Department of Anatomy
Šrobárova 2, 041 80 Košice

Assoc. Prof. Ingrid Hodorová, MD, PhD.

21.-24.11.2018
MediTec, Košice, Slovakia

Co-funded by the
Erasmus+ Programme
of the European Union

History of Department of Anatomy

- Department of Anatomy at Medical Faculty of Šafárik University in Košice was established in August 1, 1949 by ***MUDr. Vladimír Munka*** (that time assistant of the Anatomy and Topographic Anatomy Department at Comenius University, Bratislava)
- Despite of difficulties and lack of efficient equipment, standard mode of teaching has started in **1st October 1949**

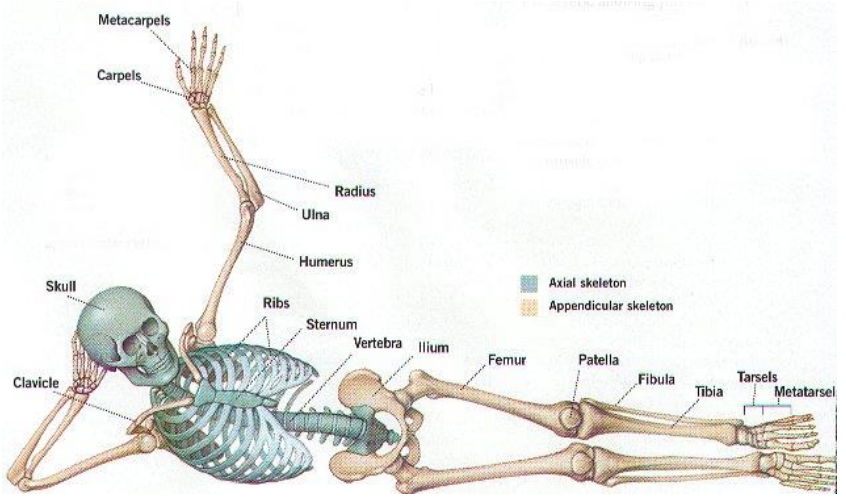
- **Heads of the Department of Anatomy successively:**

- Prof. MUDr. V. Munka, DrSc., , 1949 - 1986
- Prof. MUDr. A. Gomboš, DrSc. 1986 - 1992
- Doc. MUDr. M. Kočišová, CSc., 1992 - 2004
- Prof. MUDr. K. Schmidtová, CSc., 2004 - 2008
- Prof. MUDr. D. Kluchová, PhD., 2008 - 2016
- Doc. MUDr. Ingrid Hodorová, PhD., since 2016

Department Staff

- **Head of Department:** doc. MUDr. Ingrid Hodorová, PhD.
- **Deputy head for education:** prof. MVDr. Silvia Rybárová, PhD.
- **Professor:** prof. MUDr. Darina Kluchová, PhD.
- **Associate professors:** doc. MUDr. Adriana Boleková, PhD.
  doc. MVDr. Květuše Lovásová, PhD.
  doc. MVDr. Jozef Mihalik, CSc.
- **Assistant professors:** MUDr. Dalibor Kolesár, PhD.
  MUDr. Janka Vecanová, PhD.
  MUDr. Stanislav Matéffy
- **Assistants:** MVDr. Natália Hvizdošová, PhD.
  MUDr. Zuzana Kováčová
  MUDr. Andriana Pavliuk - Karatchevceva
- **Research worker:** Mgr. Františka Horváthová, PhD.
- **Secretary:** Mária Orgonášová
- **Laboratory assistants:** Mgr. Diana Gagyiová
  Mgr. Ivana Čigášová Perunská
  Mgr. Marcela Výrostková
  Rudolf Medvecký
  Milan Šingovský
- **Another employees:** Slávka Harcsová, Gabriela Kamencová
- **PhD students:** MVDr. Alena Hladová
  MVDr. Andrea Kreheľová

Teaching subjects



General medicine (GM)

- **Anatomy 1** – compulsory subject (1st year of study)
- **Anatomy 2** - compulsory subject (1st year of study)
- **Anatomy 3** - compulsory subject (2nd year of study)
- **Topographical Anatomy** – elective subject (3rd, 4th and 5th year of study)
- **Anatomical Dissection 1** – elective subject (3rd year of study)
- **Anatomical Dissection 2** – elective subject (3rd year of study)

Dental medicine (DM)

- **Anatomy 1** – compulsory subject (1st year of study)
- **Anatomy 2** – compulsory subject (1st year of study)

Study sources

- books, lectures, educational videos

Topics for practical lessons from Anatomy 3 for students of General Medicine

Topics for practical lessons from Anatomy 3 are developed for foreign students of General Medicine and are ar
and neck, cranial nerves, cervical plexus, regional anatomy of head and neck and neuroanatomy.

author: Janka Vecanová, Ingrid Hodorová | discipline: Anatomy | published on: 30.6.2018 | last modified on: 7.9.2018 | (cc) BY-NC-ND

