

GRAVES FROM THE PALACE CENTRE – EAST SITE: AN ATTEMPT AT ETHNIC CULTURAL IDENTIFICATION OF BURIALS *INTRA MUROS* IN PLISKA

*Valeri Grigorov**, *Victoria Russeva***, *Nadezhda Atanassova****

** National Archaeological Institute with Museum, Bulgarian Academy of Sciences, 2 Saborna Str., 1000 Sofia, Bulgaria;
valerig@abv.bg*

*** Institute of Experimental Morphology, Pathology and Anthropology with Museum, Bulgarian Academy of Sciences, Acad.
G. Bonchev Str., bl. 25, 1113 Sofia, Bulgaria; victoria_russeva@yahoo.com*

**** Institute of Experimental Morphology, Pathology and Anthropology with Museum, Bulgarian Academy of Sciences,
Acad. G. Bonchev Str., bl. 25, 1113 Sofia, Bulgaria; naditimeva@gmail.com*

ABSTRACT

This study presents five graves discovered east of the Palace Centre in Pliska (fig. 1). They represent individual burials located in the inter-dwelling area (fig. 2). The graves' contexts were studied interdisciplinarily. The archaeological study provided data on the stratigraphy of the graves and detailed documentation of the burial pits and skeletal remains. The anthropological study provided information about the sex, age and height of the buried individuals, also their anatomical and anthropological features, disease (pathologies), traumas and medical manipulations that left traces on the bone remains.

Stratigraphically, the graves date to the last phase of habitation of the medieval city (between the 30s/40s of the 11th c. and the 60s of the 11th c.). The newly studied graves can be placed in the context of the other intramural graves in the Inner City of Pliska, which makes it possible to clarify and summarize a wide range of issues related to the stratigraphy and chronology of the intramural graves and their connection with the demographic and ethnic cultural changes in the medieval city.

Keywords: Pliska, graves, anthropological research, trepanation

Introduction

This study presents five graves discovered east of the Palace Centre in Pliska (fig. 1). They were studied during the 2011 – 2016 period, and represent single burials situated in the inter-dwelling area (fig. 2). Stratigraphically, the graves date to the last phase of inhabitation of the medieval city (between the 30s/40s of the 11th c. and the 60s of the 11th c.). An individual was placed in each of the graves, lying on their back, with the head to the west.

The graves' contexts were studied interdisciplinarily. The archaeological study provided data on the stratigraphy of the graves and detailed documentation of the burial pits and skeletal remains. The anthropological study provided information about the sex, age, and height of the buried indi-



Fig. 1. Orthophotograph of the Inner city of Pliska. Location of the "Palace Centre – East" site is marked
Обр. 1. Ортофотография на Вътрешния град на Плиска. Отбелязано е местоположението на обект „Дворцов център – изток“

viduals, anatomical and anthropological features, diseases, traumas and medical manipulations that left traces on the osteological remains.

Description of the graves

The graves from the Palace Centre – East site will be reviewed in the order of their discovery. First, information will be provided on the archaeological context, the stratigraphy and characteristics of the burial pit, the position of the body and the *in situ* measurements of the skeleton. Then, the results of the laboratory anthropological analyses of the bone remains will be presented.¹

¹Sex, age, height of the buried individuals, anthropological features, diseases and medical manipulations that left traces on the bone remains were examined. The anthropological study was carried out using a macroscopic method in

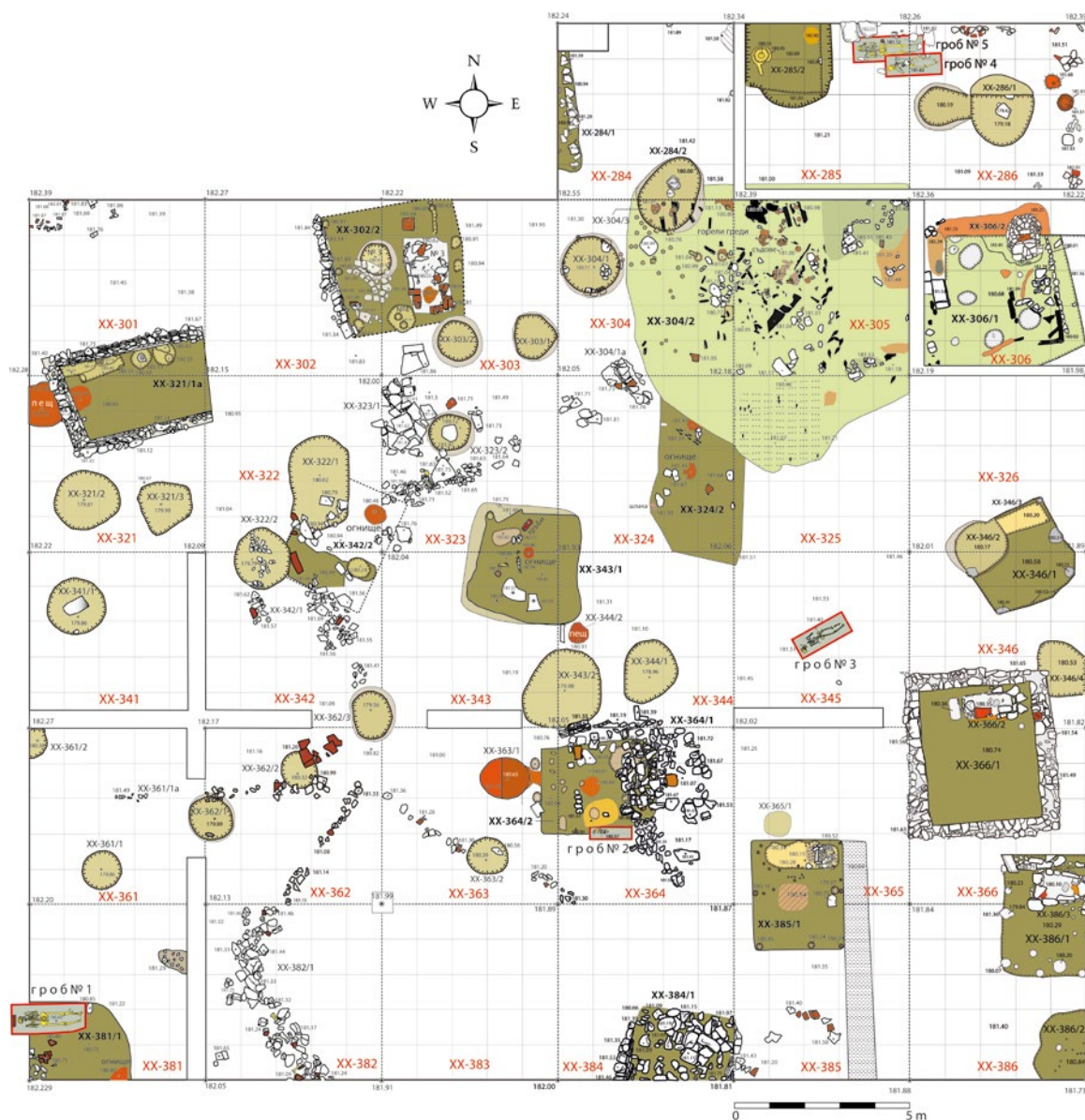


Fig. 2. Plan of the studied area of the "Palace Centre – East" site during 2011 – 2016 in Pliska

Обр. 2. План на проучената през 2011 – 2016 г. площ на обект „Дворцов център – изток“ в Плиска

laboratory conditions. Measurements were carried out via standard methods (Martin, Saller 1959). Estimation of the sex and age at the time of death was overall, based on available fragments. In adolescent individuals, priority was given to the development of the dentition, assessed by the methods of Zubov (1968), compared with the table of Ubelaker (1989). The sizes of the long bones of the limbs were used as an additional feature, compared with the table of Maresb (1970) and Black, Scheuer (1996).

Postcranial skeleton bone development was evaluated by the methods of Schwartz (1995), Alexeev (1966) and Bass (1971). Age of the grown individuals was estimated using the degree of obliteration of the cranial sutures, evaluated by the Olivier-Simpson scales (Алексеев-Дебев 1964, 37), the relief of the pubic symphysis surface, evaluated by the Todd scale (Schwartz 1995) and the relief on the auricular surface of the iliac bone, evaluated by the Lovejoy *et al.* table. (1985).

Sex was determined by evaluating the features of the cranial and postcranial skeleton of the grown individuals using the methods described in Acsádi, Nemeskéri (1970), and the traits of sexual dimorphism of the cranial bones summarized by Buikstra и Ubelaker (Walrath *et al.* 2004). Height was reconstructed based on the Pearson-Lee and Trotter-Glaeser (Алексеев 1966, 226, 232) formulas for grown individuals.

Grave No. 1 was discovered in grid square XX-381 (fig. 2). The burial level of the grave was documented in the western profile of the square. The following were recorded there: The embankment remaining from the excavations of the Palace of Khan Krum; the authentic level of contemporary terrain (elevation 181.90 m) and the burial level of the grave pit (elevation 181.60 m) (fig. 3). The grave was dug into the loose embankment of an earlier dwelling (XX-381/1), used until the end of the 10th c. Due to the mixed nature of the embankment, the outlines of the burial pit were not well defined except from the north, where they coincided with the northern boundary of the dwelling. The grave had a rectangular shape, with approximate dimensions being 220 x 80 cm, oriented along the west-east axis (azimuth 267°). The bottom of the pit was at an elevation of 180.60 m, i.e., the original depth of the grave was 1 m. The grave was marked with stones placed high in the fill of the pit in no particular order.

One individual was laid in the grave, placed in a stretched position on his back, with his head to the west (fig. 4). The skull was turned to the left, and it is likely that the head was placed in this position during the burial, and not as a consequence of the subsidence of the embankment. The



Fig. 3. Stratigraphy of the grave No. 1

Обр. 3. Стратиграфия на гроб № 1



Fig. 4. Grave No. 1. Stages of the archaeological investigation
Обр. 4. Гроб № 1. Етапи на археологическото проучване

upper limbs were strongly flexed at the elbows, with the phalanges exposed at the humerus. This unusual position of the hands required special binding and securing. The lower limbs were stretched parallel to each other. The overall measured length of the skeleton was 171 cm, the width of the pelvic girdle was 37 cm, and the width of the shoulders was 38 cm. A brick was placed on the bottom of the grave, behind the head. It stood almost vertically and marked the western wall of the grave. There was also “under-gradation” at the feet, where two stones were placed on top of each other, marking the end of the burial pit from the east. After lifting the skeletal remains, a defect from a trepanation treatment of the skull roof was found (fig. 6, arrow). There is no inventory in the grave.

The anthropological analysis of the skeletal remains established a 45 – 50-year-old man, buried in grave No. 1. The cranial and postcranial skeletal remains are incompletely represented (tables 1.1 – 1.3), the dentition is relatively completely preserved (fig. 5: 4):

Dentition:

X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
X	X	X	5	4	3	2	-	-	X	3	4	5	6	X	X		

1 – a tooth from the permanent dentition:

- – lost tooth *post mortem*;

X – lost tooth *ante mortem*.

The sex of the individual was determined by the features of pelvic bones, sacrum and the skull and measurements of the long bones of limbs (tables 2 and 3). Age was estimated by the cranial sutures obliteration and the state of abrasion of the chewing surface of the teeth (table 2). Height is in the category “tall”, estimated by the two used formulas of *Pearson-Lee* (170.91 cm) and *Trotter-Glaeser* (175.06 – 177.78 cm) (table 3).

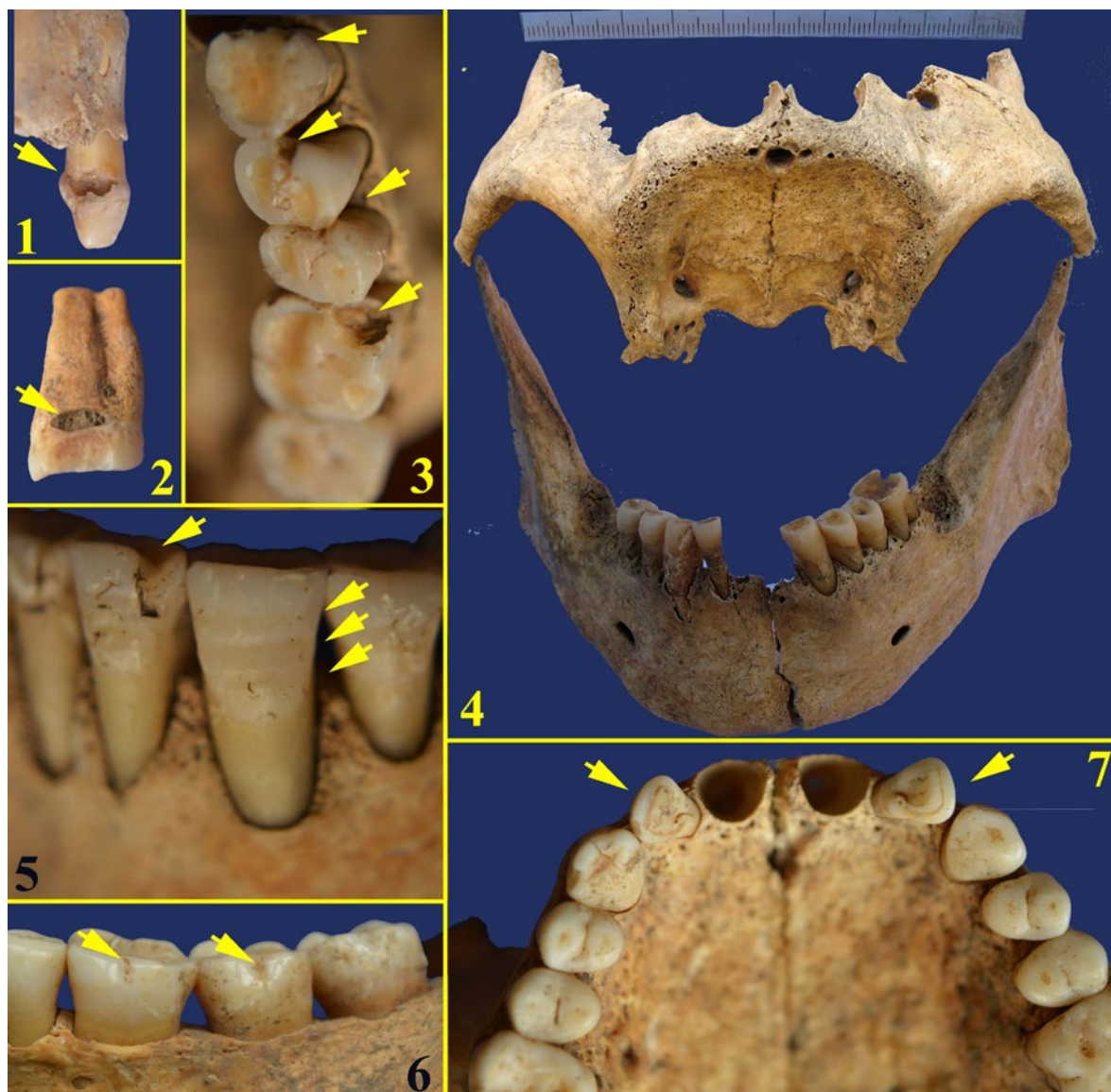


Fig. 5. Pathological changes on the dentition. 1. Grave No. 2, child, Infans I, 2 – 3 years, arrow – caries on the neck of the upper right central incisor; 2, 3. Grave No. 4, female, 18 – 20 up to 25 years. 2. Caries on the neck of the upper left first molar – arrow; 3. Carious changes on the upper left canine, premolars and first molar – arrows; defects from mechanical destruction on the canine – arrow; 4. Grave No. 1, male, 45 – 50 years, antemortal tooth loss of the upper, and advanced tooth loss on the lower jaw; 5. Grave No. 4, female, 18 – 20 up to 25 years, lower left canine, defects from linear enamel hypoplasia, arrows, defect from mechanical destruction and development of caries on the lateral left incisor – arrow; 6. Grave No. 5, male, 25 – 30 years, lower left molars – development of the buccal pit, arrow. 7. Grave No. 5, male, 25 – 30 years, upper lateral incisors, mesio-buccal rotation – arrows

Обр. 5. Патологични изменения на зъбно-челюстния апарат. 1. Гроб № 2, дете, Infans I, 2 – 3 г., стрелка – кариес на шийката на горен десен централен инцизив; 2 – 3. Гроб № 4, жена, 18 – 20 до 25 г.; 2. Кариес на шийката на горен ляв първи премолар – стрелка; 3. Кариозни изменения на горни леви кучешки зъб, премолари и първи молар – стрелки; механични дефекти на кучешкия зъб – стрелка; 4. Гроб № 1, мъж, 45 – 50 г. интравитално обеззъбяване на горната и напреднало на долната челюсти; 5. Гроб № 4, жена, 18 – 20 до 25 г., долен ляв канин, дефекти от линейарна хипоплазия на емайла, стрелки, механичен дефект и развитие на кариозен процес на латерален ляв инцизив – стрелка; 6. Гроб № 5, мъж, 25 – 30 г., долни леви молари, развитие на букални ямички – стрелки; 7. Гроб № 5, мъж, 25 – 30 г., горни латерални инцизиви, уининг – стрелки



Fig. 6. Grave No. 1, male, 45 – 50 years at death. Skull, preservation: calvaria, vertical and occipital view; arrow – defect on the frontal and partially right parietal bones, located on the coronal suture

Обр. 6. Гроб № 1, мъж, 4 – 50 г. Череп, съхранена calvaria, вертикален и окципитален изглед; стрелка – дефект на челната и отчасти дясна теменна кост, разположен на венечния шев

Data on the anthropological type are scarce. The skull shows a rhomboidal vertical and vaulted occipital norm (fig. 6), the occipital bone has a prominent relief, strongly convex; the mastoid processes are moderately massive, with a strong relief, downward and inward. The frontal bone is moderately inclined, with small height, but large width, a moderately pronounced glabella (grade II – III according to *Broca*), the superciliary arches are grade 1 according to *Broca*; the superior orbital margin is rounded; the temporal lines and forehead ridges are moderately pronounced. The parietal elevations are distinct; the occipital relief and *protuberantia occipitalis externa* show strong development; the lower margin of piriform aperture is formed as *anthropina*; the canine fossa is moderately deep with weak relief. The mandible has the characteristic male shape in basal view, the jaw is large, very massive and with a prominent relief; the chin has a triangular shape, without a hollow, slightly convex. The skull is of tall height (hysicrane, acrocrane), with an average value of the main cranial index (mesocrane) and with small values of the transverse fronto-parietal and transverse parieto-occipital indices.

