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CASE REPORT

Is a Small Oribi a "Large Ruminant"? Case Report

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ABSTRACT

The paper describes stemming from head arterial main stream, manifested by the facial artery and transverse facial artery in oribi (*Ourebia ourebi*) case. The studied material constitutes corrosive preparations of arteries obtained on osseous material, filled with acetone-dissolved stained vinyl superchloride. Facial artery is one of the main artery which supplies face.

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INTRODUCTION

A variable manner of stemming from the head arterial main stream, in large and small ruminants is generally known. It's regarding the course of the facial and the transverse facial artery. (Nickel *et al*., 1996; Budras and Habel, 2003; Ashdown *et al*., 2011). We refer this division, into small and large ruminants, to farm animals in which differences in the size and weight are significant. In this study we used the preparation of oribi (*Ourebia ourebi*) head arteries which belongs to the subfamily *Antilopinae*, family *Bovidae*, order *Artiodactyla*, accumulated in the vast collection by our Department of Animal Anatomy, and we decided to analyse the facial artery and the facial transverse artery of this genus. The oribi lives in Equatorial and South Africa. Its weight varies between 12 and 22 kg, body length 92-110 cm, and shoulder height 50-67 cm (Grzymek's, 1990; Nowak, 1991). This rare antelope was registered in the International Union for Conservation of Nature Red List of Threatened Species. In view of their unique character and infrequent manifestation we decided to discuss this case.

Results of such an analysis may improve general biological knowledge about this rare species and may also supply data useful for clinical purposes in veterinarian practice (Milgram *et al*., 2010; Dias *et al*., 2012), especially for veterinarians in charge of the oribis kept in zoos. Facial artery can be useful for taking the pulse rate (König and Liebich, 2010; Dyce *et al.,* 2011).

In this study we decided to verify the universal character of division into small and large ruminants, based on size and weight, as related to the pattern of the capital arterial blood supply on a model of the oribi.

MATERIALS AND METHODS

The studied material, originated from the national zoological garden, constitutes one case of the oribi male (*Ourebia ourebi).* Research of the capital arterial main stream began from dissecting the common carotid arteries. Arteries of studied animal were filled with acetone-dissolved stained vinyl superchloride. The injection mass was introduced into common carotid arteries using a syringe with the air pillow at a pressure of 60-80 kPa (Godynicki, 1970). After solidification of the injected mass, enzymatic maceration for a period of around 40 days at the temperature of 38°C was done. After this putrefaction corrosive preparations of arteries were obtained on osseous material.

Nomenclature of the arteries followed as per Nomina Anatomica Veterinaria (2012) and as per the illustrated veterinary anatomical nomenclature in household animals (Schaller, 2007).

Taxonomy of the species was accepted from the Mammal Species of the World (Wilson and Reeder, 2005).

RESULTS

In the studied oribi, the facial artery (*a. facialis*) diverged together with the lingual artery (*a. lingualis*) in a common linguofacial trunk (*truncus linguofacialis*) from the external carotid artery (*a. carotis externa*).

The first branch from the facial artery is a glandular branch (*ramus glandularis*) which makes its way to the mandibular salivary gland.

The facial artery after its passage through the mandibular notch to the facial surface of the mandible branched off masseteric branches (*rami massetterici*) to the masseter muscle (*musculus masseter*).

Terminal branching of the facial artery yielded inferior labial arteries (*aa. labiales inferiores*), and the superior labial artery (*a. labialis superior*), which gave many small branches, e.g. angular artery of mouth (a. angularis oris).

The transverse facial artery (*a. transversa faciei*), which followed its origin from the superficial temporal artery (*a. temporalis superficialis*), yields numerous fine branches to the masseter muscle.

DISCUSSION

The division into large and small ruminants is generally known and is used in veterinary medicine and animal husbandry. Textbooks of animal anatomy courses contain a division into large and small ruminants, which applies to cattle, sheep and goats. The scope of the wild cattle weight fluctuates from 600 to 940 kg, and household cattle can weigh more than 1000 kg. The shoulder height is between 150 and 200 cm, and the body length from 180 to 325 cm. In case of wild goats weight fluctuates from 25 kg (female) to 120 kg (male). Different morfometrical properties, such as the shoulder height, fluctuate from 60 cm (female) to 110 cm (male), and body length 130-186 cm. Wild sheep weigh from 32 kg (female) to 180 (male) with the shoulder height from 64 cm (female) do 120 cm (male). The body length varies from 100 to 200 cm (Grzymek's, 1990; Nowak, 1991).