Topics for practical lessons from Anatomy 2 for students of General Medicine

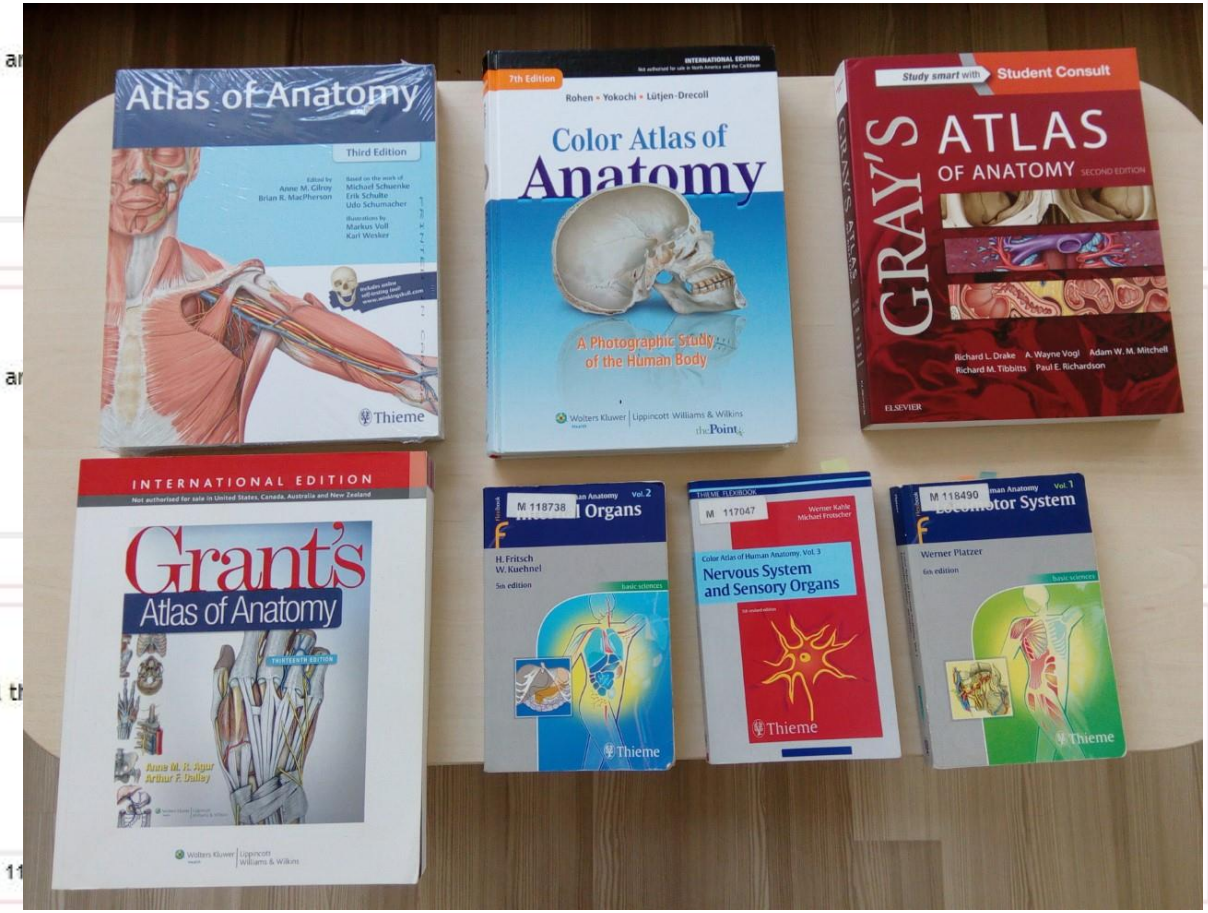
Topics for practical lessons from Anatomy 2 are developed for foreign students of General Medicine and are ar
mammary gland, mediastinum and heart, respiratory system, nasal cavity, nasopharynx etc.

author: Janka Vecanová, Ingrid Hodorová | discipline: Anatomy | published on: 30.6.2018 | last modified on: 7.9.2018 | (cc) BY-NC-ND

Anatomy 2 for students of General Medicine

Lectures are devoted to students of the 1st year of study - General medicine. The students can find here all th
digestive system, peritoneum, retroperitoneum, urinary system, reproductive systems and pelvis.

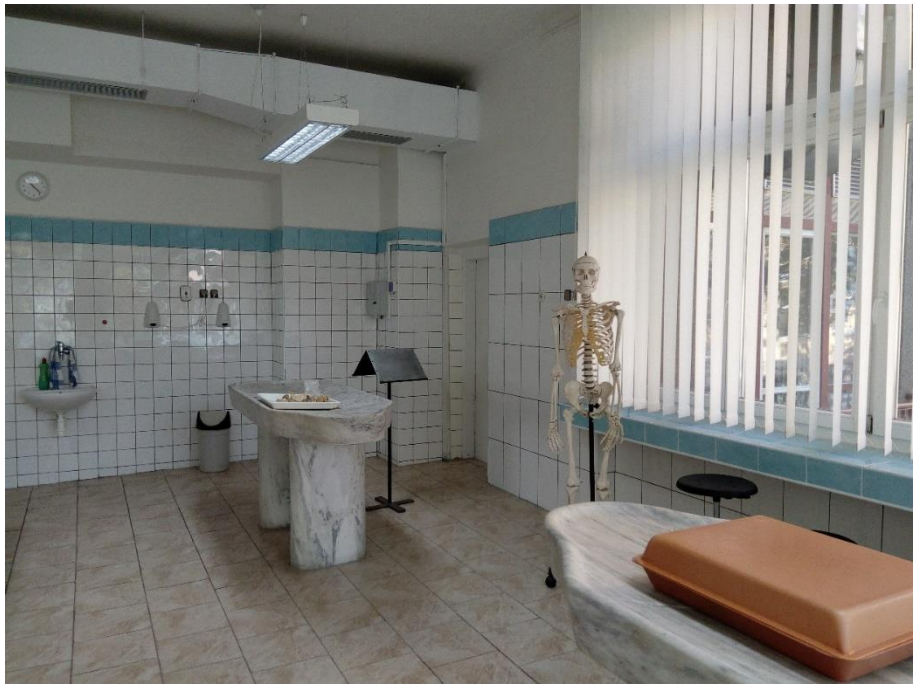
author: Ingrid Hodorová, Darina Kluchová, Silvia Rybárová, Jozef Mihalik | discipline: Anatomy | published on: 7.3.2011 | last modified on: 11



Anatomy 2 for students of Dental Medicine

These presentations included here represent a series of the second group of lectures for students of Dental Medicine in the first year of study. Lectures are dedicated to understand the skull and its connections, muscles, arteries, veins, lymphatic structures, and nerves of head and neck. The group of presentations continues with the description of sensory organs and individual nerve pathways, endocrine system, and topographical anatomy of head and neck structures.

