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The Bulgarian anatomical terminology of today

ABSTRACT

By *Bulgarian anatomical terms* we mean the names established by scientific tradition, duplicating the Latin anatomical terms and coined with the means of the Bulgarian language or loan-words which are grammatically integrated (assimilated) into the Bulgarian anatomical text and are written in the Cyrillic alphabet. In their integrity and systemic relationships, the Bulgarian anatomical terms make up the *Bulgarian anatomical terminology*.

The modern Bulgarian anatomical terms are formed in conformity with the basic term formation methods in Bulgarian literary language: lexico-morphological, lexico-syntactical and lexico-semantic. Besides them, word-borrowing in its two varieties — borrowing through translation (literal and free) and borrowing existing foreign terminological items — has had an impact on the terminological norm and is currently an active modern process lending itself to control.

Main points in the research: Terms, terminolgy and nomenclature; Definitions in the anatomical scientific literature; Term formation; Links and interrelationships; General linguistic characteristics of the anatomical terms; Norm, codification and standardization in anatomical terminology.

Key words: anatomical terminology, Bulgarian anatomical terminology, Latin anatomical nomenclature.

Introduction

The modern anatomical terminology has been established and developed in strict conformity with the Latin anatomical nomenclature.

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International anatomical nomenclature

The Latin anatomical nomenclature is an orderly, standardized, internationally unified system of names of anatomical entities presented as a list, reflecting the inherent consistency of anatomical terminology. An expression of that consistency is the generic relationships and those of the part-whole, which are the foundation of the nomenclature structuring and classification in anatomy.

The establishment, development and refinement of anatomical nomenclature have a long history, dating back to the Basiliensia Nomina Anatomica, followed by Jenaensia Nomina Anatomica, Parisiensia Nomina Anatomica and other revisions (Ванков & Давидов 1993).

Bulgarian anatomical terminology

By Bulgarian anatomical terms we mean the names established by scientific tradition, duplicating the Latin anatomical terms and coined with the means of the Bulgarian language or loan-words which are grammatically integrated (assimilated) into the Bulgarian anatomical text and are written in the Cyrillic alphabet. In their integrity and systemic relationships, the Bulgarian anatomical terms make up the Bulgarian anatomical terminology.

The beginning of Bulgarian anatomical terminology goes back to the period of the National Revival - 1820s (Николова 2003). Following the liberation of Bulgaria from Turkish domination (1878), the trend of translating literally, translating freely or borrowing Latin terms directly gathered momentum.

A number of basic terminological types can be differentiated, based on the structure and origin of the modern terms.

Objectives and tasks set of the research

- 1. To present the Bulgarian anatomical terminology in terms of sources and ways of term formation.
- 2. To make a general, linguistic description of the anatomical terminology.
- 3. To study the interrelationships of Bulgarian anatomical terminology with general Bulgarian and with Latin nomenclature.
- 4. To outline the inward terminological norm and the state of terminological codification and standardization.

The practical application of this research has both a linguistic and a didactic aspect.

CHAPTER I

Terms and terminology

According to the modern understanding, a *term* is a language sign – word or word combination – which names a notion of an object or event from a particular scientific or engineering field and requiring a definition (Даниленко 1977:15; Манолова 1984:7; Бояджиев & Куцаров & Пенчев 1999:185-186).

All the terms, characteristic of a particular field of scientific and engineering knowledge, form its terminology. This narrower meaning of the notion (Манолова 1984:7) has been adopted in the present paper.

Scientific term parameters

the scientific term parameters are characteristics, properties (Манолова 1984:9-11), requirements (Sager 1990:89-90) of the language item in the scientific text, which are the basis for identifying it as a scientific term. These are: 1. Monosemy; 2. Accuracy; 3. Conciseness; 4. Consistency; 5. Grammatical correctness; 6. Stylistic neutrality; 7. Derivation ability.

Terminology and nomenclature, scientific term and nomenclature symbol

Terminology and nomenclature are closely interrelated – we cannot speak of a nomenclature where no terminology has been established.