In the studied oribi, the facial artery branched from the capital arterial main stream whose main arteries that supply the head and neck with blood are two common carotids arteries (; Frąckowiak, 2003; Standring, 2008; Dogan *et al*., 2010; König 2010; Dyce *et al*., 2011; Krysiak and Świerzyński, 2012; Mata, 2012).

In cattle, that is a household "large ruminant", the facial artery originated from the linguofacial trunk (Frąckowiak, 2003; Schaller, 2007; Dyce *et al*., 2011; Krysiak and Świerzyński, 2012; Zdun *et al*., 2014).

In wild animals the facial artery can branch in a different way. The facial artery originates directly from the external carotid artery that is the capital arterial main stream in a Giraffe (family *Giraffidae)* (Frąckowiak and Godynicki, 1979; Zdun *et al*., 2014) and in a Reindeer (family *Cervidae*) (Zdun *et al*., 2014).

Derivatives of the facial artery described earlier include the glandular branch to the mandibular salivary gland (Schaller, 2007; Krysiak and Świerzyński, 2012; Zdun *et al*.,2014), the submental artery (Schaller, 2007; Dyce *et al*., 2011; Krysiak and Świerzyński, 2012; Zdun *et al*.,2014), inferior labial arteries (Frąckowiak, 2003;

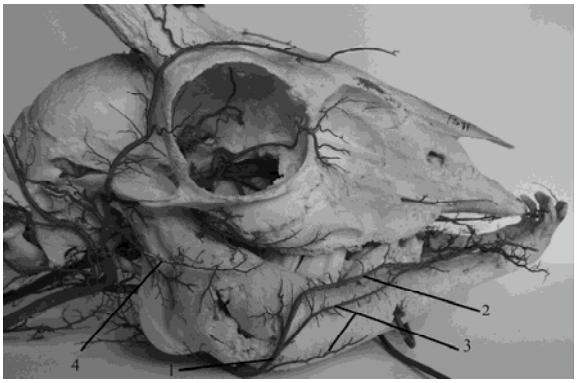

Fig. 1: Main arteries of the face.
1. Facial artery
2. Superior labial artery
3. Inferior labial arteries
4. Transverse facial artery

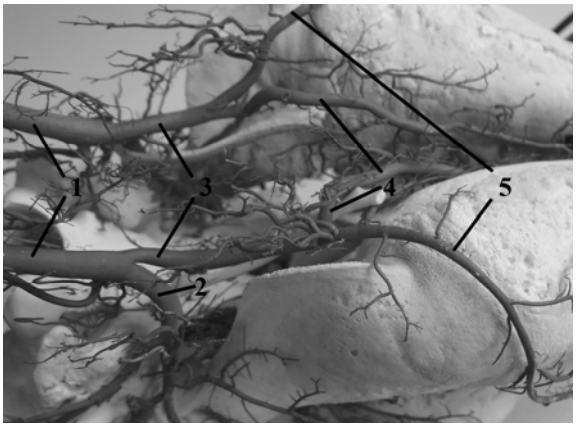

Fig. 2: Main arteries of the neck and head.
1. Common carotid artery
2. External carotid artery
3. Linguofacial trunk
4. Lingual artery
5. Facial artery

Schaller, 2007; Dyce *et al*., 2011; Krysiak and Świerzyński, 2012; Zdun *et al*.,2014), the superior labial artery (Frąckowiak, 2003; Schaller, 2007; Dyce *et al*., 2011; Krysiak and Świerzyński, 2012; Zdun *et al*.,2014), the angular artery of the mouth (Schaller, 2007).

In cattle the transverse facial artery supplying blood to the masseter muscle is poorly developed (Schaller, 2007; Dyce *et al*., 2011; Krysiak and Świerzyński, 2012; Zdun *et al*.,2014).

