



History of Czech anatomical terminology

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Abstract

Latin anatomical terminology has been codified since 1895. However, the situation is different for national anatomical terminologies. There are countries that have standardized anatomical terminology in their language, e.g., Poland, Slovenia, Japan, Spain, Hungary, others, such as the Czech Republic or Slovakia, are still lacking their own standardized and official terminology. In the Bohemian Lands, the first terms describing parts of the human body appeared as early as the ninth century in works written in Cyrillic script. The first comprehensive references to Czech anatomical terminology appeared in the fourteenth century. From the Baroque period, anatomical terms were preserved in the educational works of the Teacher of Nations Jan Amos Comenius' *Janua linguarum reserata* and *Orbis sensualium pictus*. Many of these terms have remained almost unchanged to this day, but some of them have acquired a pejorative meaning over time. We present here an overview of the history and examples of these terms describing parts of the human body.

Keywords Czech anatomical terminology · Bohemian Lands · History

Introduction

The primary purpose of anatomical nomenclature is to describe the human body, primarily for educational purposes. Another equally important purpose is the need to communicate with authorities, courts, and entities involved in criminal proceedings, where communication is in the official language of the country. Another very important function of national anatomical nomenclatures is to communicate with patients whose native language is not English (or they do not understand Latin), and especially with children and the elderly. Last but not least, function of national anatomical nomenclatures is for translation services and creation of specialized books and dictionaries.

The foundations of Czech anatomical terminology trace back to the early Middle Ages and have evolved over the course of the turbulent history of the Bohemian Lands. Its evolution spans peaks of Czech independence, which fostered advancement of sciences and medicine and periods of

oppression that pushed the Czech language into obscurity, until the era of national revival, with the revitalization of long-forgotten terms. Contrary to the Czech contribution to the human anatomy, which is very well mapped (Kachlák and Whitley 2021), we regret to acknowledge that the current state of Czech anatomical terminology is on the periphery of interest for both medical and linguistic experts.

In all these works, Czech terms for the human body are more or less represented. Some of them, such as “ruka” (hand), “ucho” (ear), or “oko” (eye), have remained almost unchanged, if we disregard the different spellings, e.g., as w/v, j/i, f/s, or g/j, to the present day and are represented in all the books. Therefore, terms that are interesting or that have acquired a different meaning over time will be given as examples.

Early years

Since its beginnings, Czech anatomical terminology has always been overshadowed by Latin. The very first Czech terms for parts of the body and various diseases were written in monasteries in the ninth century.

Czech King Přemysl Otakar I established the position of royal physician, though medical procedures were mainly

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carried out by barber-surgeons at this time (Loucká 1995). Medicine was practiced in infirmaries for war veterans (mentioned in Dalimil's Chronicle from the early fourteenth century), monastic hospitals, and leprosariums. Additional medical terms in Czech from this period can be found in the Olomouc Herbarium, dated to the early fourteenth century (Loucká 1995).

Despite the teaching of medicine since the founding of the Prague University (Charles University) in 1348, and from the first teacher of medicine, Mikuláš z Jevíčka (Nicholas Biceps, Nicholas Knight of Jevíčko) in 1367, it was not until 1600 that dissections of the human body began to be performed. At first, dissection was primarily taught theoretically, and occasionally the bodies of animals, mainly monkeys, were dissected (Staněk 1840).

A medical manuscript written by a translator known as the Franciscan Apothecary, titled "*Lékařství neznámého františkána*" (*Medicine of an Unknown Franciscan*), dates to the first half the fifteenth century and contains terms describing various parts of the human body. Almost nothing is known about the author, except that he likely operated in Brno and Český Krumlov. During the same period, the work "*Ranné lékařství Rhazesovo*" (*Early Medicine of Rhazes*) was also published. This work is an interpretation and translation of the books written in Arabic by the Persian physician named Abū Bakr Muhammad ibn Zakarīya al-Rāzī (865–925), who was referred to as Rhazes in medieval Latin texts (Průšek 1967, p. 221). In addition, the work of Guillermino de Saliceto (1210–1277), titled "*Saličetova ranná lékařství*" (*Saliceto's Early Medicine*), was translated into Czech around the same time. The translator's name is not mentioned, but in 1864, Czech historian, lawyer, archivist, writer, poet, translator, and collector of Czech folk songs and fairy tales, Karel Jaromír Erben, as well as František Ladislav Rieger, author of the "*Slovník naučný*" (*Educational dictionary*) attribute the translation to Křišťan z Prachatic for both Rhazes' and Saliceto's works. However, Jaroslav Vlček (1897, p. 234) refutes this claim and attributes the Czech authorship of both books to an unknown author. Already in these earliest works, Czech terms appear for the general designation of parts of the human body that have remained unchanged until now, e.g., "ruka" (hand), "noha" (foot), or "hlava" (head).