Some pathological alterations can be established: on the dentition, carious lesions of the crown were registered on the second lower right premolar and the first lower left molar; deep periradicular cyst in the area of the alveolus of the second lower left molar; periodontal alterations of the mandible; the upper jaw bone is completely ante mortem toothless, and the lower jaw – partially; the alveolar process of the upper jaw is resorbed (fig. 5: 4); on the preserved teeth, calculus accumulation and advanced dental abrasion were found on the single teeth, preserved during life.

Anatomical peculiarities can be observed on the skull – additional intersutural bones in the region of the lambdoid suture (fig. 6). A defect is also found – a pit with an oval shape and dimensions – 21 mm long, 16 mm wide and 5 mm deep, located on the right half of the frontal bone near the *bregma* point (the intersection of the coronal and sagittal sutures), affecting the coronal suture and a very small part of the right parietal bone (fig. 6, arrow).

Alterations from osteochondrosis, spondyloarthrosis and spondylosis were found on the vertebrae from all areas of the spine, with the lumbar sector being the most affected with a proliferative bone reaction (fig. 7). The bones of the limbs showed initial arthritic alterations on the articular surfaces of the upper limbs, as well as in the area of the hip joint. At the distal end of the left fibula, periosteal formation of hyperostoses is established.

Grave No. 2 was discovered in square XX-364, immediately next to the remains of a dwelling (structure XX-364/1) (fig. 8). The burial pit was dug high into the cultural layer of the latest stratigraphic horizon, but due to the mixed nature of the embankment, its exact outlines have not been established. The bottom of the grave was at an elevation of 180.97 m, and its original depth was about 70 cm. One individual was laid in the grave, the skeleton being partially preserved. The body was oriented with the head to the west (azimuth 270°). The skull was turned to the left. There was no inventory in the grave.

The anthropological analysis of the skeletal remains established a child was buried in grave No. 2, about 2 – 3 years of age at the time of death. The cranial and postcranial skeletal remains are fragmented and incomplete (tables 1.1 – 1.3). The explanation for the missing fragments is natural destruction.

Dentition:

V	IV	-	II	I	-	-	-	IV	V
V	IV	-	-	-	-	-	-	IV	V

I – a tooth from the deciduous dentition:

- – lost tooth *post mortem*.



Fig. 7. Grave No. 1, male, 45 – 50 years. Bone reaction and spondylo-arthrosal changes of the vertebral bodies. 1. Thoracic vertebra, herniation of the upper body margin; 2. Fourth and fifth lumbar vertebrae, distal view, proliferative bone reaction of the shafts, osteochondrosis and bone reaction of articulation surface of the body of the fifth lumbar vertebra

Обр. 7. Гроб № 1, мъж, 45 – 50 г. Костна реакция и спондилоартрозни изменения на прешлените на гръбначния стълб. 1. Торакален прешлен, херниация на горен ръб на тялото; 2. Четвърти и пети лумбални прешлени, дистален изглед, пролиферативна костна реакция на стените на тялото, остеохондроза и костна реакция на ставната повърхност на тялото на пети лумбален прешлен

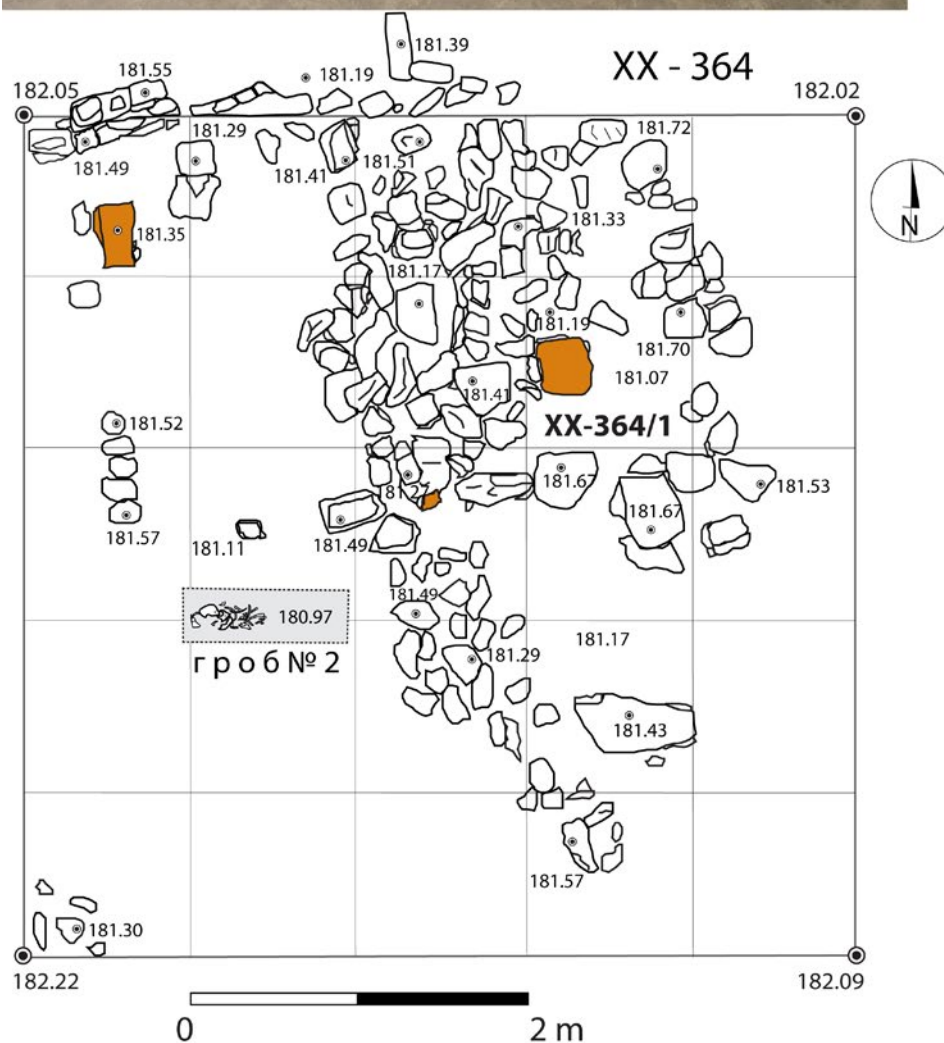


Fig. 8. Location of grave No. 2
Обр. 8. Местоположение на гроб № 2

The age of the individual was estimated by the development of the dentition and the postcranial skeleton and the length dimensions of the diaphyses of the long bones of the limbs (tables 2 and 4).

The following pathological alterations can be established: upper right central incisor is affected by cervical caries located towards the lateral incisor (fig. 5: 1); the orbital roof is affected by an advanced, trabecular form of *cribra orbitalia* (fig. 9: 2). On the occipital scale, a deformation is found, parallel to the *linea nuchae superior* – a pronounced depression (fig. 9: 3), while the remaining bones of the skull do not show traces of artificial deformation and no premature synostosis of the cranial sutures is observed. Areas of periosteal reaction with accumulation of porous bone formations following a proliferative bone reaction were found on the diaphyses of the tibia, distally-laterally, and on the diaphysis of the ulna, proximally (fig. 10: 1).

Grave No. 3 was discovered in grid square XX-345 (fig. 2). It was shallowly dug into a mixed cultural layer of the latest stratigraphic horizon. The outlines of the burial pit were not well defined. The bottom of the grave was at an elevation of 181.42 m, and its original depth was about 30 – 40 cm. The burial pit was oriented to the west-southwest (azimuth 242°).

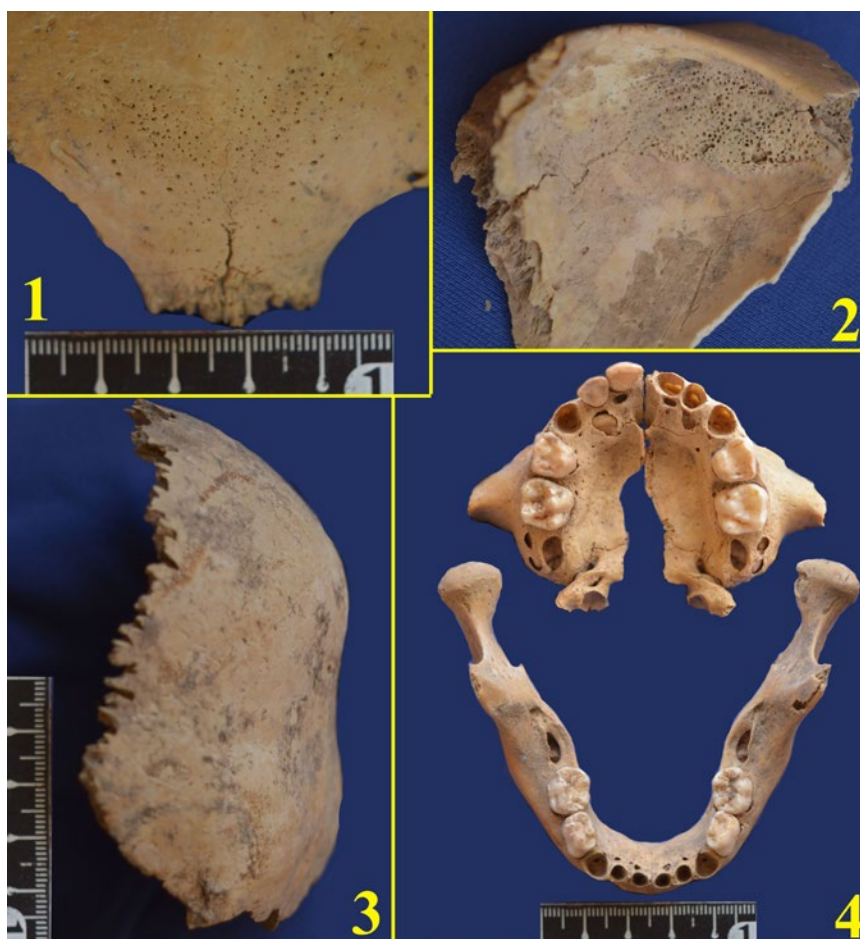


Fig. 9. Grave No. 2, child, *Infans I*, 2 – 3 years at death. 1. Frontal bone, fragment, detail, porous changes; 2. *Cribra orbitalia*: advanced, trabecular form; 3. Fragment of the occipital bone – the occipital squamma, lateral view, deformation; 4. Maxilla and mandible

Обр. 9. Гроб № 2, дете, *Infans I*, 2 – 3 г. 1. Фрагмент от челната кост, детайл, порьозни изменения; 2. *Cribra orbitalia*: напреднала, трабекуларна форма; 3. Фрагмент от тилната кост, тилна люспа, латерален изглед, деформация; 4. Горно и долно-челюстни кости



Fig. 10. Porotic hyperostosis of diaphyses of the long bones of limbs. 1. Grave No. 2, child, Infans I, 2 – 3 years at death, diaphyses of the right and left tibiae, diaphysis of the left ulna; 1.a. Left tibia, detail; 1.b. Left ulna, detail; 2. Grave No. 4, female, 18 – 20 up to 25 years, right and left tibiae; 2.a – b. Distal medial shafts, detail

Обр. 10. Поротична хиперостоза на диафизите на дългите кости на крайниците. 1. Гроб № 2, дете, Infans I, 2 – 3 г. Диафизи на дясна и лява голямомициални кости, диафиза на лява лакътна кост; 1а. Лява голямомициална кост, детайл; 1б. Лява лакътна кост, детайл; 2. Гроб № 4, жена, 18 – 20 до 25 г., дясна и лява голямомициални кости; 2а – б. Дистална медиална повърхност на стената, детайл

One individual was laid in the grave, placed in a stretched position on his back, with his head to the west (fig. 11). The cervical vertebrae were slightly curved to the right, the skull was slightly raised relative to the body, which is an indication that a pad was formed under the head in advance. The right arm was bent at the elbow and placed on the abdominal area. The position of the left arm was probably the same, but the forearm bones were not preserved. The lower limbs were stretched parallel to each other. The total measured length of the skeleton was 132 cm.

The anthropological analysis of the skeletal remains established a child, buried in grave No. 3, about 10 – 12 years of age at the time of death. The cranial (fig. 12) and postcranial skeletal remains are relatively well represented (tables 1.1 – 1.3).

Dentition:

-	6	-	4	-	2	1		1	2	3	-	-	6	-
7	6	5	4	3	2	1		1	2	3	4	5	6	7

1 – a tooth from the permanent dentition;

3 – tooth in eruption;

- – lost tooth *post mortem*.

The age of the individual was estimated by the development of the dentition and the postcranial skeleton, the length dimensions of the diaphyses of the long bones of the limbs show a slightly lower age, of about 8 – 9 years (tables 2 and 4).

On the skull, the presence of an *os incaie* in the lambdoid suture at the *lambda* point (an anatomical feature) was found, and the shape was defined as *os occipitale tripartite* (fig. 12). Initial development of an active form of *cribra orbitalia* was found on the orbital roofs. The sagittal cranial suture shows premature obliteration.

Development of the supratrochlear tubercle is registered on the left humerus (fig. 13: 1), combined with septal foramen of *fossa olecrani* of both humeri.

Pathological changes of the dentition were established: linear enamel hypoplasia, seen on lower canines, with lines corresponding to 2nd and 3rd years of the individual's development.