Dissecting rooms



- on the ground floor (section A), there are dissection rooms, training rooms, the osteology study room 1, laboratory for research, and cleaner´s room

Practical lessons

Osteology study room

Seminar rooms

- on the first floor (section C), there is the Secretariat of the Department of Anatomy, office of the Head of the Department and teaching staff offices; in section D – research laboratories, seminar rooms 1 and 2, and osteology study room 2 (in seminar room 2)

MEDICAL SCIENCE MONITOR

CLINICAL RESEARCH

e-ISSN 1643-3750
© Med Sci Monit, 2018; 24: 5422-5426
DOI: 10.12659/MSM.909507

Received: 2018.02.14
Accepted: 2018.04.03
Published: 2018.08.04

Monoamine Oxidase B in Renal Cell Carcinoma

Authors' Contribution:
Study Design A
Data Collection B
Statistical Analysis C
Data Interpretation D
Manuscript Preparation E
Literature Search F
Funds Collection G

ABCG 1 Ingrid Hodorová
ABDG 1 Silvia Rybárová
ADG 2 Peter Solár
CD 3 Marián Benický
BDF 4 Dušan Rybár
BD 1 Zuzana Kováčová
CEF 1 Jozef Mihalik

1 Department of Anatomy, P.J. Šafárik University, Faculty of Medicine, Košice, Slovak Republic
2 Department of Medical Biology, P.J. Šafárik University, Faculty of Medicine, Košice, Slovak Republic
3 Department of Pathology, P.J. Šafárik University, Faculty of Medicine, Košice, Slovak Republic
4 Department of Anesthesiology and Intensive Medicine, P.J. Šafárik University, Faculty of Medicine and VUSCH a.s., Košice, Slovak Republic

Corresponding Author: Jozef Mihalik, e-mail: jozef.mihalik@upjs.sk
Source of support: This work was supported by following grants: VEGA 1/0204/16, VEGA 1/0394/15 and KEGA 019 UPJŠ-4/2017

Background: Studies on monoamine oxidase B (MAO-B) expression in renal cell carcinoma (RCC) are lacking. This study focused on the immunohistochemical evaluation of MAO-B in RCC.

Material/Methods: Sixty-three RCC samples were compared on basic clinical and histopathological parameters, including histopathological type and tumor grade. RCC samples were divided according to the histopathological type into 2 groups: conventional type (51 samples) and other types (12 samples). For MAO-B detection, a standard immunohistochemical procedure was employed.

Results: In healthy kidney samples, MAO-B was detected predominantly in tubules. Fifty-two cancer tissue samples were MAO-B negative and 11 tissue samples were MAO-B low positive. Enzymes were detected only in the cytoplasm. We did not find any significant correlation between the percentage of positive MAO-B specimens and nuclear grade. Additionally, Fisher's test did not reveal any difference in numbers of positive and negative MAO-B samples between the 2 RCC types ($P>0.05$).

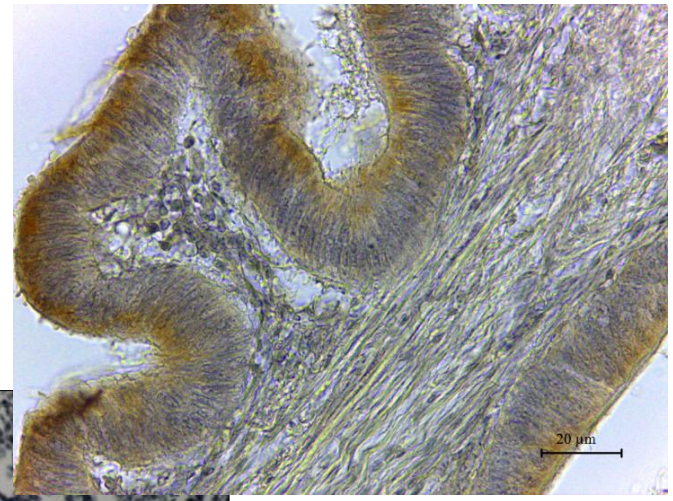
Conclusions: From our results, it was clear that MAO-B expression played no significant role in stimulation of renal cancer development. We found that MAO-B occurred only in 19% of kidney tumors and that the positivity of protein expression was low. Moreover, it seems that the disappearance of this enzyme in RCC is a consequence of replacement of healthy tissue by cancer cells. On the other hand, one can assume that the loss of MAO-B expression could be associated with severe pathological processes in the kidney.

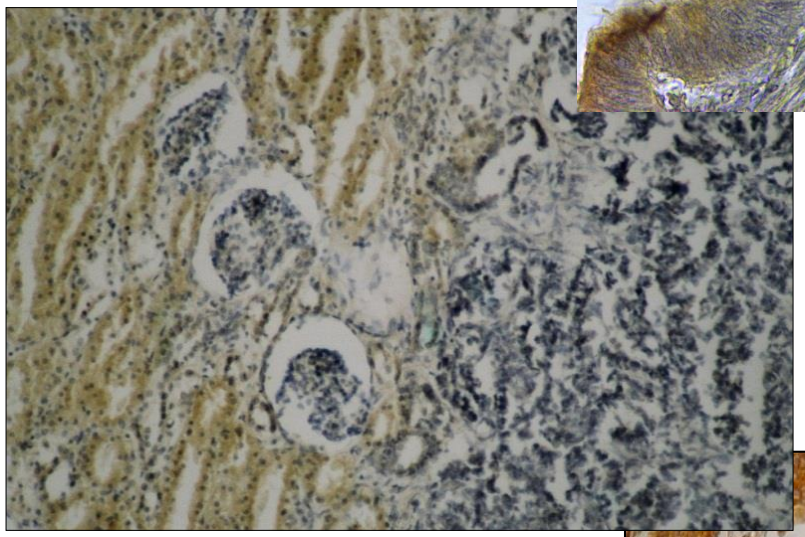
MeSH Keywords: Carcinoma, Renal Cell • Immunohistochemistry • Monoamine Oxidase