The beginnings of Czech terminology

The earliest comprehensive mentions of Czech medical and anatomical terminology can be found in the works of Bartoloměj z Chlumce, also known as Claretus de Solenci or Klaret (1320–1370), specifically in his books "*Vokábulář gramatický*" (*Grammatical vocabulary*); "*Bohemář*"

(*Bohemarius*), and "*Glosář*" (*Glossary*), e.g., "denník" (abdomen, belly), now "břicho".

The first dictionary entries in Czech language on this topic include the anonymous "*Vocabularium Latinoboemicum Posoniense*" (*Bratislava Dictionary*) from the fourteenth century, e.g., "múdě" (testis), now "varle", "zřiedlna" (pupilla), now "zornice" or "pizda" (anus), now "řit" (the word pizda today means an ugly, unpleasant woman) and "*Dictionarius trium linguarum latine, teutonice boemice*" (*Dictionary in three languages Latin, German Czech*) from 1513, as well as "*Dictionarium trilingue latinum teutonicum et boemicum ad Ladislaum Hungariae et Bohemiae regem*" (*Latin-German-Czech Dictionary for Ladislaus the Posthumous, King of Bohemia*) by Jakub Holubín/Holubář from the fifteenth century. This work introduces Czech terms such as "zbroj" (arms) for the penis, now "penis, pyj" or "kostřec" (coccyx), now "kostrč". In addition, three other dictionaries were produced in this period: "*Nomenclator tribus linguis*" (*Trilingual Nomenclator*) from 1586 and two works from 1598: "*Sylva quadrilinguis vocabulorum et phrasium Bohemicae, Latinae, Graecae et Germanicae linguae*" (*Four-language forest of words and phrases in Czech, Latin, Greek, and German*) (Fig. 1) and "*Nomenclator quadrilinguis Boemico-Latino-Graeco-Germanicus*" (*Four-language Nomenclator Czech–Latin–Greek–German*) by Daniel Adam of Veleslavín (1546–1599), who was a publisher, editor, writer, and translator. In Veleslavín's works, it is possible to find terms such as "požeradlo" (derived from the verb "žrát"–today a pejorative term for "jíst" (to eat) and "jedák" (esophagus), now "jícen"; "život" (abdomen, belly), now "břicho" or "suchá žíla (dry vein)" (nervus), now "nerv".

From the year 1573, there is a manuscript by Matouš Wolkenberger of Wolkenberk (Matouš Filomatus Dačický) titled "*O vyvýšení a vysokém důstojenství lidského pokolení, i o divné fabrice, o spůsobu, spojení a usilování oudův v těle, z autorův anatomických vybrané*" (*On the Exaltation and High Dignity of the Mankind*) (Fig. 2), here we can find, e.g., "pozieradlo" (esophagus), now "jícen" or "rameno" (brachium), now "paže (arm)" (rameno today means shoulder). This work is referenced by the anatomist Wáclaw Staněk (1840).

The Moravian provincial physician Tomáš Jordán of Klauznburk (1539–1586) also contributes to the field with his work "*Kniha o vodách hojitedlných, neb teplicech moravských*" (*A book on healing waters, or the Moravian spas*) from 1580. In this book, he introduces Czech terms describing various parts of the human body, e.g., "muškule" (sphincter), now "svěrač" or "chřtán" (os, oris), now "ústa". The work not only details treatments using medicinal waters but also incorporates plants and other natural products. Unconventional therapeutic methods are also mentioned, such as applying young, split-open pigeons or freshly