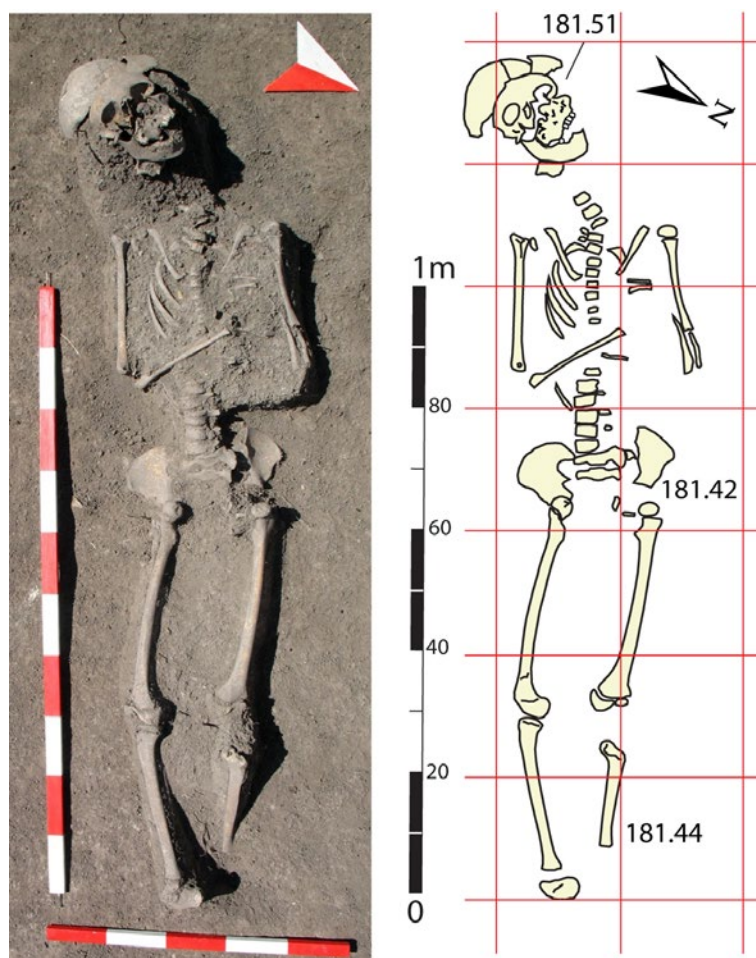


Fig. 11. Grave No. 3

Обр. 11. Гроб № 3



Fig. 12. Grave No. 3, child, *Infans II*, 10 – 12 years at death. Skull fragments, reconstructed calva. 1. Fragments of frontal bone and maxilla, frontal view; fragment of mandible, proximal view; 2. Occipital view: Inca bones in the lambdoid suture, located at point lambda

Обр. 12. Гроб № 3, дете, *Infans II*, 10 – 12 г. Фрагменти от череп, реконструирана calva. 1. Фрагменти от челна и горночелюстна кост, фронтален изглед, фрагмент от долночелюстна кост, проксимален изглед; 2. Окципитален изглед, инкови кости в ламбдовиден шев при точка lambda



Fig. 13. 1. Grave No. 3, child, *Infans II*, 10 – 12 years at death. Left humeral bone, development of supratrochlear tubercle, arrow, septal foramen of the fossa olecrani; 2. Grave No. 5, male, 25 – 30 years. Right femur. Myositis ossificans, located distally on the posterior shaft, lateral lip of the linea aspera, arrow

Обр. 13. 1. Гроб № 3, дете, *Infans II*, 10 – 12 г. Лява раменна кост, развитие на супратрохлеарен туберкул, стрелка, септален форамен на fossa olecrani; 2. Гроб № 5, мъж, 25 – 30 г. Дясна бедрена кост. Осифициращ миозит, дистално на постериорната стена на диафизата, на латералната страна на linea aspera, стрелка

Grave No. 4 was situated on the border between grid squares XX-285 and XX-286 (fig. 2). The burial facility was registered at an elevation of 182.00 m, and the bottom was at an elevation of 181.63 m. The original depth of the burial pit was only 37 cm. On the surface, on the west side, the grave was marked with a stone. The burial pit was oriented to the west-east (azimuth 255°).

One individual was laid in the grave, placed in a stretched position on his back, with his head to the west (fig. 14). The skull was slightly raised, resting on the sloping western wall of the burial pit. The lower and upper jaws, together with the teeth, are well preserved. The bones from the spine were preserved *in situ*. The upper right limb was strongly bent at the elbow joint, with the phalanges exposed to the clavicle. The upper left limb was bent at the elbow joint at an almost right angle and was laid on the abdominal region. The lower limbs were stretched parallel to each other. The total measured length of the skeleton, in the slightly bent posture of the body, was 148 cm. There was no inventory in the grave.

When the burial pit was filled, a medium-sized slab stone was placed on the abdominal area. Immediately next to the skull, to the west, several human bones (phalanges) were found, which seem to have been scattered by an animal. Fragments of scattered ribs were also found 30 cm to the left of the pelvis.

The anthropological analysis of the skeletal remains established a woman, buried in grave No. 4, about 18 – 20 to 25 years of age at the time of death. The cranial and postcranial skeletal remains are relatively well represented (tables 1.1 – 1.3).

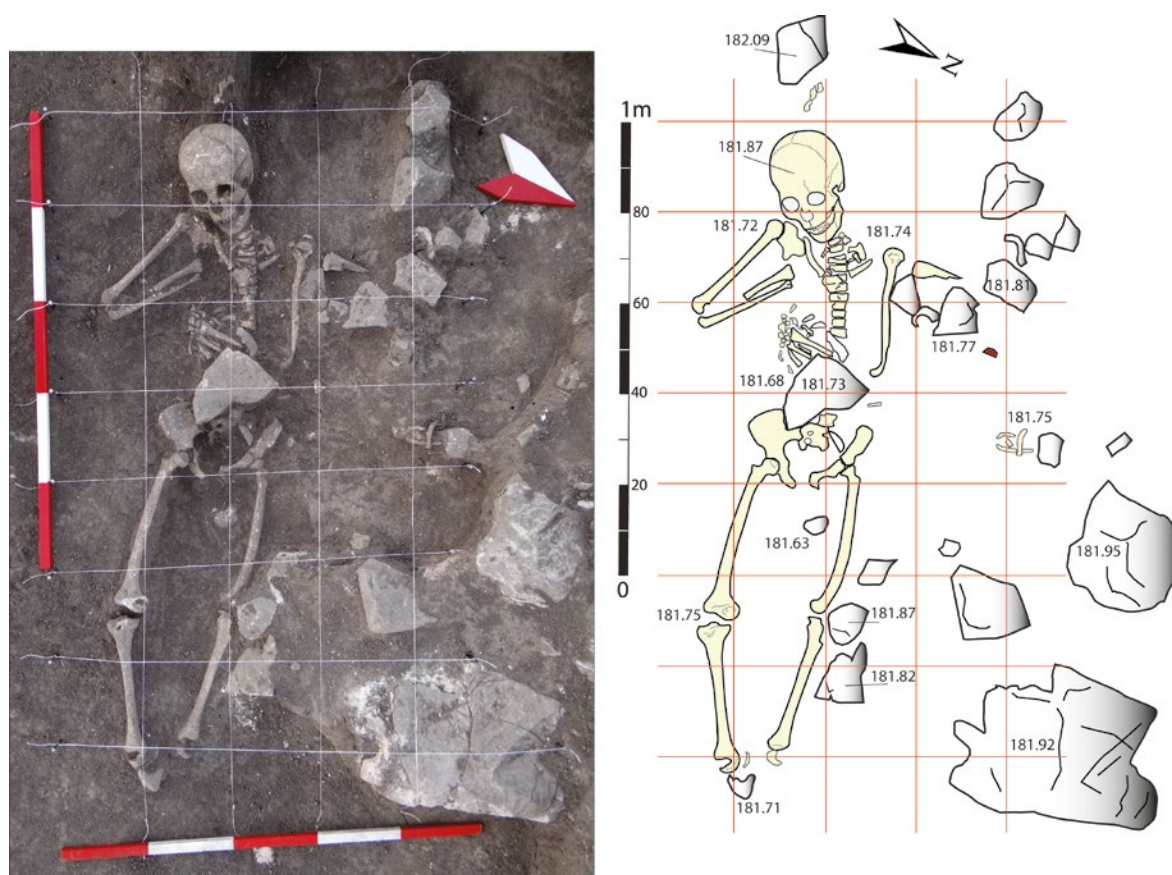


Fig. 14. Grave No. 4

Обр. 14. Гроб № 4

Dentition:

8	7	6	5	4	3	2	-	1	2	3	4	5	6	7	8
8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8

1 – a tooth from the permanent dentition:

- – lost tooth *post mortem*.

The sex of the individual was determined by the features of a reconstructed pelvic girdle and the skull, the size of the long bones of the limbs confirm the result (tables 2 and 3). Age was estimated by the degree of obliteration of the cranial sutures and the synostosis of the epiphyses to the diaphyses. Height is in the category “short” according to the two used formulas of *Pearson-Lee* (152.46 cm) and *Trotter-Glaeser* (157.14 cm) (table 3).

The skull (fig. 15) allowed some basic dimensions to be taken following reconstruction (table 5). It is described as ultrabrachycrane, i.e., width strongly predominates; the both height-width indices, estimated with the *basion-bregma* and with the *porion-bregma* height, place the skull in the tapeinocranium rubric; the length-height indices, again with the two heights, place the skull in the



Fig. 15. Grave No. 4, female, 18 – 20 up to 25 years. Skull, preserved cranium, frontal, left lateral, vertical and occipital view; arrow – opening from lost *post mortem* inca bone in the lambdoid suture at the lambda point

Обр. 15. Гроб № 4, жена, 18 – 20 до 25 г. Череп, почти пълно съхранен скраниум, фациален, ляв латерален, вертикален и окципитален изглед; стрелка – отвор от изгубена *post mortem* инкова кост в ламбдовиден шев при точка lambda

hypsicranium rubric, i.e., with predominant height measurement. The facial part of the skull allows some measurements. The orbits have a rectangular form, described as relatively high – hypsiconh, the horizontal profile, described by the nasomalar and zygomaxillary angles as relatively flat. The vertical profile, without the possibility of measurements, visually determined, describes the skull as slightly prognathic. In this complex the nose can be described as a relatively narrow with nasal index in the lower border of the mesorrhin rubrication, the lower edge of the piriform aperture is shaped as *anthropina*; the mandible is relatively wide and long, falling under the rubric dolichostenomandibular; the frontal, parietal, temporal, and occipital bones show weak relief, characteristic of the female sex.

In general, the skull presents features of both Mongoloid and Caucasian types, with descriptive traits more characteristic for the Caucasian but most of measurements and indexes, like pronounced brachyrania, big horizontal angles and orbital proportion more characteristic for Mongoloid type. Presence of *os incae* is restored in the lambdoid suture at point *lambda*, and the bone is not currently detected in the material.

The postcranial skeleton shows defects on the inner surface of the pubic bone, which can be interpreted as traces of a parturition process.

Pathological changes in the bones of the cranial and postcranial skeletal remains can be established. On the dentition, development of carious changes was registered on the left first molars and upper left first premolar, apparently provoked by mechanical defects, as also observed on the upper right premolars and first molar; the development of surface occlusive caries is already established on the upper right second molar and cervical caries, medially, on the upper left third molar (fig. 5: 2, 3, 5); linear enamel hypoplasia is seen on lower canines, with lines corresponding to 2nd – 2 ½ and 3rd years of the individual's development (fig. 5: 5); alveolar processes show advanced periodontal changes; the teeth have advanced dental abrasion.

A defect can be found on the frontal bone, representing a pit with an elliptical shape and dimensions – 16 x 9.5 mm, not quite regular contour, located in the left part of the bone, towards the left craniometric point *frontotemporale* (fig. 19: 1). A similar one is also found on the left parietal bone, representing a pit with an elliptical shape, dimensions – 15 x 10.3 mm, not quite regular contour, located almost in the middle of the bone (fig. 19: 2).

The left and right tibiae present a periosteal accumulation of porous bone substance, located medial-distal to the diaphysis, following a proliferative bone reaction (fig. 10: 2).

Grave No. 5 was situated immediately next to grave No. 4, on its north side (fig. 2). The grave was studied in two stages, in two different archaeological seasons. In the first stage the excavators uncovered the lower part of the skeleton (fig. 16). This made it possible to make a cross-section of the burial pit, in which the outline of its longitudinal walls was documented. The grave was registered at a level of 181.97 m and its bottom was at an elevation of 181.12 m, i.e., the original depth of the pit was about 85 cm. The burial pit was oriented to the west-east (azimuth 266°). The burial facility was a simple burial pit with a width of 80 cm and a length of about 190 cm. North of the grave two massive stones were preserved from a pavement which marked the daily walking level of the terrain in the middle of the 11th c. (fig. 17). There is no information as to whether the pavement was cut when the grave was excavated or if it was installed afterwards.

One individual was laid in the grave, placed in a stretched position on his back, with his head to the west. The head was slightly turned to the left, the mouth was open and the teeth are perfectly preserved. The upper limbs were bent at the elbows and crossed on the chest, with the right hand placed on top of the left. The lower limbs were stretched parallel to each other. Two stones were



Fig. 16. Grave No. 5. Stages of archaeological investigation
Обр. 16. Гроб № 5. Етапи на археологическото проучване



Fig. 17. Grave No. 5, South view
Обр. 17. Гроб № 5, поглед от юг

placed by the right shoulder, on the bottom of the pit, marking the south-western corner of the grave. The total preserved length of the skeleton was 172 cm, the width at the pelvic girdle was 31 cm, and the width at the shoulders was 41 cm. There was no grave inventory.

The two graves, No. 4 and No. 5, were in stratigraphic superposition. The pit of grave No. 4 partially overlapped the pit of grave No. 5 (fig. 18). The partial overlap of the two graves and the close placement of the two individuals is hardly accidental. The excessively shallow excavation of grave No. 4 also points to a deliberate act, with the aim of not affecting the individual buried earlier in grave No. 5. Stratigraphic information and field observations for the two graves confirm that the time difference between the two burials was small. Archaeoastronomical calculations of the orientation of the two skeletons suggest that the earlier buried male individual probably died in April or early September, and the later buried female died in late May or mid-July. The deliberate burial of the two individuals next to each other does not exclude the possibility that they were close relatives or that they were family-related in their lifetime. A similar case of partial overlapping of two graves

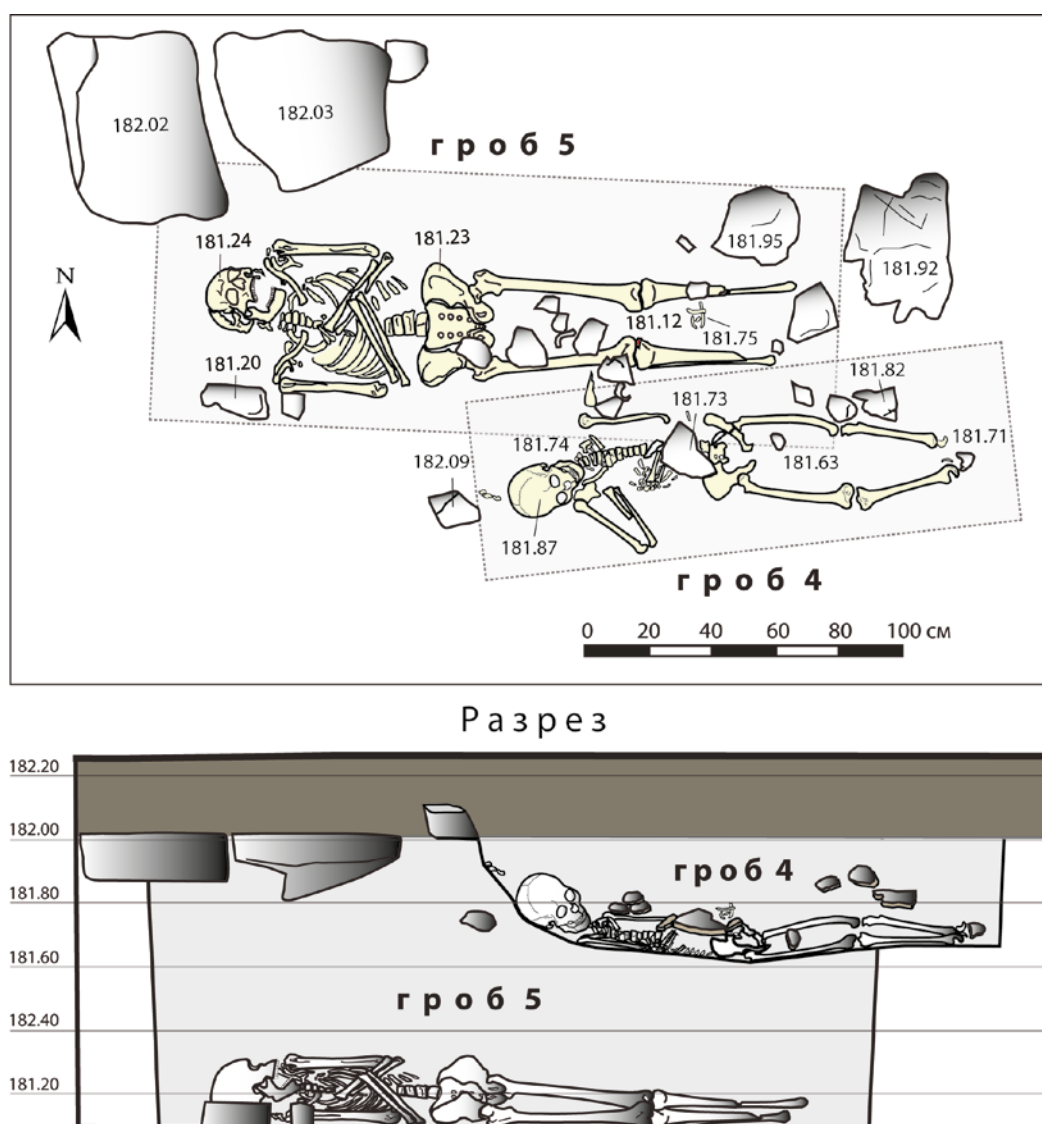


Fig. 18. Graves Nos. 4 and 5 – plan and section

Обр. 18. Гробове № 4 и 5 – план и разрез

(20 and 21) was documented next to the southern sector of the western fortress wall of Pliska, where the later buried individual was laid about 15 cm higher (Дончева-Петкова 1984, 181). L. Doncheva-Petkova interprets them as a mother and child buried at different times.

The anthropological analysis of the skeletal remains established a 25 – 30-year-old man, buried in grave No. 5. The skull is highly fragmented; the postcranial skeleton is incompletely represented (tables 1.1 – 1.3).