The differences between the scientific term and the nomenclature symbol arise in the nomination process. The term as a language sign not only denotes but mostly signifies events from reality, studied by science, while the function of the nomenclature symbol is only to denote the objects from reality without giving them meaning. It is further pointed out, in clarifying of the essence of the scientific term, that it possesses a definitive function. By terminological meaning we understand 'that part of the term content which is presented as a concise summary in its definition. The meaning of the term comprises its most essential characteristics, which create the scientific notion of it.' (Ποποβα 1990:15). We differentiate between the meaning of the term and its content, the latter comprising the whole totality of knowledge about the object or event from reality which is an object of study by science. (Ποποβα 1990:14-15).

Nature of the anatomical term as a language sign

it is pointed out in Bulgarian terminological studies that the terms as linguistic entity signs are characterized by both aspects of the sign meaning – denotative and significative – with one or the other prevailing depending on the different kinds of meanings. The denotative aspect, if present, should not be perceived as referring to a specific single object, but rather to a class of objects (Ποποβα 1990:32)..

Anatomical terms fulfill a denotative function by designating anatomical objects and, at the same time, denote the scientific notions for the latter, thus playing a significative function. The scientific notions in anatomy are specific notions, content notions. They possess the characteristic feature of object terms in that the set of attributes comprising their meaning cannot be accurately determined since the specific notions they contain reflect in a generalized way the properties of concrete objects or a class of objects. This is explained with the impossibility to clearly outline the borderline between content (substantive notion) and the meaning (formal notion) of the term denoting a specific object and creates indefiniteness about the meaning of the terms for specific objects is reflected in the terminological definitions and accounts for the specific character of definition in anatomy which leads to structural variety of the defining texts.

Definitions in the anatomical scientific literature

it is a specific characteristic of the anatomical definitions that the first part of the classical requirement of "definitio per genus proximum" in the real definition underlies the nomenclature consistency of the anatomical terminology and its verbal expression in the anatomical texts isn't compulsory; the second part of the "et differentiam specificam" requirement is achieved by using qualitative and descriptive methods, implemented in the broader scientific context.

The specifics mentioned creates variety in the defining anatomical texts: 1. Nominal definitions by etymology; 2. Nominal definitions by synonyms; 3. Conventional nominal definitions; 4. Real definitions; 5. Diffusive definitions; 6. Definitions by listing constitutive components; 7. Contextual definitions.

CHAPTER II

Term formation

Term formation is a two-way process including the definition of the notion as a complex logico-semantic act and the establishment of its linguistic form (Ποποβα 1990:10).

Methods of formation of Bulgarian anatomical terms

the modern Bulgarian anatomical terms are formed in conformity with the three basic term formation methods in Bulgarian literary language: lexico-morphological, lexico-syntactical and lexico-semantic (Манолова 1984:6). Alongside them, word-borrowing in its two varieties – borrowing through translation (literal and free) and borrowing existing foreign terminological items – has had an impact on the terminological norm and is currently an active modern process lending itself to control.

1. Lexico-semantic term formation method

The lexico-semantic term formation is the creation of terms by changing the meaning of words from the general language (Манолова 1980:220, 1984:46; Христова 1999:224). In anatomical terminology, two lexico-semantic term formation processes can be distinguished: *specialization* of commonly used vocabulary and *transfer of meaning (metaphorisation)* of commonly used vocabulary. These include commonly used nouns of Bulgarian origin.

1.1. Specialization

Commonly used words start being used in a special context, the relationship with their denotations preserved. Complete or partial coincidence of the general and the terminological denominations is achieved and this phenomenon can be defined as *weak terminologisation of the commonly used vocabulary*. Although the commonly used word and the term both preserve identical denotative reference, it is possible for changes in the meaning of the newly coined term to take place in a functional aspect – it can be narrowed, extended or differentiated (specified).

Most numerous are the cases of specialization of the nouns from the 'Parts of the body' class. Examples: бъбрек (kidney), зъби (teeth), език (tongue), бузи (chicks), нос (nose) etc.

1.2. Metaphorisation

Of the various divisions of the metaphor, of importance to the anatomical terminology is the one into identifying (objective, substantive) and attributive (predicative) metaphor.

The *identifying metaphor* serves as a means for autonomous (indirect) secondary nomination, i.e. for independent denotation (Попова 1997-1998: 19). Using it, metaphorical terms are coined which are comparatively few in number in anatomy, for instance the names of the hearing ossicles – *чукче* (hammer), *наковалня* (anvil) and *стреме* (stirrup) etc.

