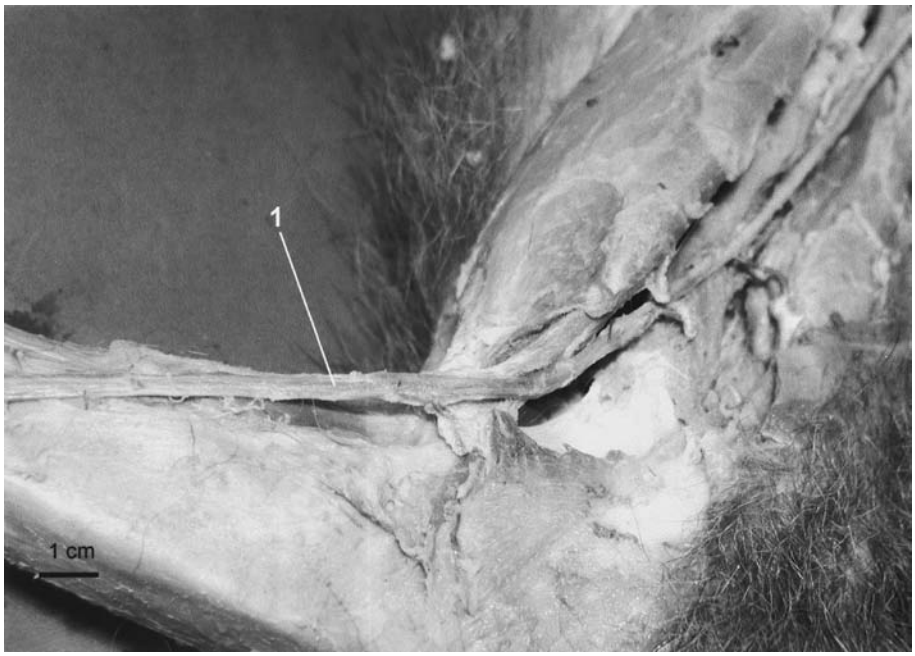

Figure 2. Medial view of the left hind leg of the baboon. The area near the knee-joint. Bare 1 cm; 1 — vascular sheath with three vessels inside: the medial and lateral trunk of the long saphenous vein and their accompanying artery.

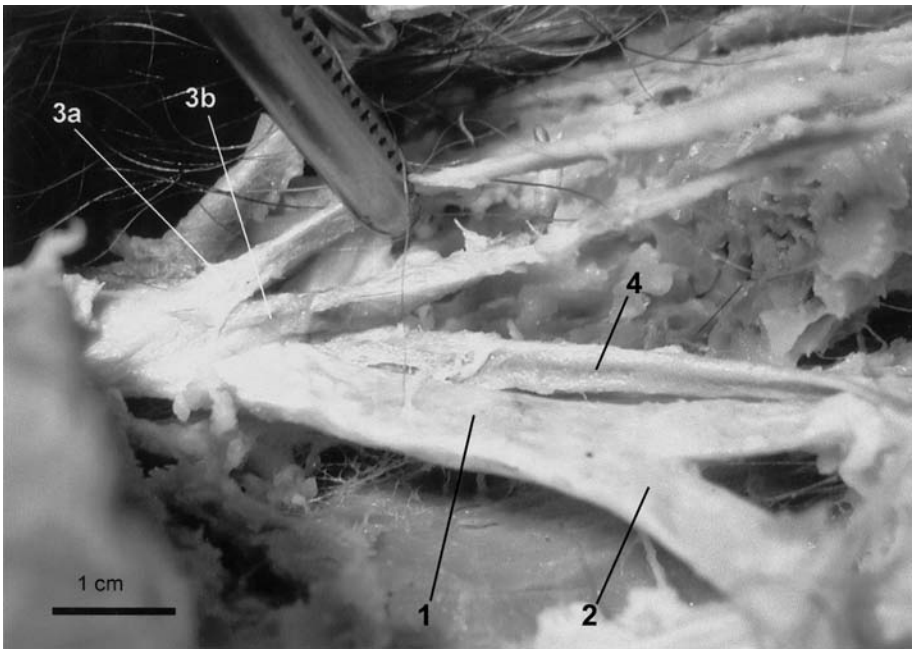

Figure 3. Medial view of the right hind leg of the baboon about 4–6 cm above the line of the knee-joint. Two separate saphenofemoral junctions of the long saphenous vein trunks. Bare 1 cm; 1 — distal part of the femoral vein, 2 — the area of the sapheno-popliteal junction, 3a — saphenofemoral junction of the medial trunk, 3b — saphenofemoral junction of the lateral trunk, 4 — distal part of the femoral artery.