Dentition:

8	7	6	5	4	3	2		-	2	3	4	5	6	7	8
8	7	6	5	4	3	2		-	2	3	4	5	6	7	8

1 – a tooth from the permanent dentition:

- – lost tooth *post mortem*.

The sex of the individual was determined by reconstructed pelvic girdle, features of the skull, and the size of the long bones of the limbs (tables 2 and 3). Age was estimated by the relief of the symphyseal surface of the pubic bone and the sternal epiphyses of the two clavicles, which had synostosed shortly before death occurred. The height of the individual is in the category “tall”, estimated by the two used formulas of *Pearson-Lee* (172.07 cm) and *Trotter-Glaeser* (177.78 cm) (table 3).

Restoration of the skull was impossible (fig. 20) for conducting measurements. However, some conclusions can be made: the forehead is medium wide, sloping and with strongly pronounced temple lines, rounded supraorbital ridge and browbone – score 1, glabella – score 2 – 3 (according to Broca); mastoid processes are large, with prominent relief and forward direction; the occipital

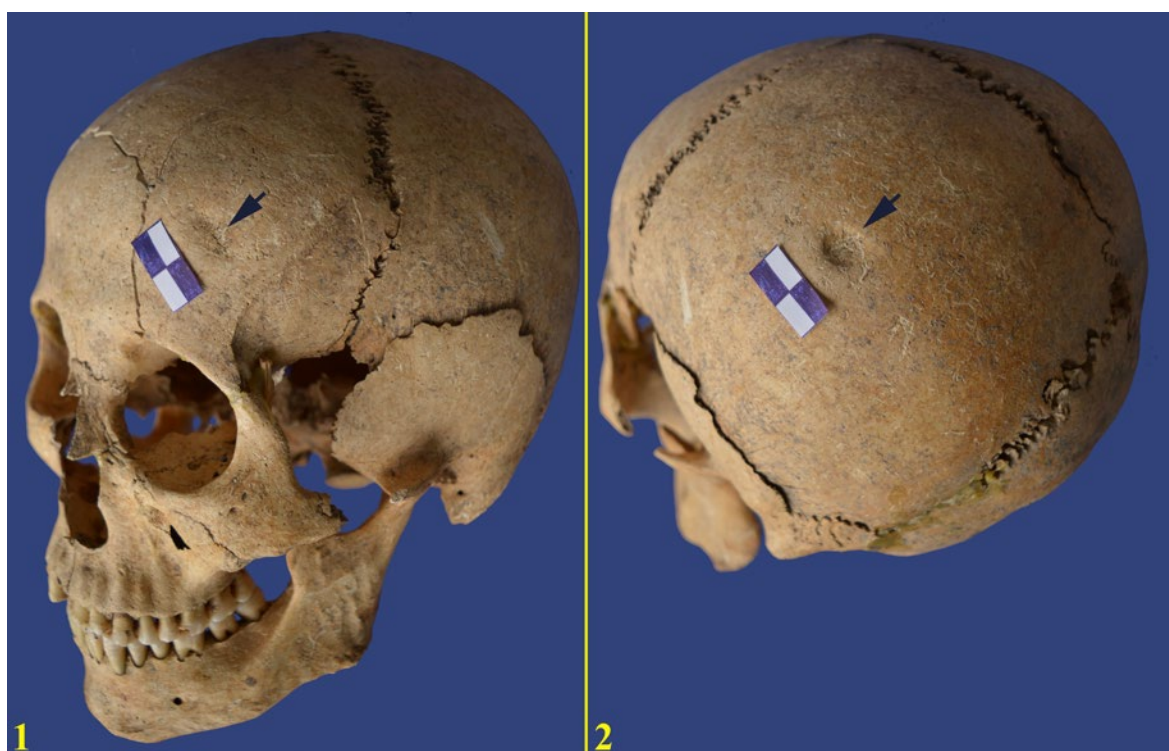


Fig. 19. Grave No. 4, female, 18 – 20 up to 25 years. Skull. 1. Arrow – defect on the frontal bone;
2. Arrow – defect on the temporal bone

Обр. 19. Гроб № 4, жена, 18 – 20 до 25 г. Череп; 1. Стрелка – дефект на челна кост;
2. Стрелка – дефект на темenna кост



Fig. 20. Grave No. 5, male, 25 – 30 years. Skull, fragments. Arrow pointing occipital – area with porous changes on outer table; arrow to the maxilla – mesio Buccal rotation of upper lateral incisors

Обр. 20. Гроб № 5, мъж, 25 – 30 г. Череп, фрагменти. Стрелка към тилна кост, площ с порьозни изменения на ектокраниалната повърхност; стрелка към горночелюстна кост – уининг на горни латерални инцизиви

relief is moderately pronounced; *tuberculum marginale ossis zygomatici* is moderately developed; the lower edge of the piriform aperture is shaped as *anthropina*; canine fossa moderately deep, with weak to moderate relief; the mandible is described as large and massive, with a prominent relief, with the characteristic male shape of the basal view; the chin is triangular in shape, on a broad base, moderately convex and with a hollow.

Some pathological alterations can be established. The dentition shows slight abrasion of the chewing surface of the teeth (*abrasio*) (grade 1 – 2), corresponding to the estimated age; a buccal fossa is developed on all lower molars (fig. 5: 6), the upper lateral incisors have pronounced bilateral mesiobuccal rotation (fig. 5: 7).

The skull shows pronounced porotic alterations on the ectocranial surface of the occipital squama (fig. 20). The right femur is affected by ossifying myositis, localized distally on the posterior wall of the diaphysis, on the lateral side of *linea aspera* (fig. 10: 2). On the left fibula, a periosteal formation of hyperostoses (atypical accumulation of bone substance) was found, identified on the proximal end of the bone.

Summary of the results of the anthropological analysis

The osteological remains of five human individuals were examined – two men aged 45 – 50 years (grave No. 1) and 25 – 30 (grave No. 5), a woman aged 18 – 20 to 25 years (grave No. 4) and two children, aged 2 – 3 years (grave No. 2) and 10 – 12 years old (grave No. 3). The small number of individuals does not allow demographic analysis, and the information on the anthropological types of the buried individuals is also relatively poor.

The men in graves No. 1 and No. 5 are tall, on average 175.06 cm and 176.75 cm, respectively, by the *Trotter-Glaeser* formula and 170.92 cm and 172.07 cm by the *Pearson-Lee* formula, respectively (table 3). The long bones of the limbs are massive, with moderate to prominent relief and great length, which is an indicator of good physical condition during life, and also of abundant physical activity.

The woman from grave No. 4 is short – 150.75 cm or 157.14 cm according to the two formulas used (table 3). The bones of the limbs are gracile, show a weak relief, indicating underdeveloped musculature.

The small series of three full-grown individuals presents fragmentary skulls, making racial identification difficult. The male skulls (fig. 6, 20) do not provide opportunities for measurements to be taken of the facial part, with the exception of the lower jaw bones. Craniometric data were partially taken from the skull of the man from grave No. 1, and the woman from grave No. 4 (fig. 15), and from the jaw area of the fragments from grave No. 5 (table 5).

The two skulls where measurement was possible (from graves No. 1 and 4) show sizes that placed them according to the cranial index in the rubric mesocrane, grave No. 1, and ultrabrachy-crane, grave No. 4, respectively (table 6). Both skulls are of relatively tall height and fall under the rubric of hypsicranes. According to the height-width index, the skull from grave No. 1 is again described as having a predominantly high size, i.e., an acrocrane, while that from grave No. 4 falls under the rubric tapeinocrane, which is explained by its very large width size, which also affects the cranial index. Transverse indices tracing the relations of least width of forehead, greatest width of skull, and greatest width of the occiput describes the two skulls as stenometopes.

The facial area was partially restorable only for the skull from grave No. 4. The woman has a relatively narrow nose, high orbits; the horizontal profiling described by the values of the nasomalar and zygomaxillary angles fall in the rubric of 'large'. Vertical profiling, without it being possible to measure it, describes the skull as slightly prognathic.

All three skulls of the fully-grown individuals from graves Nos. 1, 4 and 5 provide some possibility for measurements of the jaw area. The maxillary index of the skulls from graves Nos. 4 and 5 falls under the brachycran rubric with a predominant width size.

The mandible in the same individuals is described as relatively wide and long, falling under the rubric dolichosteno-mandibular. The formation and relief of the cranial bones show pronounced sexual dimorphism of the bones of the neurocranium (relief of the frontal, parietal, temporal and occipital bones) and the facial lobe (formation of the glabella and super ciliary arcs, the formation of the zygomatic bone), including the mandible (relief of the angle, formation of the basilar view).

The lower border of piriform aperture in all three skulls can be described as distinctly *anthropina*. Overall, the scarce data present an admixture between both Caucasian and Mongoloid features, the latter mostly expressed in the skull from grave No. 4. It is not clear how the latter result should be interpreted – as an individual peculiarity, influence of the Mongoloid race, or a characteristic of the population. On three of the skulls (from graves Nos. 1, 3 and 4), the presence of *os incae* in the lambdoid suture was established. In two of the cases (graves Nos. 3 and 4), they are located in point *lambda* (fig. 12, 15). In the male individual from grave No. 1, small *inca* bones are located bilaterally in the region of the lambdoid suture (fig. 6).

The data on the anthropological type of the population fit into what is known from earlier studies of graves in the Inner City of Pliska (Боев, Чолаков 1992, 302 – 311; Русева 2013, 215 – 228). In thirteen adult individuals examined from the necropolis next to the western fortress wall, the anthropological data show a mixed anthropological type between Caucasian and Mongoloid types.

The individuals studied from the “Palace Centre – East” site show a variety of pathological changes with a high prevalence of scars interpreted as traumatic lesions. On the skull of the skeleton from grave No. 1 (male, 45 – 50 years old), signs of trauma with a subsequent infectious process on the inner cranial plate (*lamina interna*), as well as post-traumatic trepanation, is visible. The trepanation is localized in the area of trauma, on the right half of the frontal bone, near the *bregma* point, affecting the coronal suture and a very small part of the right parietal bone (fig. 6, arrow). The trauma and the subsequent trepanation should have been survived, and most likely the manipulation was carried out as treatment. This find complements the picture of the high incidence of cranial trauma in the population, as well as the attempts to treat such conditions by cranial trepanation.

In the female individual from grave No. 4 (18 – 20 to 25 years old), defects can be found on the frontal and parietal bones, which are pits with an elliptical shape, located on the frontal (fig. 19: 1) and round – on the parietal bone (fig. 19: 2). Their origin can be defined as traumatic, with an injury experienced on the scalp, affecting the upper cortical layer of the cranial bones. The destruction of this layer may also have been caused by infection following complications in the healing of the scalp, and the bone was not affected by the trauma itself. The irregular contour of the frontal bone defect and its asymmetric position in the left half of the skull roof makes its interpretation as more possibly acquired after an accidental injury. The defect of the parietal bone is also located to the side of the central sagittal plane of the skull, but its regular round shape is more reminiscent of an incomplete artificial trepanation of the skull (fig. 15, arrow). This type of manipulation is characteristic of the period and is associated with the influence of steppe tribes who settled in the region of North-eastern Bulgaria (Боев 1964, 289 – 298; Боев 1965, 113 – 127; Йорданов, Димитрова 2005, 415 – 460; Йорданов и др. 2010, 43 – 60; Russeva 2012, 77 – 95).

The bone defects found on the inner side of the pubic bones of the woman from grave No. 4 are of special interest. Many authors interpret this feature as a trace of the birthing process (Bergfelder, Herrmann 1980, 611 – 613, Conzato et al. 2010, 237 – 254). This implies that the woman had at least one child.

The skeleton of the same individual also provides evidence of a long-term disease – a periosteal reaction with the accumulation of proliferative, porous bone substance on both tibiae (fig. 10: 2). These alterations can be interpreted in different ways: as a condition resulting from an early stage of development of several kinds of severe chronic diseases – ones with an infectious cause (Ortner 2003, 206 – 215, Ortner 2008, 196 – 199), development of hypertrophic osteoarthropathy – a condition involving a reaction of the periosteal layer of the bone to toxins in the blood, most often the result of an oncological disease (Ortner 2003, 354 – 357), or as a consequence of nutritional deficiency following improper/poor nutrition, especially with a lack of important vitamins and /or minerals, or caused by disorders of the metabolic functions of the body (Ortner 2003, 354 – 357 Aufderheide, Rodriguez-Martin 1998, 310 – 311). These alterations also go some way to explain the premature death of the individual.

The skeleton of the child from grave No. 2 (about 2 – 3 years old at death) also shows periosteal reaction in the limb bones, located distal-laterally to the diaphyses of the tibiae and proximal to the diaphysis of the present left ulna (fig. 10: 1). It is possible that a similar process took place in both individuals. For individuals in childhood, these alterations are more often explained by metabolic disorders, as a result of illness or improper nutrition (Ortner 2003, 383 – 393). Similar disorders were also found in previous studies of the population in Pliska (Pyceva 2013, 221). They should rather be explained by insufficient nutrition in the children of the population from the period.

Despite the young age of the individuals from graves Nos. 2 and 4, alterations are to be found in their dentition as a result of the development of dental caries. In the woman from grave No. 4, the permanent dentition is affected with carious changes in the left first (upper and lower) and upper right second molars and upper left first premolar (fig. 5: 2, 3, 5). The alterations seem to have developed at the places affected by mechanical defects, as the ones observed on the upper right premolars and first molar.

The deciduous dentition of the individual from grave No. 2, a child of about 2 – 3 years at the time of death, is also affected by dental caries (fig. 5: 1). Here the neck of the upper right central incisor is affected. The development of carious changes at this early age is indirect evidence of deteriorated health, and the possible unhealthy diet of the affected individuals. The development of periodontal alterations and the advanced abrasion of the tooth enamel of the woman from grave No. 4, as well as the initial periodontal alterations in the man from grave No. 5, point to a similar conclusion.

The dentition from grave No. 1 shows a high number of pathological changes in the dental-jaw apparatus (fig. 5: 4), which is explained by the advanced age of the buried individual (45 – 50 years) and probably, again, by an unbalanced diet and the low level of oral hygiene during the period. The combined influence of these factors led to the complete intravital tooth loss of the upper, and partially of the lower jaw, with a corresponding strong deformation and resorption of the alveolar processes of the maxilla and pronounced periodontal alterations of the mandible. The advanced dental pathology made the chewing process and nutrition very difficult, which ultimately should have strongly deteriorated the quality of life and health of the person (Anelloes et al. 2010, 1 – 11). Carious alterations were found on the few preserved teeth – on ones identified as the second lower right premolar and the first lower left molar. The second lower left molar had been lost shortly before death, and in the same area of the mandible an inflammatory odontogenic cyst had developed around the root of the lost tooth. Such cysts result from bacterial infection in acute pulpitis causing an abscess (Aufderheide, Rodriguez-Martin 1998, 408). On the rest of the teeth preserved during the life of the individual, on the same dentition, an accumulation of calculus is registered.

The observed defects of linear hypoplasia of the tooth enamel are also interpreted as a consequence of periods of unfavourable conditions for development (Starling, Stock 2007, 520 – 528;

Goodman et al. 1980, 515 – 528; Goodman, Rose 1990, 59 – 110; Skinner, Goodman 1992, 153 – 174), explained by long periods of illness (Sarnat, Schour 1941, 1989 – 2000; Kreshover 1940, 1083 – 1101) or nutritional deficiency (Rose et al. 1985, 281 – 306). Such are found on both dentitions in which permanent teeth are represented – from grave No. 4, where the lines correspond to 2 – 2 ½ and 3 years of development (fig. 5: 5) and from grave No. 3 with lines, corresponding to a similar age. The age of formation of these defects matches the age at which the individual from grave No. 2 died.

These results identify the period as high risk in terms of health for people from the population. It seems that the age between two and three years was transitional and marked the end of the weaning process of the child from breastfeeding and transition to the solid food. The change in diet is an indication that around 2 – 3 years of age the child was placed in a new social position that reduced the close relationship with the mother and the breastfeeding process, as the mother probably had a new child of breastfeeding age.

The dentition from grave No. 1 is not informative for enamel hypoplasia defects due to its destruction during life. A similar feature, a buccal pit (foramen cecum), is found on the molars from the dentition from grave No. 5 (fig. 5: 6). The reasons for acquiring this defect, according to the researchers, are close to those leading to the linear hypoplasia of the enamel, but some argue that in the case of the foramen cecum, the congenital predisposition seems to have a greater influence. Recognition of the feature again could point to a possible unfavourable period in the individual's development between his second and third year (affected first molars). However, a later similar period between the 10th and 13th year of growth, when the feature was formed on the third molar, is also registered here.