The absence of the facial artery was described in the sheep and goats or the so called "small ruminants" (Frąckowiak, 2003; Schaller, 2007; König and Liebich, 2010; Krysiak and Świerzyński, 2012; Zdun *et al*.,2014). In the mentioned species the absence of the facial artery was compensated by a pronounced development of the transverse facial artery, stemming from the superficial temporal artery (Schaller, 2007; Krysiak and Świerzyński, 2012; Zdun *et al*.,2014)), which yielded superior and inferior labial arteries (Frąckowiak, 2003; Schaller, 2007; König and Liebich, 2010; Krysiak and Świerzyński, 2012; Zdun *et al*.,2014) and the

masseter branch (Schaller, 2007; Zdun *et al*.,2014), the angular artery of the mouth (Schaller, 2007).

Based on the conducted study we should state that the division into the so called large and small ruminants, as related to the course of the facial artery, and the transverse facial artery, is not universal and is practiced only in farm animals.

REFERENCES

Ashdown RR, SH Done, SW Barnett and EA Baines, 2011. Atlas anatomii przeżuwaczy. Elsevier Urban & Partner. Wroc, 5-11, 16, 19.

Budras KD and RE Habel, 2003. Bovine Anatomy. Schlutersche, Hannover, 36-37.

Dias DPM, LG Teixeira, PA Canola, RM Albernaz, JA Marques and J Corrrea de Lacerda Neto, 2012. Long-term facial artery catheter implantation for serial arterial blood sampling and invasivearterial blood pressure measurement in horses. The Vet J, 192: 541-543.

Dogan NU, AE Cicekcibasi, Z Fazliogullari, MT Yilmaz, II Uysal and A Salbacak, 2010. Unilateral variations of vessels and nerves in the neck. Int J Morphol, 28: 963-966.

Dyce KM, WO Sack, CJG Wensing, 2011. Anatomia weterynaryjna. Elsevier, Wrocław. 262-263, 685.

Frąckowiak H, 2003. Magistrale tętnicze głowy u niektórych rzędów ssaków. Roczn AR Pozn, 336: 1-81.

Frąckowiak H and S Godynicki, 1979. Tętnice głowy u żyrafy. Rocz. AR Pozn. 111, Zootech, 26: 37-46.

Godynicki S, 1970. Auxillary setup for automatic injection of plastic masses during anatomic dissection. Folia Morphol Warsz 29: 115-118..

Grzymek's Encyklopedia Mammals. 1990. Mc Graw-Hill Publishing Company, 15: 340-341, 406-409, 512-515

König HE and HG Liebich, 2010. Anatomia zwierząt domowych. Galaktyka Łodź, 512, 738.

Krysiak K, K Świerzyński, 2012. Anatomia zwierzząt. Narządy wewnętrzne i układ krążenia. PWN, Warszawa. 457-461.

Mata JR, FR Mata, MCR Souza, H Nishijo and TAA Ferreira, 2012. Arrangement and prevalence of branches in the external carotid artery in humans. Italian J Anat Embriol, 117: 65-74.

Milgram J, M Weiser, E Kelmer and H Benzioni, 2010. Axial Pattern Flap Based on a Cutaneous Branch oft he Facial artery in Cats. Vet Surg, 40: 347-351

Nickel R, A Schummer and E Seiferle, 1996. Lehrbuch der Anatomie der Haustiere. Band III Kreislaufsystem Haut und Hautorgane. Parey Buchverlag Berlin.

Nomina Anatomica Veterinaria, 2012. International Committee on Veterinary Gross Anatomical Nomenclature, 5th ed. (revised version).

Nowak R, 1991. Waker's Mammals of the World 5th Ed. Vol II. Baltimore & London the John Hopkins University Press, 1445

Schaller O, 2007. Illustrated Veterinary Anatomical Nomenclature. 2nd edition. Enke Verlag, Stuttgart. 258-261

Standring S, 2008. Neck In: Pandit JJ (Ed). Gray's anatomy: The anatomical basis of clinical practice. London: Churchill Livingstone. pp: 435-466.

Wilson D and D Reeder, 2005. Mammal Species of the World. The Johns Hopkins University Press Baltimore, 651-722.

Zdun M, H Frąckowiak, K Kowalczyk, H Maryniak, A Kiełtyka-Kurc, 2014. Comparative analysis of the course of the facial and transverse facial arteries in selected ruminant species. Ann Anat 196: 129-134.

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