Quite common are the cases when, in addition to the identifying metaphor, also another term is incorporated which becomes a microcontext for the metaphor, i.e. into the content of the term both the name-metaphor and the smallest nominative context explaining the reference of the metaphorical name are included (Попова 1986:29). Example: *покрив на тъпанчевата кухина* (lat. tegmen tympany, engl. roof of the tympanic cavity) etc.

The attributive metaphor is a means of a non-autonomous (indirect) secondary nomination (Попова 1997-1998: 19), i.e. not of independent naming but rather together with another name to which it plays a characterizing role. The name created through an attributive metaphor is a term-element of a term combination. The examples for metaphorical adjectives representing term-elements are numerous: охлювно каналче (lat. cochlea, engl. snail shell), скалиста част (lat. pars petrosa, engl. rock-like part), люспеста част (lat. pars squamosa, engl. scale-like part) etc. In contrast to them, the ones for metaphorical participles representing term-element are few in number: блуждаещ нерв (lat. nervus vagus, engl. vagus nerve), пробиващи артерии (lat. arteriae perforantes, engl. perforant arteries), катерещи се влакна (lat. fibrae ascendens, engl. climbing fibers) etc.

2. Lexico-morphological term formation method

The lexico-morphological term formation is based on *affixation* and *composition*. In the anatomical terminology these processes are directly linked to the strong trend of loan translation.

- **2.1. Affixation** is the addition of word-building formants to the <u>root</u> forms of various parts of speech with the aim of forming new term words.
- 2.1.1. By adding prefixes a number of Bulgarian anatomical terms and term elements, pertaining to nouns and adjectives are formed. The use of the following Bulgarian prefixes is rather common: 3að- ('behind'), hað- ('above'), noð- ('below'),

пред- ('in front of'), между- ('between'), около ('around') etc. They are connected to the bases of nouns, e.g. задстомашен (pancreatic), надкостница (periosteum), подлигавица (submucosa), предмишница (forearm), etc. Together with the borrowed anatomical terms, a number of foreign language affixes were introduced, such as: enu- (epi-), мета- (meta-), диа- (dia-), пери- (peri-) etc., е.g. епифиза (epiphysis), метафиза (metaphysis), диафиза (diaphysis), периневриум (perineurium) etc.

2.1.2. Suffixation is used to form:

- I. Noun terms. Discussed and illustrated by examples is the term formation through the following suffixes: -eų, -ник, -ица, -ач, -тел, -ък, -ак, -ка, -ло, -ост, -не, -ние, -ие, -ище, -че, -ица², -ка², -ичка, -ен, -це.
- II. Adjective terms. Discussed and illustrated by examples is the term formation through the following suffixes: -ecm, -ucm, -eн, -oв(-eв), -eн², -oв², -eн³, -oв³, -mелен (-ителен, -ателен). Information on borrowed adjective terms is also given.
- III. Adverb terms with the suffix '-*o*'.
- 2.1.3. By confixation (prefix-suffix word formation method) a number of terms are created. Examples: надгръклянник (epiglottis), надкостница (periosteum), надсеменник (epididymis).
- 2.1.4. *Term formation without suffixes* (zero suffixation). Only one example was found προςβετ (lumen).
- **2.2.** By composition a great number of noun and adjective terms are formed.
- 2.2.1. Formation of compound noun terms. Depending on the relationship between the initial root bases two groups exist:
 - a) Terms with syntactically equal bases, e.g. назофаринкс (nasopharynx);
 - b) Terms with syntactically unequal root bases, e.g. хранопровод (esophagus).

Belonging to the second group are the terms formed by combined constituents (compact compositional term formation). Discussed and exemplified is the term formation through the following combined constituents:

- a) borrowed: *-бласт* (*-blast*), *-зома* (-soma), *-фаг* (-phag), *-класт* (-clast), *-цит* (-cytus), *-вила* (*-vilus*);
- b) domestic: *noлу-* (semi-), *дву-* (bi-) , *-въса* (*-vilus*),
- 2.2.2. Formation of compound adjective terms:

- 2.2.2.1. Compound adjectives with a conjunctive link between the two bases. Example: *стомашно-чревен (gastro-intestinal)*.
- 2.2.2.2. Compound adjectives, formed by binominal word combinations with a subordinating link between the two bases. Example: *горночелюстен* (lat. maxillaries, engl. 'of the upper jaw').
- 2.2.2.3. Compound adjectives formed by using Bulgarian word bases: -виден, -образен (-shaped).
- 2.2.2.4. Compound adjectives with the first part based on a cardinal number.