The distortion (messiobuccal rotation) of the two upper lateral incisors of the dentition of the young man from grave No. 5 is also explained by irregular development of the dentition (fig. 5: 7, arrows). Most often, the change is a consequence of insufficiently developed size of the alveolar process of the jaw during tooth eruption or in cases of delayed tooth eruption, following advanced development of adjacent teeth. Another reason could be a child's bad teething habit or a non-specific (unrelated to the normal chewing process when eating) activity performed with the teeth in everyday life.

Development of *cribra orbitalia* was found in both individuals in infancy from graves Nos. 2 and 3, and in both cases the bone structure shows an active reaction at the onset of death. While in the older child from grave No. 3, the alteration is weakly manifested, in the younger child from grave No. 2, it shows an advanced trabecular form (fig. 9: 2). In the latter case, it is combined with a pronounced deformation of the occipital bone (fig. 9: 3), which cannot be explained by artificial deformation or premature obliteration of any of the cranial sutures. The advanced form of the alteration in this individual could point to sickle cell anaemia (Stuart-Macadam 1989, 201 – 222; Aufderheide, Rodriguez-Martin 1998, 348; Walker et al. 2009, 109 – 129) and development of thalassemia.

In the individual from grave No. 3, *cribra orbitalia* remains as a sign of the presence of an anaemic condition, its etiology not being clear – nutritional deficiency, presence of internal parasites which favour such a condition, or other causes (Marcsik 1973, 191 – 197; Holland, O'Brien 1997, 183 – 193). However, development of the inherited sickle cell (hemolytic) anaemia cannot be excluded, as it is supposed for the individual from grave No. 2, the latter pointing to a spreading of the condition in the population. In such cases, where individuals whose skeletal remains show advanced forms of skeletal deformities, lower affectation in other population members could be explained with the inherited hemolytic anaemia (HersHKovitz et al. 1991, 7 – 13).

The skull of the adult individual from grave No. 5 (male, 25 – 30 years old) shows signs of recombined *cribra orbitalia*. State of recombination indicates an overcame period of defect

formation, probably experienced in childhood. Such cases are explained by diet and past illnesses and often present in paleopopulations.

In both male skeletons, enthesopathic alterations were identified on the left fibula. Entheses are the places where tendons, ligaments, fascia and joint capsules attach to bones, providing a reduction in mechanical tension at the border of tissues with different stiffness and elasticity. Inflammation (enthesitis) is a pathological change in the entheses. It is believed that the process can develop in the course of spondyloarthropathy, metabolic or endocrine diseases and secondarily, in (micro) injury (Sudoł-Szopińska et al. 2015, 72 – 84).

No periosteal formation of hyperostoses was observed on the right fibulae in the studied male skeletons from Pliska. For this reason, we can hypothesize that the enthesopathies on the left fibulae are more likely due to trauma or possibly chronic trauma from a specific activity performed by both men that overloaded the left leg muscles.

The alteration of the skeleton of the individual from grave No. 1 is combined with highly pronounced degenerative-dystrophic changes (osteocondrosis, spondyloarthrosis and spondylosis) (Aufderheide, Rodriguez-Martin 1998, 96 – 97; Ortner 2003, 549 – 550) in all areas of the spine. One explanation for the alterations can be related to abundant physical activity that intensively loaded this part of the skeleton – such as lifting and carrying heavy loads, improper compulsory postures and strong vibrations of the whole body.

The lumbar area is most affected, where large-sized osteophytes formed (Seidler et al. 2001, 735 – 746). The strong proliferative reaction of the walls of the bodies of the lumbar vertebrae (fig. 7: 2), the herniation of the upper edge of the body of one of the thoracic vertebrae (fig. 7: 1) and the reaction of the articular surfaces of the vertebral bodies point the interpretation to the assumption of a skeletal reaction to an infectious bacterial agent. It is possible that the complex could be a result of the development of a brucellosis infection, characteristic for populations with diets based on consuming unpasteurised milk and products made from it (Aufderheide, Rodriguez-Martin 1998, 192 – 193, Ortner 2003, 215 – 221).

Initial arthrosis alterations were also registered on the articular surfaces of the bones of the upper limbs, as well as in the area of the hip joint (coxarthrosis), due to the advanced age of the individual. A complication that is again associated with accidental trauma or chronic, traumatic overload of the skeletal-muscular apparatus, similar to enthesopathies, is ossifying myositis, which is a benign condition of heterotopic bone formation within the muscle (Cushner, Morwessel 1992, 1319 – 1326; Mevio et al. 2001, 345 – 347). This pathological condition can be identified on the distal dorsal end of the body of the right femur of the man from grave No. 5, on the lateral line of the linea aspera at the place of attachment of the muscles on the back of the thigh (fig. 13: 2). The affected muscle could be one of the adductors, namely *adductor magnus*. It seems more likely, that the condition developed on the attachment zone of one of the heads of the quadriceps muscle, namely *vastus lateralis*.

Such alterations can be associated with chronic trauma (overload) of the adductor muscle group in equestrians (Molleson 2007, 19, 28 – 29). In these cases, in contrast to the studied series, the alterations due to horse riding are manifested bilaterally (Molleson 2007, 28 – 29; Jones, Ward 1980, 506 – 507). The defect in the skeletal remains of the man from grave No. 5 is unilaterally located, so it should have been caused by asymmetric physical load, different from the usual manner of locomotion experienced by a horse rider. One possible explanation is that the injury was acquired while standing in an asymmetrical position on one side of the horse, used in some hunting riding styles and combat techniques. A similar riding posture may also be the reason for the alterations of the bones of the left leg (of the fibulae in the two male skeletons).

Clearly manifested porotic alterations on the ectocranial surface of the occipital scale were registered in the young man from grave No. 5 (fig. 20).

The registered bilateral asymmetry in the bone length of the limbs of the individual from grave No. 3 (table 4) is also of interest, evident in the humerus, where it reaches 7.5 mm in favour of the right side. Such an asymmetry is very rare at such a young age. The bilateral asymmetry is additionally manifested in the developed supratrochlear tubercle of the left humerus (fig. 13: 1), combined with subtrochlear foramen on *fossa olecrani* on both humeri. It is possible that the individual was exposed to heavy physical exertion associated with active training in an activity with marked development of the right side of the upper limbs from an earlier age, about 6-7 years of the individual's development.

A subtrochlear foramen on the left humerus was also found in the male skeleton from grave No. 1. The described finding may be the result of accidental trauma or chronic load on the left upper limb. Excessive extension (hyperextension) of the elbow joint is observed in individuals with this anatomical variation (De Wilde et al. 2004, 77 – 84). In the literature, data on the frequency of occurrence of the specified anatomical variation in European populations are scarce, but studies show a high rate in Japanese, African and Native American populations (18.1 %, 21.7 % and 58 %, respectively), while in white Americans of European descent the frequency is low – only 4.2 % (Benfer, McKern 1966, 247 – 252; Ozturk et al. 2000, 72 – 76; Akabori 1934, 395 – 400). The quoted data clearly show that the subtrochlear foramen is more common in Negroids and Mongoloids and much less common in the Caucasian racial group. In the studied series of a total of five skeletons from Pliska, perforation of the articular fossa of the elbow joint was established in two of them.

Both in the newly studied series and in previous studies of graves from Pliska, there is a notable increase in the incidence of lesions, which point to development of diseases such as anaemia caused by intestinal parasites, brucellosis and tuberculosis. Accordingly, some of the alterations can be explained by zoonoses – diseases transmitted by animals to humans. Their high incidence rate shows that in the studied period there was a close, shared environment between humans and domestic animals. The observed morbidity may also be caused by the methods of processing meat, milk and dairy products for consumption, associated with insufficient heat treatment/cooking.

On the other hand, the indirect data on metabolic disorders in the studied series and the clearer signs of such disorders associated with a deficiency of vitamin C in the previously studied material (Pyceba 2013, 216) again points the interpretation to a diet deficient in products of botanical origin. Such a nutrition strategy shows the insufficient ability of the population to use the natural resources of the environment as efficiently as possible.

Discussion of the chronology of the intramural graves at Pliska and the characteristics of the burial ritual

During archaeological studies in the Inner City of Pliska, hundreds of similar graves have been discovered, scattered in small groups or as single burials. The practice of placing burials in an urbanized environment, without clear regulation, is a topic that has not yet been fully analysed. In the context of the newly studied graves, examples from other sections of the Inner City of Pliska are also drawn, which provide an opportunity to discuss a wide range of issues related to the stratigraphy and chronology of the intramural graves and their relationship with demographic and ethnic cultural changes in the medieval city.

The large-scale archaeological excavations in Pliska from the last three decades of the 20th c. provided data on 176 graves, situated individually or grouped in small necropoleis along the inside face of the fortress walls (Захариев 1979, 129 – 137; Василев 1979, 99 – 100; Дончева-Петкова 1984, 181 – 191; Антонова, Витлянов 1985, 61 – 66, обр. 18, 19, табло VIII; Милчев 1992, 191

– 192, обр. 13, 195 – 196, обр. 23; Димитров 1996, 87 – 88; Балабанов 2000, 93 – 102). The burial ritual described by the researchers indicates a relatively poor “Christianized” population. Inventory is rarely found in the graves, and when it is, it is mainly in the form of jewellery. The grave pits were dug relatively shallowly, without special care taken to shape them. Individual cases of grave marking, for example with stones, and partial enclosure of the dead have been documented. I. Zahariev suggested that graves Nos. 10 and 20 at the southern fortress wall are pagan, without providing more complex arguments (Захариев 1979, 129 – 137). T. Balabanov speaks of “deviations” from the Christian ritual or, rather, great variety in the position of the body, limbs and head, which in his opinion provide evidence for not entirely Christianized population (Балабанов 2000, 93 – 94). In the section near the Northern Gate T. Balabanov uncovered four graves with orientation to the north-south, placed in a common trench, which he defined as Pecheneg.

All the researchers have dated the graves to the latest Pliska period, referring them exclusively after the 30s/40s of the 11th c., or most generally around the middle and even after the middle of the 11th c. Publications, however, lack detailed graphic and/or photo documentation adequately presenting the stratigraphic levels of registration of the grave pits. The authors provide more general observations of the terrain situation. According to T. Balabanov, the graves near the northern fortress wall were dug “on dwellings and workshops from the Byzantine period, and two coins dated 1035/42 were found on the pelvis of one of the buried individuals (Балабанов 1985, 120 – 121; Балабанов 2000, 95). The appearance of graves on top of previously destroyed dwellings and ironsmith workshops determines the date of the necropolis to the 30s of the 11th c. at the earliest (Балабанов 2000, 95).

Similar descriptive information is also provided on the graves along the western fortress wall, which, according to V. Antonova, were dug into a layer formed by the ruins of the wall (Антонова, Витаянов 1985, 65). L. Doncheva-Petkova also notes that the initial date of the graves next to the southern section of the western fortress wall is defined by the fact that they break up the masonry belonging to craft-trade premises dated to the second half of the 10th and beginning of the 11th c. (Дончева-Петкова 1984, 188). Stratigraphic observations and the analysis of the finds provide grounds to refer the chronology of the graves to the period after the 40s/50s of the 11th c. (Дончева-Петкова 1984, 189). Several graves have also been found near the eastern fortress wall. In grave No. 4, under the skeleton, a coin of Basil II and Constantine (976 – 1025) was found (Василев 1979, 100).

In 1980, archaeological excavations were carried out in the Palace Centre of Pliska, where three more single graves were found, defined as Late Nomadic (Pecheneg) (Михайлова 2003, 259 – 266). The bodies were laid in facilities abandoned in the 30s/40s of the 11th c. (a pit and kilns). In general, most researchers agree on the chronology of the graves discovered in the Inner City, referring them to the latest stratigraphic horizon of post-capital Pliska.

In the last two decades, during excavations in various sections of the Inner City of Pliska, quite a number of graves have been discovered, about which there are no detailed publications.² Brief descriptive information, often without illustrations of the grave contexts, is noted only in the annual archaeological reports (Георгиев, Василев 2006, 312; Станилов и др. 2006, 380; Станилов и др. 2007, 583; Георгиев, Василев 2008, 586; Георгиев и др. 2008, 598 – 599; Георгиев и др. 2012, 373; Иванов 2012, 384; Станилов, Инкова 2012, 381; Георгиев и др. 2013, 351; Георгиев и др. 2014, 435; Аладжов и др. 2016, 652). With the new data, the number of graves in the Inner City

² One of the drawbacks of contemporary archaeological studies in Pliska is that they are carried out by independent teams excavating large sections over decades. This significantly delays the processing and publishing of the results and the possibility for them to be fully used for overview studies.

of Pliska has grown significantly, and the topography of the burials has been complemented. It is noteworthy that the graves (single or grouped in small, probably family necropoleis) are scattered throughout the territory of the Inner City, and in addition to the space next to the fortress walls, dozens of graves have also been found around the Palace Centre.

The burial of the dead in the inhabited area, in the Inner City of Pliska, is a phenomenon that has not yet found a satisfactory explanation. The opinion that the graves are the result of the increased number of city residents (Димитров 1996, 91) is not based on sufficiently convincing evidence.³ Only the burials around the Palace Basilica can be attributed to the period of the most significant demographic growth (at the end of the 10th and the first third of the 11th century) (Иванов 2008, 595 – 596; Иванов 2013, 362; Иванов 2015, 596). At that time, the large city necropoleis were formed in front of the Eastern Gate (Димитров 1995, 42 – 70) and around Mound XXXIV (Димитров 1998, 69, 73), which were located on the main roads leading out of the city (Димитров 1996, 89). The organization of the inner-city space and the dense building-up of the space have rather limited and excluded the possibilities for unregulated burial in the Inner City.

An attempt at ethnic cultural identification of the intramural graves in Pliska

Despite many years of archaeological excavations, information about the latest stage of life in medieval Pliska remains incomplete. One of the reasons is that studies so far have always prioritized uncovering the monumental architecture and fortification of the capital period, while the post-capital period and especially the latest stratigraphic horizon have been greatly underinvestigated, which is partly the reason for the limited number of well-published monuments.

Current archaeological data on the stratigraphy of post-capital Pliska allow us to date with great confidence most of the intramural graves after the 30s/40s of the 11th c. They were preceded by widespread abandonment of “Byzantine-period” dwellings, and specific examples of burnt buildings from that time have also been published (Дончева-Петкова 1993, 80, обр. 1; Григоров, Тодорова 2018, 179 – 206). There are also data on the abandonment of dwellings from other studied sections – next to the northern and eastern fortress walls (Балабанов 1985, 120, 130). This process testifies to the changes that occurred in demography, the urban planning scheme and the organization of life in the city.

Byzantine chronicles describing the events around this time speak of a tense military and political situation in the region. Skylitzes, Joannes Zonaras, Michael Attaleiates, Michael Psellos and Anna Comnena mention multiple attacks to the south of the Danube carried out by the Pecheneg people (ГИБИ 1965, 111 – 115; 298 – 301; 312 – 317, 324). Massive Pecheneg raids were noted in 1027, attacks intensified in 1032, 1034, 1035 and 1036 to reach their peak in 1048. A consequence of these events was the permanent settlement of Pechenegs south of the Danube, in the province of Paristrion (Дончева-Петкова 2003, 244; Григоров 2016, 288 – 289). In 1053, the Pechenegs defeated the Byzantine army at Ioannopolis (Preslav), resulting in a 30-year peace (Рашев 1983, 244).

Located at the epicentre of military events, Pliska and the Pliska field probably became one of the main centres of Pecheneg presence and settlement. This was determined by the favourable geographical location and the developed urban and fortification infrastructure. According to R. Rashev, the “headquarters of the Pecheneg leader and the clan headed by him” was in Pliska (Рашев 1983, 245). Anna Comnena also provides information indicating that the Pliska field was a Pecheneg centre. During the campaign against the Pechenegs in 1088, emperor Alexius I Comnenus

³ According to Yanko Dimitrov, intramural burials in Pliska had probably already started in the second half of the 10th c. in connection with the uncontrolled settlement of certain sections of the Inner City with “common” people who seem to have buried their dead not far from their dwellings.

arrived in Pliska and from there climbed a hillside called Simeonovo, which the local population also called “Skitsko Saveshtalishte” [Scythian Council] (Златарски 1972, 192).

As early as the first excavations of the Palace Centre, in the uppermost layers, the researchers found materials and buildings that can be connected with the Pechenegs who settled in Pliska (Дончева-Петкова 1993, 246). There are data about the settlement of a newly arrived population in the Outer City of Pliska and the area of the Great Basilica (Дончева-Петкова 1993, 249 – 250), as well as in the north-eastern end of the village of Voyvoda (Антонова 1964, 49 – 52).

Archaeological studies have documented multiple traces of military conflicts in Pliska. Traces of fires can be found everywhere on the fortress walls, dated to the first third of the 11th c. The two gates – the Northern and the Southern – were fenced off at that time, and significant repairs and reconstructions of the fortress towers were carried out (Иванов 2004, 212 – 228).