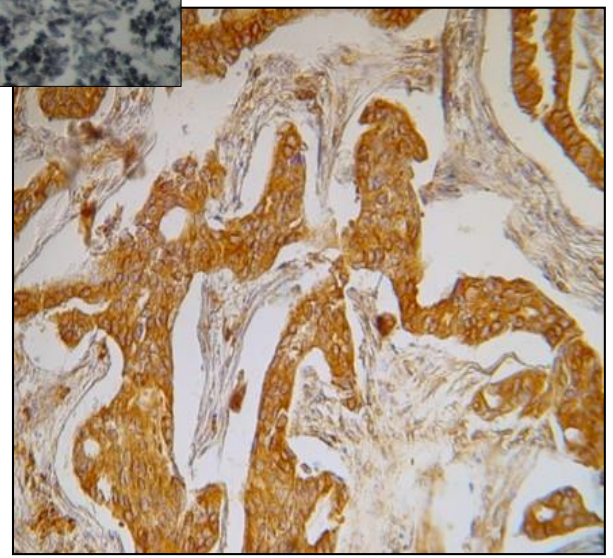
Full-text PDF: https://www.medscimonit.com/abstract/index/idArt/909507

1599 2 4 29

Research





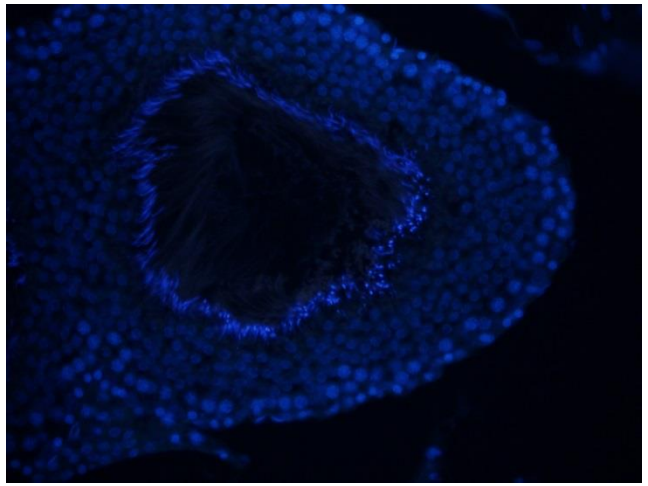


Research is focused on the following areas:

- study of drug resistance in cancers in humans and in experimental animals **(VEGA 1/0204/16)**

Research

- relationship between antioxidant enzymes and reproductive system



- issue of ischemia and reperfusion injury on the nervous system

European Journal of Pharmacology 788 (2016) 21–28

Contents lists available at ScienceDirect

European Journal of Pharmacology

journal homepage: www.elsevier.com/locate/ejphar

Pulmonary, gastrointestinal and urogenital pharmacology

The effect of R-(-)-deprenyl administration on antioxidant enzymes in rat testis

Františka Horváthová [a], Viera Danielisová [b], Iveta Domoráková [c], Peter Solár [d], Silvia Rybárová [a], Ingrid Hodorová [a], Jozef Mihalik [a,*]

[a] Department of Anatomy, Medical Faculty, Šafárik University, Šrobárova 2, 040 01 Košice, Slovakia
[b] Institute of Neurobiology, Slovak Academy of Sciences, Šoltésovej 4, 040 01 Košice, Slovakia
[c] Department of Histology and Embryology, Medical Faculty, Šafárik University, Šrobárova 2, 041 80 Košice, Slovakia
[d] Institute of Biology and Ecology, Science Faculty, Šafárik University, Moyzesova 11, 040 01 Košice, Slovakia

ARTICLE INFO

Article history:
Received 11 May 2016
Received in revised form
3 June 2016
Accepted 8 June 2016
Available online 9 June 2016

Keywords:
Selegiline
SOD
CAT
Immunohistochemistry

Chemical compounds studied in this article:
R-(-)-Deprenyl hydrochloride (Selegiline hydrochloride) (PubChem CID: 26758)

ABSTRACT

The aim of the study was to investigate the effect of R-(-)-deprenyl administration on the activity and localization of superoxide dismutases (SODs) and catalase (CAT) in rat testis. After 30 days of intraperitoneal administration of either saline (control) or R-(-)-deprenyl dissolved in saline at concentrations of 0.0025 mg/kg (low dose of deprenyl, LDD) or 0.25 mg/kg (high dose of deprenyl, HDD), males were killed by thiopental, and their testes were collected. We found that deprenyl administration significantly increased the activity of antioxidant enzymes, and this effect varied by dosage. LDD caused significant elevation of all monitored enzymes, but HDD did not increase the activity of SOD2. Employing immunohistochemistry, we detected enzymes predominantly in Leydig cells (SOD1, SOD2, CAT), in late spermatids and residual bodies (SOD1, SOD2), and in primary spermatocytes (SOD2). Histopathological examination did not reveal testicular damage in experimental groups compared to control. Deprenyl proved to be a potent stimulator of antioxidant enzymes in rat testes; therefore, it could be used in the therapy of male infertility. On the other hand, it is crucial to choose a proper dose, since lower dose was more competent compared to a dosage that was one hundred times higher.

© 2016 Elsevier B.V. All rights reserved.