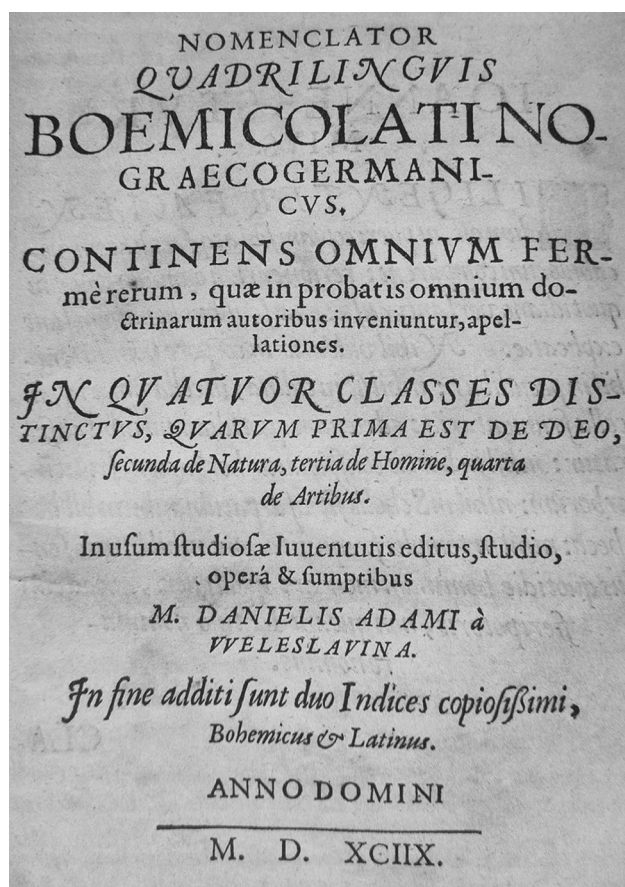


Fig. 1 Title page of Veleslavin's *Sylva quadrilinguis vocabulorum et phrasium Bohemicae, Latinae, Graecae et Germanicae linguae* from 1598

removed sheep lungs in the treatment of “madness caused by cold” (melancholia).

From the Baroque period, anatomical terms are preserved in the works “*Janua linguarum reserata*” (*The Gateway of Languages Unlocked and Opened*) in its first Czech edition from 1633 and “*Orbis sensualium pictus*” (*Joh. Amos Comenius's Visible World*) from 1658 by Jan Ámos Komenský (Johann Amos Comenius) (1592–1670) (Fig. 3). Also noteworthy is the detailed dictionary “*Poklad jazyka českého*” (*Treasure of the Czech Language*), aiming to include informal, dialectal, and borrowed words. Unfortunately, this dictionary did not survive; it perished in Lešno (Poland) in 1656. The first edition of Komenský's “*Orbis pictus*” in 1658 is written in Latin and German. During the author's lifetime, 18 editions were published in Nuremberg, London, and Wrocław with translations into several languages—German, English, Italian, French, Polish, and Hungarian. It is a highly successful book that was frequently reissued. In the seventeenth century (1658–1700), there are records of 53 different editions, in the eighteenth century (1703–1800) 90 editions, in the nineteenth century (1801–1896) 76 editions,

and in the twentieth century, specifically in 1910, the first facsimile of the original print from 1658 was published. Subsequent reprints of other editions followed, such as the 1989 Prague reprint from 1685, a four-language edition with Czech appearing historically for the first time alongside Latin, German, and Hungarian. In the late twentieth century, translations into new national languages emerged, including Japanese and Spanish in Mexico. In total, there are over 200 editions in 23 different languages.

The first Czech edition of “*Orbis pictus*” appeared in 1685, 15 years after Komenský's death (Fig. 4). Both books contain Czech terms, some of which are now considered pejorative, such as “cecek” (mamma), now “prs” (cecek is now a pejorative term for a nipple or mamma), “huba” (os, oris), now “ústa”, and “prdel” (anus), now “řit” (Komenský 1633, 1685).

Czech anatomical terms, e.g., “bradawice” (papilla), now “bradavka” (bradavice today means warts), or “beřich” (abdomen, belly), now “břicho”, can also be found in the unfinished preserved manuscript of the Baroque linguist Václav Jan Rosa “*Thesaurus linguae Bohemicae*” (*Dictionary of Czech language*), which was based on the Komenský's Czech–Latin dictionary (Petráčková 1988). This advocate of purism is primarily known for his efforts to reform the Czech language and spelling.