Example: двуглав (two-headed).

2.2.2.5. Compound adjectives with the first part based on adverb.

Example: вътреклетьчен (intracellular).

3. Lexico-syntactic term formation method

The word combination terms in anatomical terminology have been analyzed on the basis of *syntactic models* representing the syntactic relationship between the word combination components – attributive, objective, adverbial – and on *structure-positional models* which represent a) the structural elements (term elements) of the word combination as parts of speech; b) the linear position (word order) of the structural elements and c) the presence or absence of grammatical words (Ποποβα 1985:107-108). That approach allows for the word combination terms to be studied with regard to the requirements of the terminological norm for lexico-grammatical correctness, complying with the terminological standards.

Alongside this, the semantic approach has also been used, the latter taking into consideration the semantic characteristics of the term elements resulting from their belonging to one or another lexico-grammatical category and to one or another lexico-semantic class within these categories..

3.1. Non-prepositional word combination terms. These are of two types.

3.1.1. Principal part – a noun and a subordinate part – one or more (2, 3) adjectives or an ordinal number (+/- adjective-s), or a participle (+/- adjective-s) with a syntactic relationship between the term elements of *attribute cordinated* type. The word combination terms of this kind are characterized according to the basic lexico-grammatical and semantic features of the subordinate element. The cases studied are: of a subordinate element being an adjective with a general meaning of: 'relation to an

object' (relation to size, place and location, shape, surface), 'characteristic' (structure, colour), 'relation to sequencing and quantity', or 'relation to action'.

- 3.1.2. Two-element word combination terms with the formal structure of noun + noun (S+S) with an attributive syntactic correlation between the term elements of the *application* type.
- **3.2. Prepositional word group terms.** With regard to the syntactic relation between the term elements these are: 1) attributive or 2) objective.
- 3.2.1.Attributive word group terms are a type of non-concord attributes with the preposition μa (of). The formal structure is S+of+S with possible extensions by concordant adjectives. The general semantics is one of 'possession and belonging' and is related to the intra-systematic <u>partonomic</u> relations in anatomy.

Depending on the number and the lexico-grammatical category of the term elements situated on both sides of the preposition μa ('of'), differences in the formal structure of the word groups are seen.

The preposition μa 'of' can be used once, twice or three times in the word group, corresponding to a one degree, two degree or three degree attribute. Respectively, 10, 5 and 1 case(s) are presented.

- 3.2.2. Object word group terms with the preposition *Ha* 'of'. Formal structure **S+S+of+S** with a possible extension **S+A+S+of+A+S**. This structure is used in the cases when the motivating feature for the terminological nomination is the function of the anatomical structure the work done by them, together with the objects of that work.
- 3.2.3. Word group terms with other prepositions: om ('from') and 3a ('for').
- 3.2.4. Word group terms containing the conjunction u 'and'.

4. Linguistic borrowing as a term formation method

in Bulgarian anatomical terminology the sources of borrowing are the Greco-Latin nomenclature terms.

4.1. Borrowing through translation. Translation is a lasting trend in modern Bulgarian anatomical term formation, supported by the necessity to strictly comply with the Nomina Anatomica standards. As a term formation method it has two varieties — literal translation, realized by word formation and phraseological loan translation and free translation.

- **4.2. Borrowing of existing terms.** Related to word loan implementation mechanisms in the Bulgarian anatomical text, two cases emerge.
- 4.2.1. Unchanged borrowed terms. Examples: брегма (bregma), вертекс (vertex), окципут (occiput) etc.
- 4.2.2. Assimilated (Bulgarianized) terms: Examples: *enuфuзa* (epiphysis), *диафиза* (diaphysis), *метафиза* (metaphysis), etc.

The terminological borrowings become a basis for a further morphological and syntactical term formation.