Anthropological studies of both the present series of individuals and period-related materials examined earlier show an increased incidence of traumatic lesions, including cranial trauma, which can be directly interpreted as the result of the population’s combat activity (Рыцева 2013, 215 – 228; Георгиев и др. 2012, 373). These conclusions are also supported by the type of weaponry found at the “Palace Centre – East” site. In the last stratigraphic horizon, mostly small arrows are found, of a type suitable for striking soldiers who were equipped with light protective gear. Everything indicates that light gear was common in this period. It, however, did not sufficiently protect the soldiers from injuries and combat trauma.

What is new at the “Palace Centre – East” site is the appearance of buildings with a light wooden ground structure in the last stratigraphic horizon. Wall layers (fig. 21) from adobe buildings have been found. Another important archaeological fact are the remains of stone pavements (fig. 22), which mark the existence of specific ground-level facilities, which probably served as floors for light structures with a rectangular or rounded (yurt-like) shape.

One of the most visible archaeological phenomena pointing to the demographic and ethnic cultural changes in Pliska after the 30s/40s of the 11th century is related to the mass practice of burying the dead inside the inhabited area. It is complemented by the observations of researchers, who notice a number of specifics and “deviations” in the burial ritual.

Among the main archaeological finds identifying this population, researchers point out: clay cauldrons with interior lugs, hand-made clay vessels, sphero-conical vessels. Some new metal finds are also brought to attention. More specifically, the newly discovered round applications in graves No. 7 and No. 21 next to the western fortress wall of Pliska (Дончева-Петкова 1984, 184 – 185, обр. 21; 188, обр. 8). Similar applications are known from a number of fortresses and settlements in North-east Bulgaria (Veliki Preslav, Skala, Vetren, Okorsh, Odartsi) (Станилов 1993, 148, обр. 7; Дончева-Петкова 1999; Дончева-Петкова 2005), where Pecheneg presence is visible. Bronze padlocks in the shape of a dog are also associated with a newly arrived, probably Pecheneg population (Григоров, Димитров 2014, 94 – 105).

According to R. Rashev, the burial of two horses and a dog in one of the pits discovered in 1978 in the layer above the Palace of Khan Krum is evidence of Pechenegs in Pliska (Въжарова 1981, 55, обр. 28). Two burials of dogs, one decapitated, were also found in the latest stratigraphic layer, above the stone square, north of the Citadel (Станилов и др. 2007, 583). Data on the settlement of Pechenegs in Pliska are also provided by the discovered hand-made ceramic vessels and cauldrons with interior lugs (Дончева-Петкова 1993, 83, обр. 7; Станилов, Инкова 2012, 381, обр. 2). V. Yotov associated the leaf-shaped openwork “amulets” found in various places in Pliska with the Pechenegs (Йотов 2000, 242 – 246). Among the artifacts that mark the presence of Late Nomads in Pliska is a bronze tinderbox (Василев 2007, 348 – 361; Григоров 2007, 79 – 89), as well as



Fig. 21. Clay wall plasters, "Palace Centre – East" site in Pliska, square XX-384

Обр. 21. Глинени стенни мазилки от обект „Дворцов център – изток“ в Плиска, квадрат XX-384

bronze figurines of a horseman found in room 6 next to the Southern Gate of Pliska (Милчев 1979, 144 – 145, 149, обр. 22) and south of the grave of Karel Shkorpil (Милчев 1983, 223, обр. 18). The research of D. Yosifov on the spread and chronology of spherо-conical vessels in Bulgaria is also connected with Pecheneg presence (Йосифов 2018, 225 – 242), and Pliska is one of the sites with the highest number of finds (Станчев 1955, 202, обр. 19: 4; Михайлова 1987, 15 – 23).

Interesting information about the economic structure and dietary habits of the population in Pliska has also been provided by the zooarchaeological studies of the "Palace Centre – East" site. A substantial increase in the relative proportion of bones from horses and wild animals, which were mainly used for food, is registered in the last stratigraphic horizon, to which the five graves belong.⁴ The data on the diet of the population in Pliska from the second third of the 11th c. show significant consumption of meat.

The anthropological study identified metabolic disorders and diseases that are associated with a diet poor in plant products, and various other nutritional deficiencies. The numerous diseases

⁴The zooarchaeological analyses of materials from the "Palace Centre – East" site were carried out by L. Ninov and N. Karastoyanova.



Fig. 22. Stone pavements, "Palace Centre – East" site in Pliska, squares XX-302 u XX-323

Обр. 22. Каменни настилки от обект „Дворцов център – изток“ в Плиска, квадрати XX-302 и XX-323

caused by this unbalanced diet are an indication that the inhabitants had difficulty in diversifying their food sources, and under the conditions of constant military activity, they continued to follow their nomadic eating habits.

Conclusion

The publication of the graves discovered east of the Citadel aims to bring five more well-documented examples into scientific circulation. They show common features with hundreds of other burials that have been uncovered at various locations in the Inner City of Pliska. This fact provoked the authors to broaden the topic, summarizing the data on the intramural graves in Pliska. The available stratigraphic information determines that the burials were carried out after the 30s/40s of the 11th c., when significant changes occurred in the demography and ethnic cultural environment of the city. For most researchers, there is no doubt that a new ethnic group settled in Pliska at that time. Among the main archaeological finds identifying this population, researchers point out: the clay cauldrons with interior lugs, hand-made clay vessels, and sphero-conical vessels. Some of the new metal finds in Pliska, like the round applications, leaf-like open-work pendants, bronze figurines of a horseman, the bronze padlocks in the shape of a dog, and the bronze tinderboxes, are also brought to attention.

Connecting the graves from the “Palace Centre – East” site with the Pechenegs who settled in Pliska is only one hypothetical possibility that fits well with known archaeological and historical data. The specifics of the racial appearance of the individuals, their diseases, combat traumas and medical manipulations noted in the anthropological study can also be considered as characteristic of the Late Nomadic tribes in Bulgaria.

Table 1.1. Material. Skull and postcranial axial skeleton, pectoral and pelvic girdle

Таблица 1.1. Материал. Череп, аксиален скелет, раменен и тазов пояс

Grave N	Skull				Vertebrae						Clavicula						Scapula		Pelvis	
	Brain case	Facial part	Dentition		Cervical	Thoracic	Lumbar				Right			Left			Right	Left	Right	Left
			Upper	Lower							Sternal end	Diaphysis	Acromial end	Sternal end	Diaphysis	Acromial end				
1	C	F	0	8	7	F	2+3F	F	F	17F	C	C	C	x	C	C	F	F	F	F
2	F	F	6	4	F	S	S	S	x	21F	x	x	x	-	C	-	x	F	F	C
3	F	F	8	Tt	6	11	5	F	F	43F	C	C	C	C	C	C	F	F	F	C
4	C	F	17	Tt	7	7F	2+2F	C	F	26F	C	C	F	C	C	C	F	F	F	C
5	F	F	16	15	6	S	S	S	F	13F	C	C	C	C	C	C	F	F	C	C

x – no fragments; F – fragment; 8F – number of fragments found; P – premolar; M – molar; C – complete; S – single fragments

x – фрагмент липсва; F – фрагмент; 8F – брой фрагменти; C – цялостно съхранен; S – единични фрагменти

Table 1.2. Material. Upper limb

Таблица 1.2. Материал. Горен крайник

Grave N	Humerus						Ulna						Radius						Carpus, metacarpus, phalanges	
	Right			Left			Right			Left			Right			Left			Right	Left
	Proximal end	Diaphysis	Distal end	Proximal end	Diaphysis	Distal end	Proximal end	Diaphysis	Distal end	Proximal end	Diaphysis	Distal end	Proximal end	Diaphysis	Distal end	Proximal end	Diaphysis	Distal end		
1	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	F	F
2	-	F	-	-	C	-	-	x	-	-	C	-	-	x	-	-	F	-	S	S
3	x	C	x	x	C	x	x	C	x	x	F	x	x	C	x	x	F	x	F	F
4	C	C	C	F	F	x	C	C	C	F	F	F	C	C	C	C	C	C	F	F
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	S	S

Table 1.3. Material. Lower limb

Таблица 1.3. Материал. Долен крайник

Grave N	Femur						Tibia						Fibula						Tarsus, metatarsus, phalanges	
	Right			Left			Right			Left			Right			Left			Right	Left
	Proximal end	Diaphysis	Distal end	Proximal end	Diaphysis	Distal end	Proximal end	Diaphysis	Distal end	Proximal end	Diaphysis	Distal end	Proximal end	Diaphysis	Distal end	Proximal end	Diaphysis	Distal end		
1	C	C	C	C	C	C	x	F	x	C	C	x	C	C	C	F	C	C	S	S
2	-	C	-	-	F	-	-	C	-	-	F	-	-	F	-	-	F	-	x	x
3	F	C	F	x	C	F	x	C	F	x	C	F	x	F	x	x	C	x	F	F
4	C	C	C	F	F	x	C	C	C	x	F	F	x	x	x	x	F	x	F	F
5	F	F	C	F	F	F	C	F	x	F	F	x	F	C	C	C	F	C	F	F

Table 2. Features, used in age and sex identification
Таблица 2. Използвани белези за възрастово и полово определяне

Grave N	Age, sex	Pelvic girdle, reconstructed	<i>Incisura ischiadica major</i>	Skull	Dimensions	Relief and robusticity	Dental development	Dimensions of long bones of limbs	Development of bones of cranial and postcranial skeleton	Synostosis of diaphysis with epiphyses	Cranial sutures obliteration	Dental attrition	Pubis symphyseal surface relief	Iliac auricular surface relief
1	M, 45 – 50 y.		v	v	v	v					v	v		v
2	2 – 3 y.	–	–		–	–	v	v						
3	10 – 11 y.	–	–		–	–	v	?	v	v				
4	F, 18 – 20 to 25 y.	v	v	v	v	v	v			v	v		v	v
5	M, 25 – 26 y.	v	v	v	v	v				v	v	v	v	v

M – male; F – female; y. – years; v – presence of trait; ? – results from the trait controvert to the result from the feature, regarded with priority in identification

M (male) – мъж; F (female) – жена; y. – години при настъпване на смъртта; v – наличие на белега; ? – данните от белега не съвпадат с данните от признака, приет за водещ при определяне на пол/възраст

Table 3. Dimensions of long bones of limbs, stature in centimeters. Adults
Таблица 3. Размери на дългите кости на крайниците, см. Израснали индивиди

Grave N	Bone	L	D	B	Stature	
					T-G	P-L
1	Fm dx	47,7	5,25	8,6	175,06 (171,79 ÷ 178,33)* 177,78 (173,9 ÷ 181,66)	170,92
	Fm sn	47,8	5,30	8,6		
	Fb dx	40,4				
	Hm dx	34,6	4,8/4,6	6,9		
	Hm sn	34,6	4,8/4,4	6,8		
	Rd dx	27,1	2,5			
	Rd sn	27,0	2,5			
	Ul dx	30,1				
4	Ul sn	29,9			150,75 (147,21 ÷ 154,29)* 157,14 (153,09 ÷ 161,20)	152,46
	Fm dx	38,5	4,35			
	Fm sn		4,35			
	Tb dx	31,3				
	Hm dx	30,2	4,3/4,1	5,9		
	Hm sn			5,8		
	Rd dx	22,2				
	Rd sn	22,4				
5	Ul dx	24,1			176,90 (172,71 ÷ 181,09)	172,07
	Fm dx		5,20	8,30		
	Fm sn		5,30			
	Fb sn	39,5				
	Hm dx	35,2	4,80	6,20		
	Hm sn	34,9	4,85	6,15		
	Rd dx	25,6	2,4			
	Rd sn	25,4	2,3			
	Ul dx	27,3				
	Ul sn	27,0				

L – length; D – head diameter, in humerals – vertical head diameter; B – bicondylar breadth; Hm – humerus; Rd – radius; Ul – ulna; Fm – femur; Tb – tibia; Fb – fibula; dx (dexter) – right; Sn (sinister) – left

* only lengths of lower limbs taken into account

L (length) – дължина; D (diameter) – диаметър на главата, при раменните кости – вертикален диаметър; B (breadth) – бикондиларна ширина; Hm (humerus) – раменна кост; Rd (radius) – лъчева кост; Ul (ulna) – лакътна кост; Fm (femur) – бедрена кост; Tb (tibia) – голям пищял; Fb (fibula) – малък пищял; dx (dexter) – дясна страна; Sn (sinister) – лява страна.

* взети са под внимание само дължинните размери на кости на долни крайници

Table 4. Dimensions of long bones of limbs, in centimeters. Sub adults
Таблица 4. Размери на дългите кости на крайниците, см. Подрастващи

2	Fm dx	17,2	Hm sn	13,18	Cl sn	6,92
	Tb dx	13,6	Ul sn	10,9		
3	Fm dx	31,7	Fb sn	24,4	Rd dx	16,4
	Fm sn	31,8	Hm dx	22,6	Ul dx	18,2
	Tb dx	25,6	Hm sn	21,85	Cl dx	10,5
	Tb sn	25,2			Cl sn	10,6

L – diaphyseal length; Cl – clavicle

L – дължина; K – кост

Table 5. Metrical characteristics of skulls in millimeters
Таблица 5. Краниометрични характеристики, мм

Measurement		N 1	Grave N		
			4	5	
Length		8	198,0	16,8	-
Breadth		1	153,0	15,7	-
Height		17	150,0	13,5	-
Height (po)		-	-	11,45*	-
Cranial base, length		5	111,4	9,9	-
Smallest breadth of frontal bone		9	99,0	9,5	95
Occipital breadth		12	111,7	11,28	104
Skull perimeter through glabella		23	550	51,5	-
Breadth of upper face section		43	-	9,7	-
Breadth of middle face section		46	-	10,55	-
Upper face height		48	-	7	-
Face height		47	-	11,3	-
Horizontal angle, nasomalar			-	147	-
Horizontal angle, zygo-maxillary			-	137	-
Orbital breadth		51	-	3,97	-
Orbital height		52	-	3,43	-
Nasal height		55	-	5,3	-
Breadth of piriform aperture		54	-	2,5R	-
Alveolar process height		48,1	-	1,77	21,5
Palatine breadth		63	-	3,9	38,4
Palatine length		62	40	-	-
Anterior palatine length		62,1*		3,7	44
Alveolar process breadth		61	-	6,35	65
Alveolar process length		60	-	4,28	51,7
Lower jaw	Lenght	68	-	7,9	82
	Bicondilar breadth	65	-	12,5	130
	Bigonial breadth	66	-	9,7	116
	Coronal breadth		-	10	-
	Anterior breadth	67	50	4,3	48,7
	Symphyseal height	69	35	3,09	33,4
	Body height on place of mental foramen	69 ₍₁₎	39,0	2,9	33
	Body breadth on place of mental foramen	69 ₍₃₎	11,5	1,38	10,6
	Height of the ramus	70	-	5,5	72,5
	Smallest breadth of the ramus	71	-	3,5	35,5
	Mandible angle	79	-	122	129

N – Number by Martin-Saller (1959)

N – номер по Martin-Saller (1959)

Table 6. Craniometrical indexes
Таблица 6. Краниометрични индекси

Measurement	N	Grave N		
		1	4	5
Cranial index	8:1	77,27	93,45	-
Height-length index	17:1	75,76	80,36	-
Height-breadth index	17:8	98,04	85,99	-
Height-length (po) index	20:1	-	68,15	-
Height-breadth (po) index	20:8	-	72,93	-
Face index (after Virhov)	47:46	-	107,11	-
Upperface index (after Virhov)	48:46	-	66,35	-
Fronto-parietal index	9:8	64,71	56,55	
Parieto-occipital index	12:8	73,01	67,14	
Orbital index	52:51	-	86,40	-
Nasal index	54:55	-	47,17	-
Upper jaw index	61:60	-	148,36	125,73
Length-breadth index of lower jaw	68:65	-	63,2	63,08
Breadth index of lower jaw	66:65	-	77,6	89,23
Height-breadth index of body of the lower jaw	69 ₍₃₎ :69 ₍₁₎	29,49	47,59	32,12

References/Цитирана литература:

- Acsádi, Nemeskéri 1970: G. Acsádi, J. Nemeskéri. History of Human Life Span and Mortality. Budapest, 1970.
- Akabori 1934: E. Akabori. Septal apertures in the humerus in Japanese, Ainu and Koreans. – *Am J Phys Anthropol*, 18, 1934, 395 – 400.
- Anneloes et al. 2010: G. Anneloes, F. Allen, D. Witter, E. Bronkhorst, N. Creugers. Tooth loss and oral health-related quality of life: a systematic review and meta-analysis. – *Health and Quality of Life Outcomes*, 2010, 8: 126, 1 – 11. <https://doi.org/10.1186/1477-7525-8-126>
- Aufderheide, Rodriguez-Martin 1998: C. Aufderheide, C. Rodriguez-Martin (eds.). The Cambridge Encyclopedia of Human Paleopathology. Cambridge, 1998.
- Bass 1971: W. Bass. Human Osteology: a Laboratory and Field Manual of the Human Skeleton. Columbia, 1971.
- Benfer, McKern 1966: R. Benfer, T. McKern. The Correlation of Bone Robusticity with the Perforation of the Coronoid-Olecranon Septum in Man. *American Journal of Physical Anthropology*, 24, 1966, 247 – 252.
- Bergfelder, Herrmann 1980: T. Bergfelder, B. Herrmann. Estimating fertility on the basis of birth traumatic changes in the pubic bone. – *Journal of Human Evolution*, 9, 1980, 611 – 613.
- Black, Scheuer 1996: S. M. Black, J. L. Scheuer. Age changes in the clavicle: From the early neonatal period to skeletal maturity. – *International Journal of Osteoarchaeology*, 6, 1996, 425 – 434.
- Conzato et al. 2010: A. Conzato, J. Rizzi, A. Drusini. Analisi statistici della distribuzione dei markers da partito in un numeroso campione di coxali: utilit' a nell'identificazione sessuale in antropologia forense. – *Atti dell'Accademia roveretana degli Agiati*, 260, 2010, ser. VIII, vol. X, 237 – 254.
- Cushner, Morwessel 1992: F. D. Cushner, R. M. Morwessel. Myositis ossificans traumatica. – *Orthopaedic Review*, 21(11), 1992, 1319 – 1326.
- De Wilde et al. 2004: V. De Wilde, M. De Maeseneer, L. Lenchik, P. Van Roy, P. Beeckman, M. Osteaux. Normal osseous variants presenting as cystic or lucent areas on radiography and CT imaging: a pictorial overview. – *European Journal of Radiology*, 51, 2004, 77 – 84.
- Goodman et al. 1980: A. Goodman, G. Armelagos, J. Rose. Enamel hypoplasia as indicators of stress in three prehistoric populations from Illinois. – *Human Biology*, 52, 1980, 515 – 528.
- Goodman, Rose 1990: A. Goodman, J. Rose. Assessment of systemic physiological perturbations from dental enamel hypoplasia and associated historical structures. – *Yearbook Physical Anthropology*, 33, 1990, 59 – 110.