The four-volume “*Nomenclator*” a collection of various names in three languages—Czech, Latin, and German, from the years 1764–1768 by the historian and linguist Cyriak Jan Karel Rohn (1713–1779), also introduces new Czech terms that, however, did not gain widespread usage, e.g., “žláza vozhrivá” (hypophysis), now “podvěsek” or “okřšlek oka” (orbit), now “očnice” (Kachlík et al. 2010; Musil et al. 2010).

The Era of the Czech National Revival

During the National Revival, conditions were created for the thorough development of Czech anatomical terminology, laying the groundwork for attempts to compile Czech anatomical nomenclature. One notable effort was the publication of the work “*Deutsch-böhmisches Nationallexikon*” (*German-Bohemian National Lexicon*) in 1788 (an expanded two-volume edition was released in 1799) by the patriot and advocate for the Czech language, Karel Ignác Thám (1763–1816). Another significant contribution was the publication of the dictionary “*Franz Johann Tomsas Vollständiges Wörterbuch der böhmischen, deutschen und lateinischen Sprache*” (*Franz Johann Tomsa's Complete Dictionary of the Bohemian, German, and Latin Languages*) in 1791 by the Czech writer, publicist, and translator František Jan Tomsa (1753–1814). Perhaps the most well-known lexical work of the time, drawing on Tomsa's efforts, was the