1. Introduction

About 13–18% of married couples suffer from infertility. Approximately one-half of all cases can be attributed to the male factor (Seshagiri, 2001), which is usually defined by abnormal results of semen analysis. However, even if these results were normal, other components, like genetic or molecular, may be present (Sharlip et al., 2002). In the latest years, oxidative stress (OS) has been considered one of the main factors in male infertility (Kefer et al., 2009).

Reactive oxygen species (ROS) are products of normal cellular metabolism. When they are generated at low and controlled levels, they act as second messengers. In contrast, an unbalanced concentration of ROS may contribute to the development of various diseases, such as cancer, diabetes, inflammation, and premature aging. OS is a result of imbalance between reactive oxygen species and antioxidant defense system (Agarwal et al., 2008).

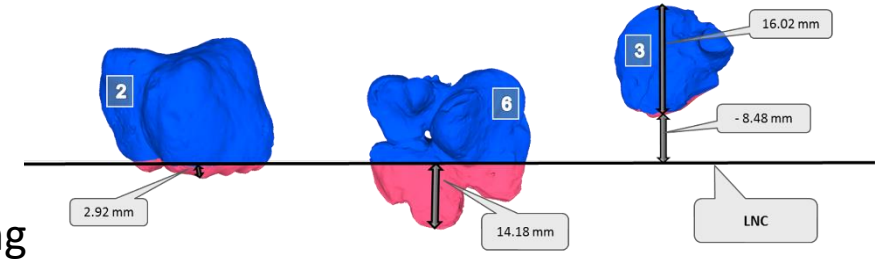
Superoxide dismutases (SODs) are enzymatic antioxidants, which inactivate the superoxide anions by converting them into hydrogen peroxide. SODs are among the first and most important antioxidant enzyme defense systems against ROS. At present, three distinct isoforms have been identified in mammals. SOD1 is localized in intracellular cytoplasmic compartments, and it contains Cu and Zn (CuZnSOD) in its catalytic center. SOD2 contains Mn (MnSOD) as a cofactor, and it is localized inside mitochondria. SOD3 also contains Cu and Zn but varies from SOD1 in terms of molecular weight, amino acid composition, and its localization, as it is found predominantly in extracellular spaces (Zelko et al., 2002). Catalase (CAT) catalyzes the decomposition of harmful hydrogen peroxide into harmless water and oxygen (Kodydková et al., 2014).

The antioxidative system of the organism can be enhanced using substances with antioxidant properties. Several methods were found to be useful in the restoration of antioxidant capacity of testis, such as exercise training (Husain & Somani, 1998), vitamin C supplementation (Jelodar et al., 2013), or supplementation with flavone chrysin (Ciftci et al., 2012). R-(-)-deprenyl (selegiline) is a monoamine oxidase B inhibitor, which is currently used as an agent to retard the progression of Parkinson's disease (Song et al., 2013). The drug was also found to enhance activities of SODs and

* Corresponding author.
E-mail address: jozef.mihalik@upjs.sk (J. Mihalik).

http://dx.doi.org/10.1016/j.ejphar.2016.06.015
0014-2999/© 2016 Elsevier B.V. All rights reserved.

Research



- study of educational methods in order to enhance the quality of anatomy teaching

(KEGA 005UPJŠ-4/2016, Kega grant 019UPJŠ-4/2017, Kega grant 019UPJŠ-4/2018)

Surg Radiol Anat
DOI 10.1007/s00276-016-1793-8

CrossMark

ANATOMIC VARIATIONS

Unilateral occurrence of five different thyroid arteries—a need of terminological systematization: a case report

Kvetuse Lovasova[1] · David Kachlik[2] · Marian Santa[3] · Darina Kluchova[1]

Received: 30 June 2016 / Accepted: 4 December 2016
© Springer-Verlag France 2016

Abstract This article highlights an unusual and unilateral variation in the blood supply to the inferior portion of the thyroid gland observed on the right lobe during anatomy dissection course. The rare variation of the occurrence of two anomalous arteries: the middle thyroid artery and the aberrant accessory inferior thyroid artery, and one uncommon variant, the thyroid ima artery, was detected in an adult female cadaver. The two generally constant arteries, the superior thyroid artery and the inferior thyroid artery, have been found in their usual anatomical location. Both the middle thyroid artery and aberrant accessory inferior thyroid artery arose from the right common carotid artery. The middle thyroid artery coursed as a very short branch ventromedially to enter the inferior lateral portion of the right lobe of the thyroid gland. It was at the same level, in which the inferior thyroid artery reached the lateral border of the thyroid gland. The aberrant accessory inferior thyroid artery originated similarly, from the ventromedial surface of the right common carotid artery and passed to supply the inferior pole of the right lobe. The thyroid ima artery was found to arise from the brachiocephalic trunk, entering the isthmus of the thyroid gland. Information about the embryological background might be helpful to clarify why such a type of variation occurs. It is necessary to understand the possible existence of this anomaly, to carry out successful radical neck dissection and to minimize the risk of postoperative complications in patients.