between them. *Papio anubis* displays several similarities to humans and most parameters in human anatomy and physiology can be identified in this baboon model [4]. There are, however, some details that distinguish the superficial venous system of the hind leg in baboons from the superficial venous vessels of the lower limb in humans. As we know, the superficial venous system of the human lower limb consists of two main veins: the great saphenous vein and the small saphenous vein [6, 9] although the priority of

Figure 4. The course of the short saphenous vein on the posterolateral surface of the calf of the left hind leg of the baboon. Bare 1 cm; 1 — short saphenous vein.

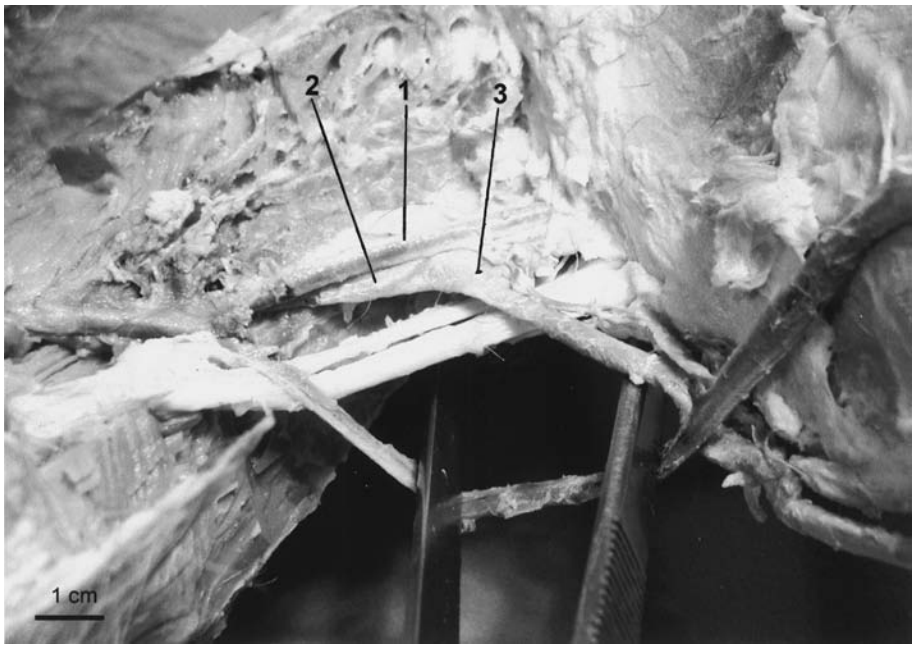

Figure 5. Lateral view of the right hind leg of the baboon at the saphenopopliteal junction area at the level of the knee-joint. Bare 1 cm; 1 — popliteal artery, 2 — popliteal vein, 3 — short saphenous vein.

the former would appear to be indicated by its diameter and length [5, 6, 8, 9]. This does not seem to be the case with baboons. In our material (20 hind legs) the short saphenous vein became the main superficial vein of the hind leg. It was usually larger and thicker than either trunk of the long saphenous vein. We noticed that this duplication of the long saphenous vein, which is a rare variant in humans [3, 5, 8], seems to be the standard pattern in the baboon *Papio anubis* and in our material it occurred in every specimen.

The short saphenous vein was also the prior superficial vein of the hind leg in the macaque [2, 11].

However, one specimen of gorilla examined by Chapple and Wood [2] revealed that it had a long saphenous vein of the human type.

CONCLUSIONS

1. The short saphenous vein is found to be the main superficial vein of the hind leg in the baboon *Papio anubis*.
2. In the baboon *Papio anubis* the long saphenous vein presents as two trunks that open into the femoral vein separately.
3. The saphenofemoral junctions are situated extremely low in comparison to the great saphenous vein ostium in humans.
4. The trunks of the long saphenous vein run together with the accompanying artery in the same fascial sheath, which is not observed in humans.

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