CHAPTER III

Links and interrelationships

bulgarian anatomical terminology is a lexical subsystem of the Bulgarian national language and alongside this is a national terminological system, which runs parallel to the Latin terminology and is created by using the latter as a model. Those positions determine the linguistic (lexico-semantic) links and relationship of the Bulgarian anatomical terminology with the lexical structure of the general literary Bulgarian language and with the Latin anatomical terminology.

Lexico-semantic relationships between the Bulgarian anatomical terminology and the literary Bularian language

three cases of interaction are discussed:

- 1. The processes of terminologization of the generally used vocabulary;
- 2. Bulgarian term creation and the commonly used vocabulary
- 3. The de-terminologization. of the generally used vocabulary.

The connection between the Bulgarian and the latin anatomical terminology

the role of the Latin terminology as a model (standard) is seen mainly in two directions.

- 1. External formal correspondences. These can be seen in the entire external formal structure of the term and in the formal structure of the term elements.
- 2. Borrowing of existing nomenclature terms. This is a phenomenon, which has wide ramification in the Bulgarian anatomical terminological system. It comprises several basic cases: a) The terminological borrowings are absolute terms; b) The terminological borrowings are absolute terms; b)

minological loan words are duplicated by Bulgarian terms; c) The terminological loan words make part of a word combinations as term elements alongside Bulgarian term elements.

CHAPTER IV

General linguistic characteristics of the anatomical terms

structural characteristics of the anatomical terms. With regard to the external form and the language structure several groups of anatomical terms are outlined: 1. Word-terms; 2. Word group terms; 3. Eponyms.

The anatomical terms according to their belonging to the category "Parts of speech". The nouns with a specific objective meaning are a basic nominative means. The biggest is the share of the common noun terms, called "general terms" (termini generales), from which the names of organs and organ elements in the different systems are formed. The common nouns in anatomy undergo internal division into two groups: a) objective nouns (which are numerous): тъкан (tissue), орган (огдан) etc.; b) nouns, naming, result of processes and actions (few in number): вколчване (gomphosis), втиснатост (impressio), etc. In the anatomical terminology personal nouns are also included in the structure of the eponymic word group terms e.g.: водопровод на Силвиус (aqueduct of Sylvius, Lat. aquaeductus cerebri), etc.

It is known by implication that *adjectives* cannot be terms, but only term elements in terminological word groups. Even though they cannot be independent terms, a great part of the adjectives in anatomical terminology possess the characteristics of an artificial language, typical of the terminological vocabulary. Therefore, in this paper we call them *terminological adjectives*.

In the anatomical scientific text *adverb* terms are used, too. By these the location of the anatomical objects and the directions in the human body are denoted.

Verbs are part of the anatomical terminology but in their indefinite forms – present participles and past participles. These act as term elements with an attributive function in the terminological word groups.

A portion of the terminological word groups contain grammar words. The prepositions Ha (of), OM (from), OM (from). The conjunction OM (and).

Semantic characteristic of the anatomical terms.

The structural hierarchy of the scientific notions finds expression in the terms which leads to the term consistency characterizing most of them. As regards the representation of the interstructural semantic relations, two terminological semantic fields are outlined, overlap being a possibility.

- 1. Terms, denoting generic notions and the species notions related to them, e.g. клетка (cell) and бодилна клетка (prickle cell).
- 2. Terms which denote notions of entire anatomical objects and ones of parts of anatomical objects, e.g. гръдна кост (sternum) and the дръжка на гръдната кост (sternum handle, manubrium sterni) etc.

Motivation for a terminological nomination in anatomy

By essential nominational characteristics in the anatomical terminology we understand the characteristics based on the features of the object notions for anatomical objects. The most common essential characteristics serving as motivation for terminological nomination in anatomy are: shape, function, location of the object in space (vicinity, position of one object in relation of another object, position of an object within another object); one object being part of a greater object; position in the body; structural feature; colour; position and direction; dimensions (Каданов & Балан & Станишев 1964:1:23).

The combined term formation by expressing two or three nominative characteristics is rather common.

Some anatomical objects carry notionally unmotivated names, which have been preserved by tradition or are the result of accidental coinage.