- Hershkovitz et al. 1991:** I. Hershkovitz, B. Ring, M. Speirs, E. Galili, M. Kislev, G. Edelson, A. Hershkovitz. Possible Congenital Hemolytic Anemia in Prehistoric Coastal Inhabitants of Israel. – *American Journal of Physical Anthropology*, 85, 1991, 7 – 13.
- Holland, O'Brien 1997:** T. Holland, M. J. O'Brien. Parasites, Porotic Hyperostosis, and the Implications of Changing Perspectives. – *American Antiquity*, 62, 1997, 2, 183 – 193.
- Jones, Ward 1980:** B. Jones, M. Ward. Myositis Ossificans in the Biceps Femoris Muscles Causing Sciatic Nerve Palsy. – *The Journal of Bone and Joint surgery*, 42, 1980, 506 – 507.
- Kreshover 1940:** S. Kreshover. Histopathologic studies of abnormal enamel formation in human teeth. – *American Journal of Odontology*, 26, 1940, 1083 – 1101.
- Lovejoy et al. 1985:** C. Lovejoy, R. Meindl, T. Pryzbeck, R. Mensforth. Chronological Metamorphosis of the Auricular Surface of the Ilium: A new Method for the Determination of Adult Skeletal Age at Death. – *American Journal of Physical Anthropology*, 68, 1985, 15 – 28.
- Marcsik 1973:** A. Marcsik. "Symmetric Osteoporosis" in a Palaeoanthropological Material. – *Acta Biologica Szeged*, 20, 1973, 191 – 197.
- Maresh 1970:** M. M. Maresh. Measurements from roentgenograms. – In: *Human Growth and Development* (R. W. McCammon, Ed.). Springfield IL, 1970, 157 – 200.
- Martin, Saller 1959:** R. Martin, K. Saller. *Lehrbuch der Anthropologie*. Band 2. Stuttgart, 1959.
- Mevio et al. 2001:** E. Mevio, L. Rizzi, G. Bernasconi. Myositis ossificans traumatica of the temporal muscle: a case report. – *Auris Nasus Larynx*, 28, 2001, 4, 345 – 347.
- Molleson 2007:** T. Molleson. A method for the study of activity related skeletal morphologies. – *Bioarchaeology of the Near East*, 1, 2007, 5 – 33.
- Ortner 2003:** D. Ortner. *Identification of Pathological Conditions in Human Skeletal Remains*. Sec. Ed. Elsevier (USA), 2003.
- Ortner 2008:** D. Ortner. Differential Diagnosis of Skeletal Lesions in Infectious Disease. – In: R. Pinhasi, S. Mays (eds.). *Advances in Human Palaeopathology*. Chichester, 2008, 191 – 214.
- Ozturk et al. 2000:** A. Ozturk, C. Kutlu, B. Bayraktar, A. Zafer, K. Sahinoglu. The supratrochlear foramen in the humerus (Anatomical study). – *st Tp Fak. Mecmuas*, 2000, 63, 72 – 76.
- Rose et al. 1985:** J. Rose, K. Condon, A. Goodman. Diet and dentition: developmental disturbances. – In: R. Gilbert, J. Mielke (eds.). *The analysis of prehistoric diets*. New York, 1985, 281 – 306.
- Russeva 2012:** V. Russeva. Religion, magic or medicine? New finds of trepanned skulls from southeastern Bulgaria, XI – XIII c. – *Archaeologia Bulgarica*, 16, 2012, 2, 77 – 95.
- Sarnat, Schour 1941:** B. Sarnat, I. Schour. Enamel hypoplasia (chronic enamel aplasia) in relationship to systemic diseases: a chronological, morphological and etiological classification. – *Journal of American Dental Association* 28, 1941, 1989 – 2000.
- Schwartz 1995:** J. H. Schwartz. *Skeleton Keys (An Introduction to Human Skeletal Morphology, Development and Analysis)*. New York, 1995.
- Seidler et al. 2001:** A. Seidler, V. U. Bolm-Audor, H. Heiskel, N. Henkel, B. Roth-Küver, U. Kaiser, R. Bickeböller, W. J. Willingstorfer, W. Beck, G. Elsner. The role of cumulative physical work load in lumbar spine disease: risk factors for lumbar osteochondrosis and spondylosis associated with chronic complaints. – *Occupational Environmental Medicine*, 58, 2001, 735–746.
- Skinner, Goodman 1992:** M. Skinner, A. Goodman. Anthropological uses of developmental defects of enamel. – In: S. Saunders, M. Katzenberg (eds.). *Skeletal biology of past peoples: research methods*. New York, 1992, 153 – 174.
- Starling, Stock 2007:** P. Starling, J. Stock. Dental indicators of health and stress in Early Egyptian and Nubian agriculturalists: a difficult transition and gradual recovery. – *The American Journal of Physical Anthropology*, 134, 2007, 520 – 528.
- Stuart-Macadam 1989:** P. L. Stuart-Macadam. Nutritional Deficiency Diseases: A Survey of Scurvy, Rickets and Iron Deficiency Anemia. – In: M. Iskan, K. Kenedy (eds.). *Reconstruction of Life From the Skeleton*. New York, 1989, 201 – 222.
- Sudoł-Szopińska et al. 2015:** I. Sudoł-Szopińska, B. Kwiatkowska, M. Prochorec-Sobieszek, W. Maśliński. Enthesopathies and enthesitis. Part 1. Etiopathogenesis. – *Journal of Ultrasonography*, 15 (60), 2015, 72 – 84. <http://doi.org/10.15557/JoU.2015.0006>
- Ubelaker 1989:** D. Ubelaker. *Human Skeletal Remains: Excavation, Analysis, Interpretation* (2nd Ed.). Washington DC, 1989.
- Walker et al. 2009:** P. Walker, R. Bathurst, R. Richman, T. Gjerdum, V. Andrushko. The Causes of Porotic Hyperostosis and Cribra Orbitalia: A Reappraisal of Iron-Deficiency-Anemia Hypothesis. – *American Journal of Physical*

- Anthropology, 139, 2009, 109 – 129.
- Walrath et al. 2004:** D. Walrath, P. Turner, J. Bruzek. Reliability Test of the Visual Assessment of Cranial Traits for Sex Determination. – American Journal of Physical Anthropology, 125, 2004, 132 – 137.
- Аладжов и др. 2016:** А. Аладжов, Е. Коматарова-Балинова, С. Станюков. Кръгла каменна площадка в Плиска – проучвания през 2015 година. – В: Археологически открития и разкопки през 2016 г. София, 2015, 650 – 654. [Aladzhov i dr. 2016: A. Aladzhov, E. Komatarova-Balinova, S. Stanilov. Kragla kamenna ploshtadka v Pliska – prouchvania prez 2015 godina. – V: Arheologicheski otkritia i razkopki prez 2016 g. Sofia, 2015, 650 – 654]
- Алексеев 1966:** В. Алексеев. Остеометрия, методика антропологических исследований. Москва, 1966. [Alekshev 1966: V. Alekshev. Osteometria, metodika antropologicheskikh issledovaniy. Moskva, 1966]
- Алексеев, Дебес 1964:** В. Алексеев, Г. Дебес. Краниометрия, методика антропологических исследований. Москва, 1964. [Alekshev, Debets 1964: V. Alekshev, G. Debets. Kraniometria, metodika antropologicheskikh issledovaniy. Moskva, 1964]
- Антонова 1964:** В. Антонова. Средновековни накити в Окръжния народен музей в Коларовград. – Археология, 1964, 2, 45 – 52. [Antonova 1964: V. Antonova. Srednovkovni nakiti v Okrazhnia naroden muzey v Kolarovgrad. – Arheologia, 1964, 2, 45 – 52]
- Антонова, Витлянов 1985:** В. Антонова, С. Витлянов. Западна крепостна стена – сектор север (археологически разкопки 1973 – 1975 г.). – Плиска – Преслав, 4, 1985, 44 – 78. [Antonova, Vitlyanov 1985: V. Antonova, S. Vitlyanov. Zapadna krepostna stena – sektor sever (arheologicheski razkopki 1973 – 1975 g.). – Pliska – Preslav, 4, 1985, 44 – 78]
- Балабанов 1985:** Т. Балабанов. Разкопки на северната и източната крепостна стена в Плиска (1970 – 1976). – Плиска – Преслав, 4, 1985, 117 – 131. [Balabanov 1985: T. Balabanov. Razkopki na severnata i iztochnata krepostna stena v Pliska (1970 – 1976). – Pliska – Preslav, 4, 1985, 117 – 131]
- Балабанов 2000:** Т. Балабанов. Некрополът при северната порта и източната крепостна стена на Плиска. – Плиска – Преслав, 8, 2000, 93 – 102. [Balabanov 2000: T. Balabanov. Nekropolat pri severnata porta i iztochnata krepostna stena na Pliska. – Pliska – Preslav, 8, 2000, 93 – 102]
- Боев 1964:** П. Боев. Символични трепанации от България. – Известия на Института по морфология, 9 – 10, 1964, 289 – 298. [Boev 1964: P. Boev. Simvolichni trepanatsii ot Bulgaria. – Izvestia na Instituta po morfologia, 9 – 10, 1964, 289 – 298]
- Боев 1965:** П. Боев. Символични трепанации от СССР. – Известия на Института по морфология 11, 1965, 113 – 127. [Boev 1965: P. Boev. Simvolichni trepanatsii ot SSSR. – Izvestia na Instituta po morfologia 11, 1965, 113 – 127]
- Боев, Чолаков 1992:** П. Боев, С. Чолаков. Антропологично и палеопатологично проучване на скелетите от некропол в северния сектор на западната крепостна стена на Плиска. – Плиска – Преслав, 5, 1992, 302 – 311. [Boev, Cholakov 1992: P. Boev, S. Cholakov. Antropologichno i paleopatologichno prouchvane na skeletite ot nekropol v severnia sektor na zapadnata krepostna stena na Pliska. – Pliska – Preslav, 5, 1992, 302 – 311]
- Василев 1979:** Р. Василев. Източната крепостна стена в Плиска (разкопки през 1972 – 1974 г.). – Плиска – Преслав, 1, 1979, 98 – 107. [Vasilev 1979: R. Vasilev. Iztochnata krepostna stena v Pliska (razkopki prez 1972 – 1974 g.). – Pliska – Preslav, 1, 1979, 98 – 107]
- Василев 2007:** Р. Василев. Огнито с бронзова дръжка от Плиска. – В: Изследвания по българска средновековна археология. Сборник в чест на проф. Рашо Рашев. В. Търново, 2007, 348 – 361. [Vasilev 2007: R. Vasilev. Ognivo s bronzova drazhka ot Pliska. – V: Izsledvania po balgarska srednovkovna arheologia. Sbornik v chest na prof. Rasho Rashev. V. Tarnovo, 2007, 348 – 361]
- Въжарова 1981:** Ж. Въжарова. Славяни и номади на територията на днешните български земи от края на VI – XI в. – Плиска – Преслав, 3, 1981, 16 – 65. [Vazharova 1981: Zh. Vazharova. Slavyani i nomadi na teritoriyata na dneshnite balgarski zemi ot kraia na VI – XI v. – Pliska – Preslav, 3, 1981, 16 – 65]
- Георгиев, Василев 2006:** П. Георгиев, Р. Василев. Ранно (дървено) укрепление на Вътрешния град на Плиска. – Археологически открития и разкопки през 2006 г. София, 2007, 311 – 313. [Georgiev, Vasilev 2006: P. Georgiev, R. Vasilev. Ranno (darveno) ukreplenie na Vatrashnia grad na Pliska. – V: Arheologicheski otkritia i razkopki prez 2006 g. Sofia, 2007, 311 – 313]
- Георгиев, Василев 2008:** П. Георгиев, Р. Василев. Ранно (дървено) укрепление във Вътрешния град на Плиска. – В: Археологически открития и разкопки през 2007 г. София, 2008, 583 – 586. [Georgiev, Vasilev 2008: P. Georgiev, R. Vasilev. Ranno (darveno) ukreplenie vav Vatrashnia grad na Pliska. – V: Arheologicheski otkritia i razkopki prez 2007 g. Sofia, 2008, 583 – 586]
- Георгиев и др. 2008:** П. Георгиев, Я. Димитров, С. Иванов, Р. Василев. Аварийно-спасителни разкопки на строежа