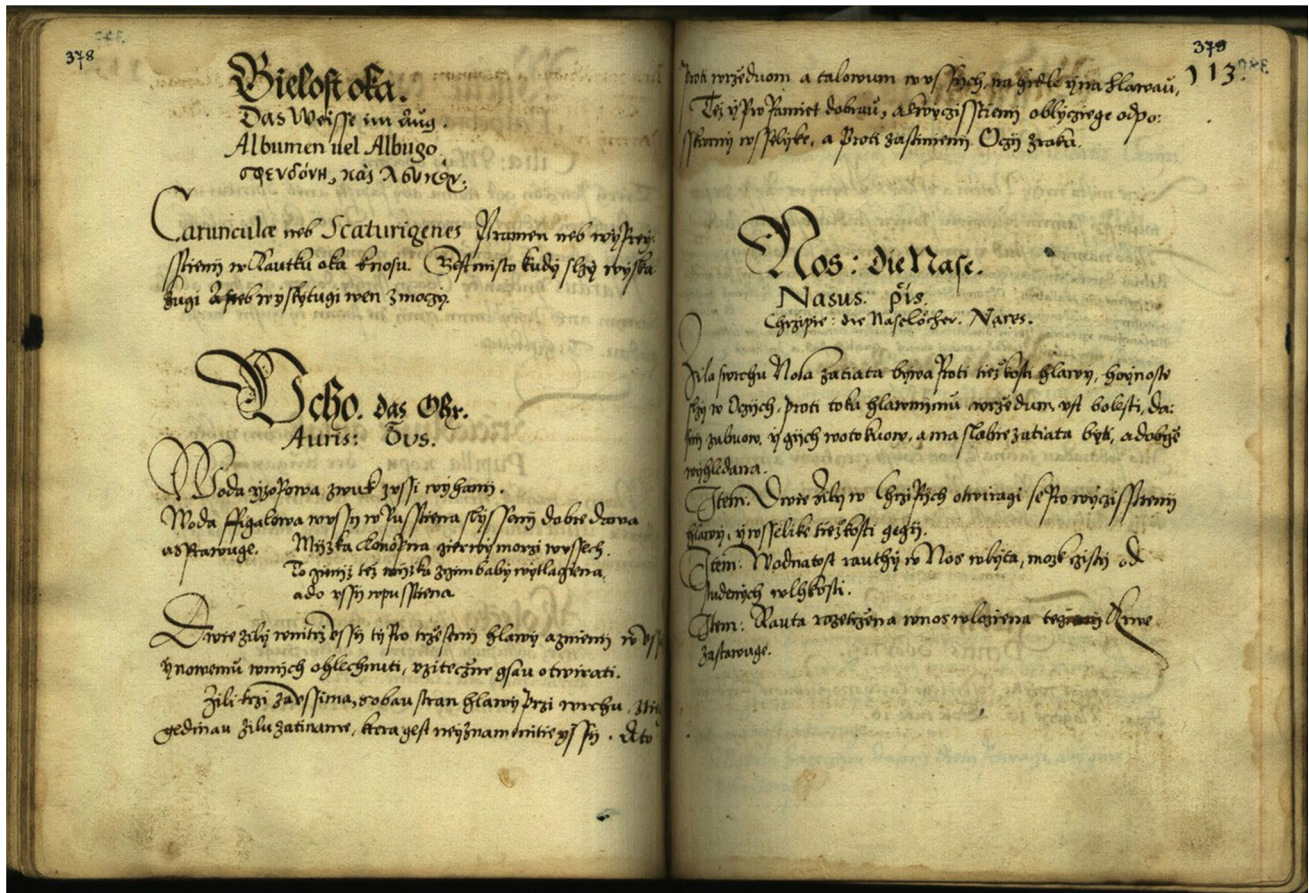


Fig. 2 Pages from the work of Matthew Philomatus Dačický with a description of the eye, ear and nose from 1573

five-volume “*Slovník česko-německý*” (Czech-German dictionary) from 1834 to 1839, edited by the linguist Josef Jungmann (1773–1847), here is possible to find, e.g. „terms “dvanáctník”, “dvanácterník”, “dvanácternice” (duodenum), now “dvanáctník” only—this term was chosen because it is 12 in. long. Jungmann, alongside the priest, philologist, and historian Josef Dobrovský, is considered a co-creator of the modern Czech language.

In the lexical works of Josef Jungmann’s brother, Jan Antonín Jungmann (1775–1854), we find many Czech terms essential to the field of obstetrics. Among these works are “*Úvod k babení*” (Introduction to Midwifery) (1804), “*Umění babické*” (The Art of Midwifery) (1814), and “*Umění porodnické*” (The art of Obstetrics) (1827), e.g., “řitní kost (transl.: anus bone)” (coccyx), now “kostrč” or “číšek” “důl (transl.: a mine)”, (acetabulum), now “jamka kyčelního kloubu”. His work “*Přehled jmen neduhů v abecedním pořádku k ustanovení jejich významu řádného*” (A List of the Names of the Ailments in Alphabetical Order to Establish their Proper Meaning), published in 1836 in the journal “Krok” contains numerous medical terms. It is also worth mentioning the contributions of Jan Svatopluk Presl

(1791–1849), a co-creator of Czech chemical, botanical, and zoological nomenclature, and the author of the work “*Ssavectwo*” (Mammals) (Havlová 1992; Kachlík et al. 2010; Musil et al. 2010). In Presl’s work, we find, e.g., the terms “keykljk”, “odříták”, “pasteljn” (rectum), now “konečník”.

One of the most prominent figures in Czech science with ambitions to compile Czech anatomical nomenclature was Wáclaw Staněk (1804–1871). In his two works, the very first Czech anatomical books, “*Dra Wáclawa Staňka Pitewnj Atlas do desatera tabul sestaweny a k snadnějšmu porozuměnj pitwy s připogeným wyswětlowánjm obrazů*” (Dr. Wáclaw Staněk’s Autopsy Atlas to ten tables compiled and to facilitate understanding of the autopsy with accompanying explanations of the images) and “*Základové pitwy (anatomie), čili saustawnj rozbor a popis těla lidského a gednotliwých geho částek*” (The Basics of Dissection with an Autopsy Atlas or Describing the Dissected Human Body and its Individual Parts), he presented not only Latin but also Czech terms, e.g., “záwitek” (cochlea), now “hlemýžď”; “puška kloubní (puška today means a rifle)” (acetabulum), now “jamka kyčelního kloubu”; “čečel” (patella), now “čéška” or “vateň” (vagina), now “pochva”. Despite his



Fig. 3 Jan Ámos Komenský—engraving by Václav Hollar from 1652

efforts, his intention to create a Czech nomenclature failed, and this deficiency persists to the present day.