General linguistic relationships within anatomical terminology

- Antonyms find wide application in the anatomical terminology for denoting objects of the same kind (anatomical objects), which differ only in one differential characteristic containing opposites. Based on opposites, the position and direction in space as well as the dimensions of the anatomical objects are denoted.
- 2. **Synonyms**. By 'terminological synonyms' in the Bulgarian anatomical text we understand the cases when, in relation to a Latin term, two (or more) Bulgarian terms are used, which enter into synonymous relationships. The terminological synonymy in anatomy is determined by the fact that the nomination can be carried out in different ways term formation using the native lan-

guage or borrowing; it can also be done on the basis of various features of the object notions for anatomical objects. Thus defined, the terminological synonymy in anatomy should not be mistaken for alternating Latin and Bulgarian terms, an occurrence which is typical for the Bulgarian anatomical literature. A number of typical cases of synonymy are reported in the Bulgarian anatomical terminology: a) existing Latin terms are borrowed and alongside this process the same terms are subjected to loan translation; b) the Bulgarian term is a loan translation, but alongside it other terms are coined locally; c) alongside the eponymic terms language-motivated terminological word combinations are presented.

- 3. **Polysemy** in anatomy develops on the basis of metaphorisation. A number of terms resulting from specialization of generally used nouns are secondarily turned into terms by metaphorical transfer of meanings, resulting in the creation of new names for other parts macroscopic objects which are similar in shape and function with the ones of the source. Examples: глава (head), влагалище (vagina) etc.
- 4. **Omonyms** are found in anatomical terminology as a result of accidental coincidence: one of the forms of a term or a term element coincides in form with another term or term element. In a scientific field such as anatomy, which uses bilingual terminology in parallel, it is possible for partial omonymy to occur between words pertaining to different languages.
- 5. **Paronyms.** The real occurrence of paronymy is individually determined, since it is a function of the general as well as the language knowledge of the person talking. In the process of study it is also related to the level of special knowledge and terminological competence of the students. In the anatomical literature and terminology a number of conditions are reported for the creation of paronyms: a) between Bulgarian anatomical terms or term elements; b) between Latin terminological loan words; c) between a local Bulgarian or borrowed anatomical term and a Latin term.

CHAPTER V

Norm, codification and standardization in anatomical terminology

Terminology as a whole adopts and complies with the norms of the literary language and also complies with its own general term norms for correctness which differ from the literary language norms without contradicting them (Манолова

1984:18). These general term norms find expression in the essential characteristics (parameters) of the terms. The general term norms find specific expression in each terminological subsystem through its own terminological norms in which the specifics as non-contradicting differences in relation to the general term norms as well as those of the literary language are expressed (Манолова 1980:214). In the anatomical terminology a number of specific features can be observed, determining the term's own norm. Five specific cases have been studied.

Deviations from the general term norms as well as those of the literary language have been observed, that being a negative trend. One such case is discussed.

Codification in terminology finds expression in the collecting, systemizing and specifying of terms from different terminological subsystems (Манолова 1984:20). The codification of the Bulgarian anatomical terminology began with the initial creation of original academic literature by Prof. I. Shapshal (Шапшал 1926, 1927, 1930) and continued in the works of Prof. D. Kadanov, Prof. M. Balan and others. In the second half of the 20th century, following the publishing of a great number of author's textbooks and manuals in human anatomy, the Bulgarian words established via codification in previous periods acquired the nature of standardized Bulgarian anatomical terms, ready to be included in the Bulgarian anatomical nomenclature.

CONCLUSION

At present, the Bulgarian anatomical terminology is a subsystem of the Bulgarian literary language having an orderly internal structure.

It has its own well-defined terminological norm.

The unification and codification processes in the Bulgarian anatomical terminology has an 80-year history. They are directly linked to and assisted by the circumstance that human anatomy is a major discipline in the curriculum of medical faculties and colleges and is studied at some level at a great number of high educational institutions. To support these studies, Bulgarian study and reference literature is available, which is extensive and constantly updated.

The standardization of the anatomical terminology is at a rather advanced stage, but it doesn't comprise all the terms yet. The next step in the standardization of Bulgarian anatomical terminology would be to include all the anatomical terms into a conventional (consensual) Bulgarian anatomical nomenclature for which all the necessary prerequisites are available.

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