Keywords Middle thyroid artery · Aberrant accessory inferior thyroid artery · Thyroid ima artery · Variations · Terminology

✉ David Kachlik
david.kachlik@lfmotol.cuni.cz

Kvetuse Lovasova
kvetuse.lovasova@upjs.sk

Marian Santa
masanta@atknet.sk

Darina Kluchova
darina.kluchova@upjs.sk

[1] Department of Anatomy, Faculty of Medicine, Pavol Jozef Safarik University in Kosice, Srobarova 2, 041 80 Kosice, Slovak Republic

[2] Department of Anatomy, Second Faculty of Medicine, Charles University, U Nemocnice 3, 128 00 Prague, Czech Republic

[3] Department of Emergency Health Care, Faculty of Health, Catholic University of Ruzomberok, Namestie A. Hlinku 48, 034 01 Ruzomberok, Slovak Republic

Published online: 17 December 2016

Springer

Introduction

The risk of blood vessel damage during the surgery can be minimized by keeping in mind all the anatomical variations and developmental anomalies. Problems coming with this knowledge concern two important standpoints—the incidence and the nomenclature of the variant. In the area of the neck, the anterior cervical region is the most important one from clinical point of view and the area of the thyroid gland must be evaluated precisely before any surgical procedures. Dissection and closure of all thyroid arteries and veins are an essential part of every successful thyroidectomy. Different types of the variations of thyroid gland blood supply are very well documented in the medical sources [1–5, 7, 10]. In general, there are two constant paired thyroid arteries: the superior thyroid artery (STA) and inferior thyroid artery (ITA). Occasionally, the thyroid ima artery (TIA) is present. In some cases, it may

Annals of Anatomy 218 (2018) 69–82

Contents lists available at ScienceDirect

Annals of Anatomy

journal homepage: www.elsevier.com/locate/aanat

Three-dimensional CAD/CAM imaging of the maxillary sinus in ageing process☆

Kvetuse Lovasova[a], David Kachlik[b,*], Mirela Rozpravkova[c], Maria Matusevska[d], Jana Ferkova[d], Darina Kluchova[a]

[a] Department of Anatomy, Faculty of Medicine, Pavol Jozef Safarik University in Kosice, Srobarova 2, 041 80 Kosice, Slovak Republic
[b] Department of Anatomy, Second Faculty of Medicine, Charles University, U Nemocnice 3, 128 00 Prague, Czech Republic
[c] Orthodontic Department, Dentistry Clinic, Palacky University, Palackeho 12, 772 00 Olomouc, Czech Republic
[d] Department of Dental Hygiene. Faculty of Health Care, University of Presov, Partizanska 1, 080 01 Presov, Slovak Republic

ARTICLE INFO

Article history:
Received 24 July 2017
Received in revised form
16 November 2017
Accepted 16 January 2018

Keywords:
Maxillary sinus
Morphology
Alveolar recess
Ageing process
3D imaging
3D scanning

ABSTRACT

Objectives: During the physiological ageing process atrophy of the alveolar bone appears in vertical direction. This bone resorption causes pushing the limits of the maxillary sinus at the expense of a degraded bone. The sinus volume increases due to the facial development in children and adolescents or during the ageing process due to the loss of teeth and bone mass. The main aim of this study is to determine the sinus shape and sinus floor morphology related to age.
Materials and methods: Human adult male and female cadaveric heads (aged 37 to 83 years) with different dental status were used. The three-dimensional CAD/CAM software was used to scan the solid impressions of the maxillary sinus to visualize the real sinus shape and sinus floor. Subsequently, other findings are shown in tables and evaluated graphically.
Results: The maxillary sinus morphology, its relationship to the nasal cavity, the sub sinus alveolar bone height, displacement of the lowest and highest points of sinus, and the sinus relationship to the roots of the upper teeth were studied and evaluated. Some septa, crests, and the prominent infraorbital canal were also found in the area of the sinus floor.
Conclusions: This paper provides a unique view on the maxillary sinus and its changes during the ageing process with preserved topographical relations in a representative sample of the Slovak population. The visualization of the maxillary sinus anatomy is necessary in the diagnosis and treatment plans for dental implants and during current surgical procedures.

© 2018 Elsevier GmbH. All rights reserved.

1. Introduction

Radiological imaging is one of the most important tools and a key for dental professionals, maxillofacial surgeons, and orthodontists as well, to evaluate and recognize the size and form of craniofacial structures. In orthodontics and dentofacial orthopaedics two-dimensional (2D) static imaging technique is routinely used, but it is not able to provide information about the interrelationship of teeth, the presence of root resorptions, the depth of structures, or the paranasal sinus pathology (Brüllmann et al., 2012).

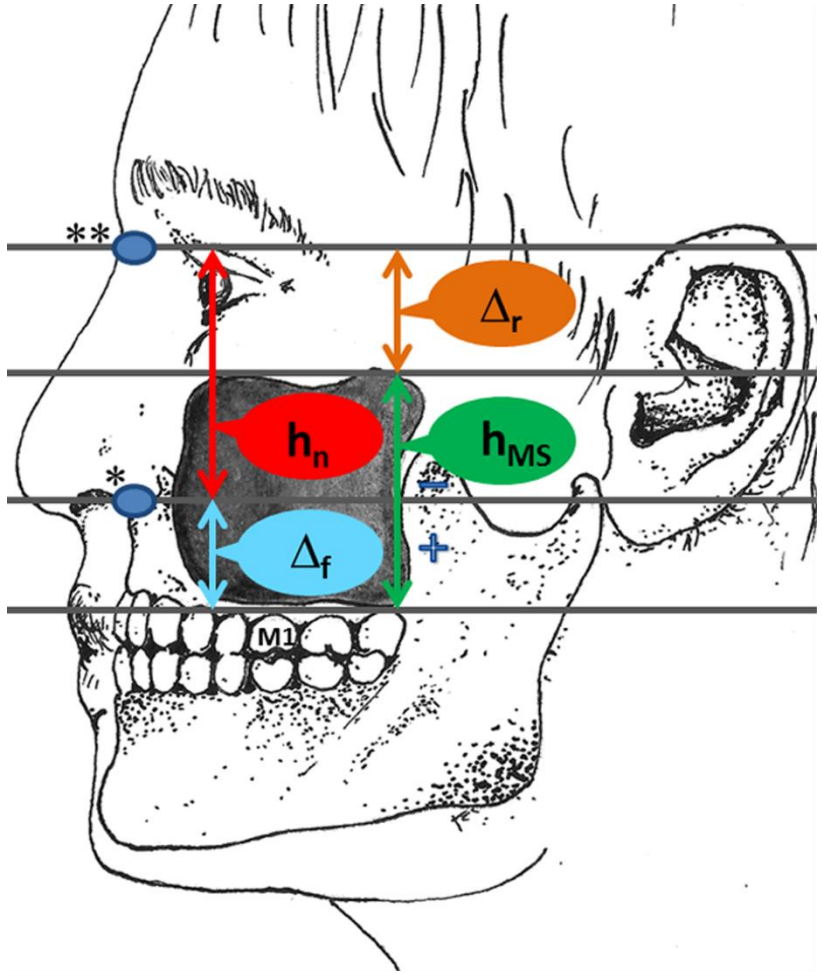
Three-dimensional (3D) imaging gains a precious place in dentistry, maxillofacial surgery, – especially in orthodontics and implant procedures (Kim et al., 2002; Karatas and Toy, 2014). However, in some cases, mainly in non-clinical disciplines, the access to radiological imaging as CT (computed tomography), CBCT (cone beam computed tomography), or MRI (magnetic resonance imaging) is limited, and advanced and specialized software that allows precise measurement and automatic calculation is not widely available for general use (Przystańska et al., 2017).