Successful in this endeavor was Josef Čejka (1812–1862), who, as an appendix to the *Časopis českého musea* (Journal of the Czech Museum), gradually released three collections of medical terminology accompanied by an anatomical supplement: “*Sbírka slov a způsobů mluvení ze starých rukopisů lékařských*” (A Collection of Words and Ways of Speaking from Old Medical Manuscripts), “*Druhá sbírka lékařské terminologie*” (Second Collection of Medical Terminology), and “*Třetí sbírka lékařské terminologie*” (Third Collection of Medical Terminology). In addition, he contributed the subsequent “*Čtvrtá sbírka lékařské terminologie*” (Fourth Collection of Medical Terminology) as part of the supplements *Domácí lékař* (Home doctor) of the journal *Živa*. The focal point of further initiatives became the *Spolek lékařů českých* (Czech Physicians Society), founded in 1862. Through its efforts, the “*Slovník lékařské terminologie*” (Dictionary of Medical Terminology) was published a year later, in 1863, without specifying authors, with a significant

share likely attributable to the previously mentioned Wáclav Staněk. In 1881, an expanded and revised second edition of the nomenclature dictionary “*Názvosloví lékařské a lékárnické*” (Medical and Pharmaceutical Nomenclature) was released, authored by Vilém Weiss, Vítězslav Janovský, Jindřich Záhř, and Alois Jandouš, here we find, e.g., the terms “*plodidla*” (organa genitalia), now “*vnitřní pohlavní orgány*”; “*žláza tipetná*” (hypophysis), now “*podvěsek*” or “*honeček*” (papilla mammaria), now “*bradavka*”. This remains the only authoritative handbook that includes anatomical terms as well (Havlová 1992; Kachlík et al. 2010; Musil et al. 2010).

While some anatomical works in the early twentieth century utilized the Czech language, for instance, Ondřej Schrutz’s “*Přehled anatomie člověka*” (An Overview of Human Anatomy) (1892), introducing the terms such as “*kloubní vložka*” for meniscus, Latin regained prominence as the leading language for anatomical terminology. This is evident in the works of anatomy professors such as Jan Janošík (1856–1927), Karel Weigner (1874–1937), Karel Žlábek (1902–1983), Ladislav Borovanský (1897–1971), Jaroslav Kos (1917–2012), Radomír Čihák (1928–2016), whose anatomy textbooks have formed the basis of anatomical education in the Czech Republic for decades, used by Pavel Petrovický (1937–2019), Josef Stingl (*1940), Miloš Grim (*1941), and others. Only in exceptional cases do authors accompany Latin terms in anatomical textbooks with their Czech equivalents: Otomar Völker (1871–1955) and Karel Hora (1901–1942) in the second volume dedicated to bone science in their prematurely terminated edition “*Anatomie člověka*” (Human Anatomy) (1939) (Professor Hora was executed in the Mauthausen, Austria, concentration camp in 1942); Jaroslav Fleischmann and Rudolf Linc in “*Anatomie člověka*” (Human Anatomy) (1987); Rudolf Linc in “*Biologie člověka*” (Human Biology) (1970); Josef Klementa and colleagues in “*Somatologie a antropologie*” (Somatology and Anthropology) (1981); Radomír Pěgřim and Anton Valachovič in “*Anatomie a fyziologie člověka*” (Human Anatomy and Physiology) (1969), and Josef Zrzavý in “*Anatomie pro výtvarníky*” (Anatomy for Artists) (1957) and “*Anatomie pro stomatology*” (Anatomy for Dentists) (1978). Jan Kábrt Sr. and Vladislav Valach published the “*Stručný lékařský slovník*” (Concise Medical Dictionary) in 1958, encompassing anatomical terms along with brief explanations. Similarly, Martin Vokurka, Jan Hugo, and colleagues compiled the “*Velký lékařský slovník*” (Comprehensive Medical Dictionary) in 2002. Some of these works have seen additional expanded editions (Kachlík et al. 2010; Musil et al. 2010).

A separate Czech anatomical nomenclature in print has only appeared three times (each time with a 25-year gap) and has always been a private initiative by the authors. Rudolf Linc and Jaroslav Fleischmann (1959; 1960)

Fig. 4 Page from Komen-
sky's *Orbis sensualium pictus*
describing the external parts of
the human body from 1685

(76)

XXXVII.

**Membra Hóminis: Die äusserlichen Glieder
externa. des Menschen.**



**'Az Embernek külső
tagjai.**

**Aludj Cslowecij;
zewnjtřně.**

Caput 1 m. III.
est *suprà,*
infrà, pedes. 20
Collis
(quod definit
in axilla 2)
pars f. III. *anterior,*
[c. III.
est *jugulum;* 3 n. II.
posterior, c. III.
cervix. 4 f. III.

Pectus, 5 n. III. .
est *antè;*
retro, dorsum. 6 n. II.

Das Haupt 1:
ist oben ;
unten die Füße/ 20
Des Halses/
(der sich endet
an den Achseln 2):
Vordertheil/
ist die Kehle; 3:
das Hintertheil/
der Nacken. 3

Die Brust/ 5:
ist vornen ;
hinten/ der Rücken; 6:

Az Fej 1:
főlyűl vagon,
alól az lábok. 20
Az nyaknak,
(a' melly végeződik:
a' vállakon) 2
elöl-ualb része.
a' torok: 3:
az hátulfo
a' nyak-száj, (nyak-
csiga) 4
A' melly 5
elöl vagon;
hácul, az hát: 6

Gláva 1:
gest na vrchu/
na spodku noby. 20
Štřla
ktere se končí:
na paždých (ramenach)
strana předni
gest/ pod hrdly/ 3
šadnj strana/
Břk. 4:
Prse/ 5:
gest spredu;
šadu hibe/ 6:

in ill.

published a two-part script for the Faculty of Physical Education and Sports titled “*Anatomické názvosloví*” (*Anatomical nomenclature*)—adapted from PNA 1955; Josef Zrzavý (1985) authored “*Latinsko-české anatomické názvosloví*” (*Latin-Czech Anatomical Nomenclature*)—adapted from the 5th edition of the NA from 1983, and the latest proposal for Czech terminology intended for professional debate, authored by David Kachlík, Pavel Čech, Vladimír Musil, and Václav Báča, is titled “*České tělovědné názvosloví*” (*Czech anatomical nomenclature*) (Kachlík et al. 2010)—adapted from TA 1998, which was published at the beginning of 2010 (Musil et al. 2010).

A more detailed examination of the issues surrounding Czech anatomical nomenclature since the early nineteenth century from a linguistic perspective is provided in the doctoral dissertation “*Stav české anatomické nomenklatury na ústavech anatomie a soudního lékařství (empirické pohledy)*” [*The State of Czech Anatomical Nomenclature at the Institutes of Anatomy and Forensic Medicine (Empirical Views)*] by Pavel Nečas (2010).

Despite a relatively significant number of anatomical books and textbooks in the Czech market (often with imprecise, misleading, or incorrect terms), there is no complete and unified standard for Czech anatomical nomenclature.

Consequently, arbitrariness persists in Czech anatomical nomenclature. In situations where a widely used or available Czech name is lacking, a borrowed Latin term is employed, making it challenging for the general non-expert public to navigate the field.

Conclusion

Anatomical nomenclature serves not only to describe the human body for educational purposes and, particularly, for diagnostic and therapeutic procedures but also for communication with authorities, courts, and entities involved in criminal proceedings. It is essential to recognize the need for a national anatomical nomenclature, not only for the aforementioned reason of communication with authorities but especially with patients whose native language is not English, particularly with children and elderly individuals.

It should be noted that many nations have their own terminology, e.g., Poland (Aleksandrowicz 1989), Slovenia (Košir 1966), Russia (Petrova 2019), Japan (Japanese 1947), Spain (Comité 2001; Jiménez Gutiérrez 2022), Hungary (Donáth 1999), Ukraine (Cherkasov et al. 2010), Brazil (Sociedade 2001), and most recently Serbia (will be published in 2024), but some nations almost lack their own terms, e.g., Sweden.

Despite numerous efforts, whether from laypeople or professionals, anatomical terminology in the Czech Republic not only does not exist but also lacks the will to create it, as indicated by the statement of the Czech Anatomical Society in 2006: “We do not feel the necessity to establish standardized Czech anatomical nomenclature.” Inclusion of a data availability statement is preferred for this journal. If applicable, please provide one. Not applicable.

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Declarations

Conflict of interest The author declares that he has no conflict of interest.

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