Another important key to increase the safety of maxillofacial surgery is through the understanding of anatomy. Precise morphological knowledge contributes to a successful strategy during the surgical procedures and decreases the potential complications (Chan et al., 2014).

In the orofacial region, the square pyramid-shaped maxillary sinus (MS; antrum of Highmore) is the largest and most important paranasal sinus from a clinical point of view. This cavity is a facial

☆ This paper belongs to the special issue Dentomaxillary.
* Corresponding author.
E-mail addresses: kvetuse.lovasova@upjs.sk (K. Lovasova), david.kachlik@lfmotol.cuni.cz (D. Kachlik), mirela.rozpravkova@upjs.sk (M. Rozpravkova), maria.matusevska@unipo.sk (M. Matusevska), jana.ferkova@unipo.sk (J. Ferkova), darina.kluchova@upjs.sk (D. Kluchova).

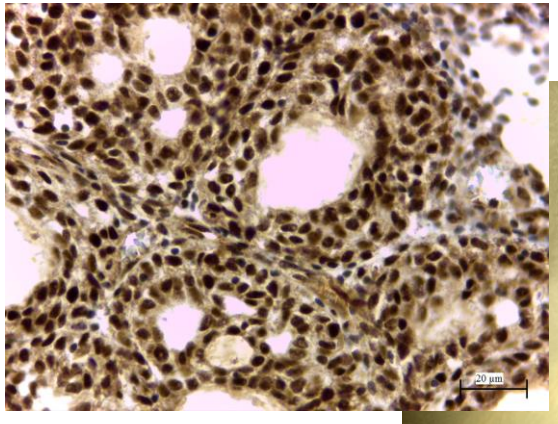
https://doi.org/10.1016/j.aanat.2018.01.008
0940-9602/© 2018 Elsevier GmbH. All rights reserved.

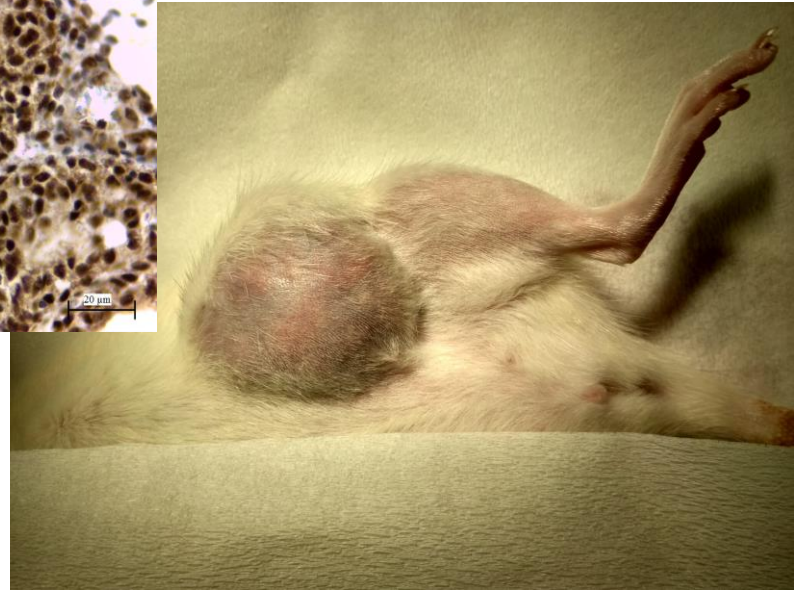


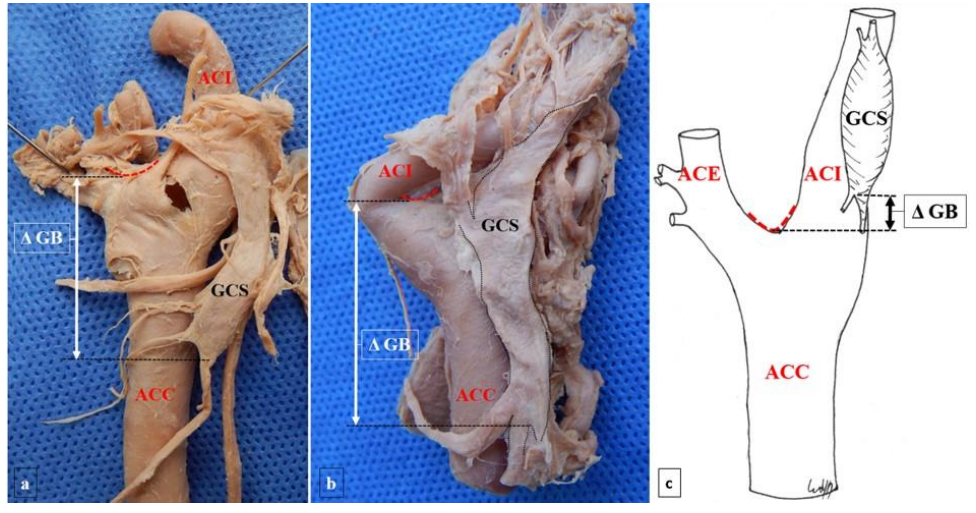
Student's scientific and professional activities

„Topographic charts of ramification of the superior cervical ganglion of the sympathetic trunk in the parapharyngeal space“

„Monitoring of selected drug resistance proteins in rat mammary carcinoma in dependence on cytostatic therapy“

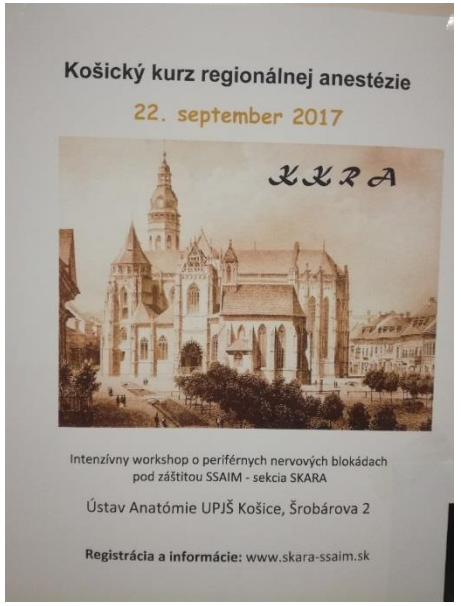






Our Workshops

„Košice Course of Regional Anesthesia“

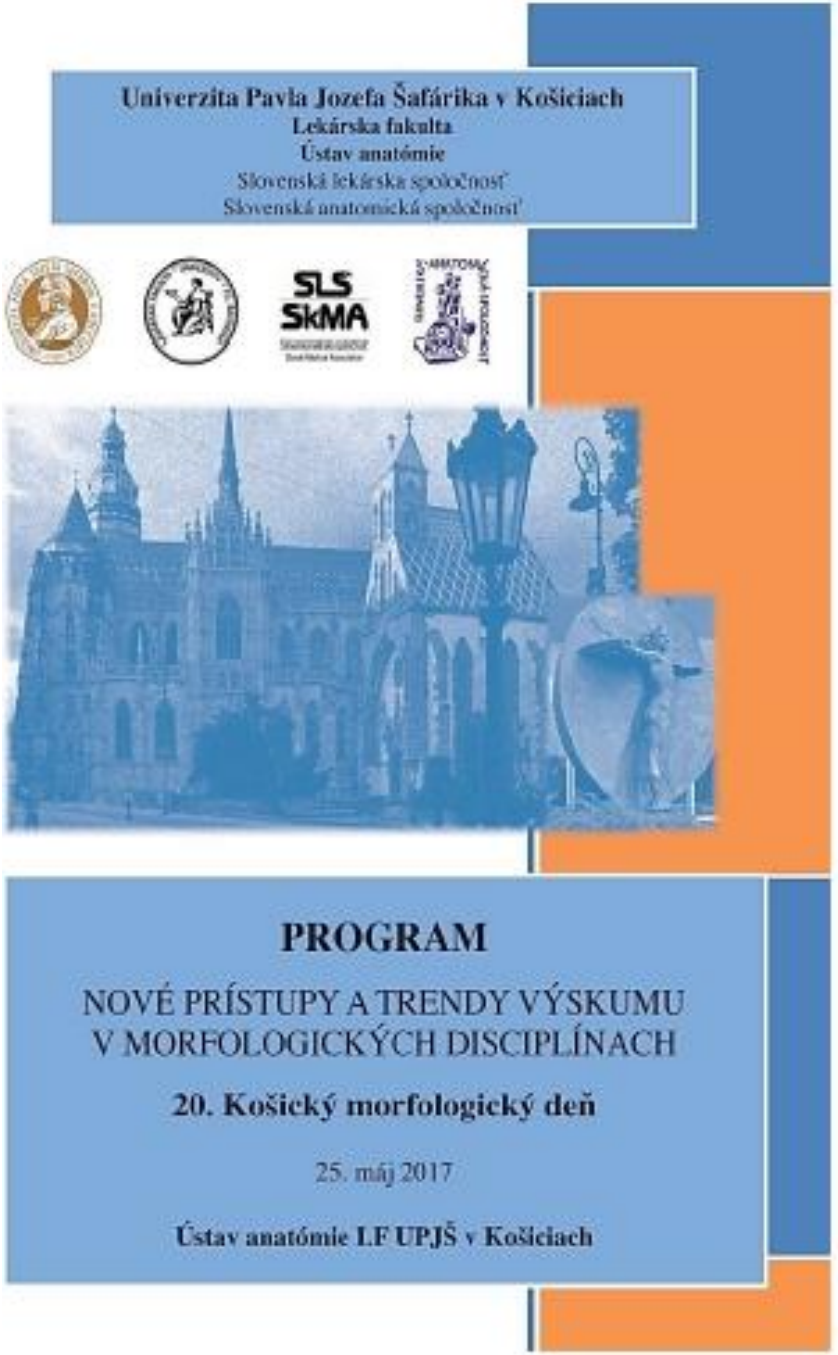


Our Workshops

„Regional and operative approaches in various areas of the upper and lower extremities“

Our Workshops

„Košice – morphological day“



Erasmus programme

Tel Aviv, 2018

Košice. 2018

Ibn Siná Avicenna, 2017
(980 Afšana pri Buchare - † 1037 Hamadan)*

Thank you for your attention!