- на „базата на НАИМ“ в Плиска. – В: Археологически открития и разкопки през 2007 г. София, 2008, 598 – 600. [Georgiev i dr. 2008: P. Georgiev, Ya. Dimitrov, S. Ivanov, R. Vasilev. Avariyno-spasitelni razkopki na stroezha na „bazata na NAIM“ v Pliska. – V: Arheologicheski otkritia i razkopki prez 2007 g. Sofia, 2008, 598 – 600]
- Георгиев и др. 2012:** П. Георгиев, Р. Василев, Т. Тихов, Г. Илиева, М. Христова, И. Илиев. Ранно (дървено) укрепление във Вътрешния град на Плиска. – В: Археологически открития и разкопки през 2011 г. София, 2012, 373 – 375. [Georgiev i dr. 2012: P. Georgiev, R. Vasilev, T. Tihov, G. Ilieva, M. Hristova, I. Iliev. Ranno (darveno) ukreplenie vav Vatreashnia grad na Pliska. – V: Arheologicheski otkritia i razkopki prez 2011 g. Sofia, 2012, 373 – 375]
- Георгиев и др. 2013:** П. Георгиев, Р. Василев, Т. Тихов, Г. Илиева, М. Христова, И. Илиев. Ранно (дървено) укрепление във Вътрешния град на Плиска. – В: Археологически открития и разкопки през 2012 г. София, 2013, 351 – 353. [Georgiev i dr. 2013: P. Georgiev, R. Vasilev, T. Tihov, G. Ilieva, M. Hristova, I. Iliev. Ranno (darveno) ukreplenie vav Vatreashnia grad na Pliska. – V: Arheologicheski otkritia i razkopki prez 2012 g. Sofia, 2013, 351 – 353]
- Георгиев и др. 2014:** П. Георгиев, Р. Василев, Т. Тихов, Г. Илиева, М. Христова, И. Илиев. Ранно (дървено) укрепление във Вътрешния град на Плиска. – В: Археологически открития и разкопки през 2013 г. София, 2014, 433 – 436. [Georgiev i dr. 2014: P. Georgiev, R. Vasilev, T. Tihov, G. Ilieva, M. Hristova, I. Iliev. Ranno (darveno) ukreplenie vav Vatreashnia grad na Pliska. – V: Arheologicheski otkritia i razkopki prez 2013 g. Sofia, 2014, 433 – 436]
- ГИБИ 1965:** Гръцки извори за българската история. Т. 6. И. Дуйчев, Л. Йончев, П. Тивчев, В. Тъпкова-Заимова, Г. Цанкова-Петкова (съставители и ред.) (Извори за българската история, 11). София, 1965. [GIBI 1965: Gratski izvori za balgarskata istoriya. T. 6. I. Duychev, L. Yonchev, P. Tivchev, V. Tapkova-Zaimova, G. Tsankova-Petkova (sastaviteli i red.) (Izvori za balgarskata istoriya, 11). Sofiya, 1965]
- Григоров 2007:** В. Григоров. Средновековни бронзови огнива от България. – Археология, 2007, 1 – 4, 79 – 89. [Grigorov 2007: V. Grigorov. Srednovekovni bronzovi ogniva ot Bulgaria. – Arheologia, 2007, 1 – 4, 79 – 89]
- Григоров 2016:** В. Григоров. Следстолична Плиска: стратиграфски наблюдения на обект „Дворцов център – изток“. – Известия на Националния археологически институт, 43 (In honorem professoris Stanislav Stanilov), 2016, 256 – 293. [Grigorov 2016: V. Grigorov. Sledstolichna Pliska: stratigrafski nablyudenia na obekt „Dvortsov tsentar – iztok“. – Izvestiya na Natsionalniya arheologicheski institut, 43 (In honorem professoris Stanislav Stanilov), 2016, 256 – 293]
- Григоров, Димитров 2014:** В. Григоров, П. Димитров. Бронзови катинари с форма на куче. Два нови паметника от Плиска и Велики Преслав. – Археология, 1 – 2, 2014, 94 – 105. [Grigorov, Dimitrov 2014: V. Grigorov, P. Dimitrov. Bronzovi katinari s forma na kuche. Dva novi pametnika ot Pliska i Veliki Preslav. – Arheologia, 1 – 2, 2014, 94 – 105]
- Григоров, Тодорова 2018:** В. Григоров, Л. Тодорова. Изгоряла сграда от обект „Дворцов център-изток“ в Плиска. – Плиска – Преслав, 13, 2018, 179 – 206. [Grigorov, Todorova 2018: V. Grigorov, L. Todorova. Izgoryala sgrada ot obekt „Dvortsov tsentar-iztok“ v Pliska. – Pliska – Preslav, 13, 2018, 179 – 206]
- Димитров 1995:** Я. Димитров. Църква и некропол във Външния град на Плиска (края на X – XI в.). – Плиска – Преслав, 7, 1995, 42 – 70. [Dimitrov 1995: Ya. Dimitrov. Tsarkva i nekropol vav Vanshnia grad na Pliska (kraya na X – XI v.). – Pliska – Preslav, 7, 1995, 42 – 70]
- Димитров 1996:** Я. Димитров. Наблюдения върху топографията и устройството на християнските гробове в Плиска. – В: Бог и цар в българската история. Пловдив, 1996, 86 – 93. [Dimitrov 1996: Ya. Dimitrov. Nablyudenia varhu topografiyata i ustroystvoto na hristiyanskite grobove v Pliska. – V: Bog i tsar v balgarskata istoria. Hr. G. Danov-Plovdiv, 1996, 86 – 93]
- Димитров 1998:** Я. Димитров. Два некрополя във Външния град на Плиска (края на X – XI в.). – Трудове на катедрите по История и Богословие в Шуменския университет, 2, 1998, 69 – 81. [Dimitrov 1998: Ya. Dimitrov. Dva nekropola vav Vanshnia grad na Pliska (kraya na X – XI v.). – Trudove na katedrite po Istoria i Bogoslovie v Shumenskia universitet, 2, 1998, 69 – 81]
- Дончева-Петкова 1984:** Л. Дончева-Петкова. Некропол при южния сектор на западната крепостна стена на Плиска. – В: Сборник в памет на проф. Станчо Ваклинов. София, 1984, 181 – 191. [Doncheva-Petkova 1984: L. Doncheva-Petkova. Nekropol pri yuzhnia sektor na zapadnata krepostna stena na Pliska. – V: Sbornik v pamet na prof. Stancho Vaklinov. Sofia, 1984, 181 – 191]
- Дончева-Петкова 1993:** Л. Дончева-Петкова. Нови проучвания край западната крепостна стена на Плиска. – Плиска – Преслав, 6, 1993, 79 – 84. [Doncheva-Petkova 1993: L. Doncheva-Petkova. Novi prouchvania kray zapadnata krepostna stena na Pliska. – Pliska – Preslav, 6, 1993, 79 – 84]
- Дончева-Петкова 1999:** Л. Дончева-Петкова. Одърци. Селище от Първото българско царство. Том 1. София,

1999. [Doncheva-Petkova 1999: L. Doncheva-Petkova. Odartsi. Selishte ot Parvoto balgarsko tsarstvo. Tom 1. Sofia, 1999]
- Дончева-Петкова 2003:** Л. Дончева-Петкова. Плиска и печенезите. – Плиска – Преслав, 9, 2003, 244 – 258. [Doncheva-Petkova 2003: L. Doncheva-Petkova. Pliska i pechenezite. – Pliska – Preslav, 9, 2003, 244 – 258]
- Дончева-Петкова 2005:** Л. Дончева-Петкова. Одърци. Некрополи от XI век. Т. 2. София, 2005. [Doncheva-Petkova 2005: L. Doncheva-Petkova. Odartsi. Nekropoli ot XI vek. T. 2. Sofia, 2005]
- Захариев 1979:** И. Захариев. Южната крепостна стена на Плиска и некрополът, открит до нея (разкопки през 1971 – 1974 г.). – Плиска – Преслав, 1, 1979, 108 – 138. [Zahariev 1979: I. Zahariev. Yuzhnata krepostna stena na Pliska i nekropolat, otkrit do neya (razkopki prez 1971 – 1974 g.). – Pliska – Preslav, 1, 1979, 108 – 138]
- Златарски 1972:** В. Златарски. История на българската държава през средните векове. Том 2. България под Византийско владичество (1018 – 1187). Второ издание. София, 1972. [Zlatarski 1972: V. Zlatarski. Istoria na balgarskata darzhava prez srednite vekove, Tom 2. Balgariya pod Vizantiysko vladichestvo (1018 – 1187). Sofiya, 1972]
- Зубов 1968:** А. Зубов. Одонтология. Методика антропологических исследований. Москва, 1968. [Zubov 1968: A. Zubov. Odontologia. Metodika antropologicheskikh issledovaniy. Moskva, 1968]
- Иванов 2004:** С. Иванов. Наблюдения върху строителните особености на каменната крепост в Плиска. – Плиска – Преслав, 10, 2004, 212 – 228. [Ivanov 2004: S. Ivanov. Nablyudenia varhu stroitelnite osobenosti na kamennata krepost v Pliska. – Pliska – Preslav, 10, 2004, 212 – 228]
- Иванов 2008:** С. Иванов. Разкопки на Дворцовия площад в Плиска. – В: Археологически открития и разкопки през 2007 г. София, 2008, 593 – 596. [Ivanov 2008: S. Ivanov. Razkopki na Dvortsovia ploshtad v Pliska. – V: Arheologicheski otkritia i razkopki prez 2007 g. Sofia, 2008, 593 – 596]
- Иванов 2012:** С. Иванов. Разкопки на Дворцовия площад в Плиска. – В: Археологически открития и разкопки през 2011 г. София, 2012, 383 – 385. [Ivanov 2012: S. Ivanov. Razkopki na Dvortsovia ploshtad v Pliska. – V: Arheologicheski otkritia i razkopki prez 2011 g. Sofia, 2012, 383 – 385]
- Иванов 2013:** С. Иванов. Археологически проучвания на обект „Плиска. Дворцов площад – СЗ“. – В: Археологически открития и разкопки през 2012 г. София, 2013, 361 – 363. [Ivanov 2013: S. Ivanov. Arheologicheski prouchvania na obekt „Pliska. Dvortsov ploshtad – SZ“. – V: Arheologicheski otkritia i razkopki prez 2012 g. Sofia, 2013, 361 – 363]
- Иванов 2015:** С. Иванов. Разкопки на Дворцовия площад в Плиска. – В: Археологически открития и разкопки през 2014 г. София, 2015, 595 – 598. [Ivanov 2015: S. Ivanov. Razkopki na Dvortsovia ploshtad v Pliska. – V: Arheologicheski otkritia i razkopki prez 2014 g. Sofia, 2015, 595 – 598]
- Йорданов, Димитрова 2005:** Й. Йорданов, Б. Димитрова. Данни от антропологичното изследване на погребаните в средновековния некропол № 2 при с. Одърци, Добричко. – В: Дончева-Петкова, Л. Одърци – некрополи от XI в., т. 2. София, 2005, 415 – 460. [Yordanov, Dimitrova 2005: Y. Yordanov, B. Dimitrova. Danni ot antropologichното izsledvane na pogrebanite v srednovekovnia nekropol № 2 pri s. Odartsi, Dobrichko. V: Doncheva-Petkova, L. Odartsi – nekropoli ot XI v., т. 2. Sofia, 2005, 415 – 460]
- Йорданов и др. 2010:** Й. Йорданов, Н. Атанасова-Тимева, Я. Димитров. Антропологично изследване на два скелета с трепанации от Плиска (края на X – XI в.). – В: От регионалното към националното. Юбилеен сборник в чест на ст. н. с. д-р Христо Харитонов. Част 2. В. Търново, 2010, 43 – 60. [Yordanov, Atanasova-Timeva, Dimitrov 2010: Y. Yordanov, N. Atanasova-Timeva, Ya. Dimitrov. Antropologichno izsledvane na dva skeleta s trepanatsii ot Pliska (kraya na X – XI v.). – V: Ot regionalното kam natsionalното. Yubileen sbornik v chest na st. n. s. d-r Hristo Haritonov. Chast 2. Veliko Tarnovo, 2010, 43 – 60]
- Йосифов 2018:** Д. Йосифов. Изследване на сфероконусен съд от Плиска с остатъци от съдържимото. – Плиска – Преслав 13, 2018, 225 – 242. [Yosifov 2018: D. Yosifov. Izsledvane na sferokonusen sad ot Pliska s ostatatsi ot sadarzhimото. – Pliska – Preslav 13, 2018, 225 – 242]
- Йотов 2000:** В. Йотов. Листовидни ажурни амулети от XI в. – Плиска – Преслав, 8, 2000, 242 – 246. [Yotov 2000: V. Yotov. Listovidni azhurni amuleti ot XI v. – Pliska – Preslav, 8, 2000, 242 – 246]
- Милчев 1979:** А. Милчев. Материали, открити в занаятчийските и търговските помещения северно от южната порта на Вътрешния град на Плиска. – Плиска – Преслав, 1, 1979, 139 – 176. [Milchev 1979: A. Milchev. Materiali, otkriti v zanayatchiyskite i targovskite pomeshthenia severno ot yuzhnata porta na Vtreshnia grad na Pliska. – Pliska – Preslav, 1, 1979, 139 – 176]
- Милчев 1983:** А. Милчев. Разкопки южно от гроба на Карел Шкорпил във Вътрешния град на Плиска през 1968 г. – Преслав, 3, 1983, 211 – 227. [Milchev 1983: A. Milchev. Razkopki yuzhno ot groba na Karel Shkorpil vav Vtreshnia grad na Pliska prez 1968 g. – Preslav, 3, 1983, 211 – 227]
- Милчев 1992:** А. Милчев. Разкопки около южната кръгла кула на Вътрешния град на Плиска. – Плиска – Преслав, 5, 1992, 185 – 211. [Milchev 1992: A. Milchev. Razkopki okolo yuzhnata kragla kula na Vtreshnia grad na

- Pliska. – Pliska – Preslav, 5, 1992, 185 – 211]
- Михайлова 1987:** Т. Михайлова. Сфероконуси от Плиска. – Археология, 1987, 1, 15 – 23. [Mihaylova 1987: T. Mihaylova. Sferokonusi ot Pliska. – Arheologia, 1987, 1, 15 – 23]
- Михайлова 2003:** Т. Михайлова. Къснономадски гробове в Дворцовия център на Плиска. – Плиска – Преслав, 9, 1993, 259 – 266. [Mihaylova 2003: T. Mihaylova. Kasnonomadski grobove v Dvortsovia tsentar na Pliska. – Pliska – Preslav, 9, 1993, 259 – 266]
- Рашев 1983:** Р. Рашев. Късни номади в Плисковското поле. – Преслав, 3, 1983, 242 – 252. [Rashev 1983: R. Rashev. Kasni nomadi v Pliskovskoto pole. – Preslav, 3, 1983, 242 – 252]
- Русева 2013:** В. Русева. Оценка на здравословното състояние на индивидите, представени в материала от некропола при северната крепостна стена на Вътрешния град на Плиска от XI в. Индивидуално и популационно значение за интерпретацията. – Приноси към българската археология, 7, 2013, 215 – 228. [Ruseva 2013: V. Ruseva. Otsenka na zdravoslovnoto sastoyanie na individite, predstaveni v materiala ot nekropola pri severnata krepostna stena na Vatrechnia grad na Pliska ot XI v. Individualno i populatsionno znachenie za interpretatsiyata. – Prinosi kam balgarskata arheologia, 7, 2013, 215 – 228]
- Станилов 1993:** С. Станилов. Преславското съкровище и произходът на старобългарската металопластика. – Преслав, 5, 1993, 138 – 164. [Stanilov 1993: S. Stanilov. Preslavskoto sakrovishte i proizhodat na starobalgarskata metaloplastika. – Preslav, 5, 1993, 138 – 164]
- Станилов и др. 2006:** С. Станилов, Я. Димитров, В. Григоров, М. Инкова. Проучвания на Тайните ходници в Плиска, във от Цитаделата. – В: Археологически открития и разкопки през 2005 г. София, 2006, 379 – 380. [Stanilov i dr. 2006: S. Stanilov, Ya. Dimitrov, V. Grigorov, M. Inkova. Prouchvania na Taynite hodnitsi v Pliska, van ot Tsitadelata. – V: Arheologicheski otkritia i razkopki prez 2005 g. Sofia, 2006, 379 – 380]
- Станилов и др. 2007:** С. Станилов, В. Григоров, М. Инкова, А. Аладжов, С. Иванов, И. Кънев, Д. Рабовянов. Тайни ходници северно от Цитаделата във Вътрешния град на Плиска. – В: Археологически открития и разкопки през 2006 г. София, 2007, 580 – 583. [Stanilov i dr. 2007: S. Stanilov, V. Grigorov, M. Inkova, A. Aladzov, S. Ivanov, I. Kanev, D. Rabovyanov. Tayni hodnitsi severno ot Tsitadelata v Vatrechnia grad na Pliska. – V: Arheologicheski otkritia i razkopki prez 2006 g. Sofia, 2007, 580 – 583]
- Станилов, Инкова 2012:** С. Станилов, М. Инкова. Двор, северно от Цитаделата в Плиска. – В: Археологически открития и разкопки през 2011 г. София, 2012, 380 – 383. [Stanilov, Inkova 2012: S. Stanilov, M. Inkova. Dvor, severno ot Tsitadelata v Pliska. – V: Arheologicheski otkritia i razkopki prez 2011 g. Sofia, 2012, 380 – 383]
- Станчев 1955:** С. Станчев. Разкопки и новооткрити материали в Плиска през 1948 г. – Известия на археологическия институт, 20, 1955, 183 – 227. [Stanchev 1955: S. Stanchev. Razkopki i novootkriti materiali v Pliska prez 1948 g. – Izvestia na arheologicheskia institut, 20, 1955, 183 – 227]

ГРОБОВЕ ОТ ОБЕКТ „ДВОРЦОВ ЦЕНТЪР – ИЗТОК“. ОПИТ ЗА ЕТНОКУЛТУРНА ИДЕНТИФИКАЦИЯ НА ПОГРЕБЕНИЯТА *INTRA MUROS* В ПЛИСКА

Валери Григоров*, Виктория Русева**, Надежда Атанасова***

* Национален археологически институт с музей, Българска академия на науките, ул. „Съборна“ № 2, София 1000; valerig@abv.bg

** Институт по експериментална морфология, патология и антропология с музей, Българска академия на науките, ул. „Акад. Георги Бончев“, бл. 25, София 1113; victoria_russeva@yahoo.com

*** Институт по експериментална морфология, патология и антропология с музей, Българска академия на науките, ул. „Акад. Георги Бончев“, бл. 25, София 1113; naditimeva@gmail.com

РЕЗЮМЕ

В настоящото изследване представяме 5 гроба, открити източно от Дворцовия център в Плиска (обр. 1). Те са проучени в периода 2011 – 2016 г. и представляват единични погребения, разположени в междужилищното пространство (обр. 2). Стратиграфски гробовете се датират в последната фаза от обитаване на средновековния град (между 30-те/40-те години на XI век и 60-те години на XI в.). Във

всеки от гробовете е положен по един индивид, по гръб, с глава на запад.

При археологически проучвания във Вътрешния град на Плиска са разкрити стотици подобни гробове, разпръснати на малки групи или като единични погребения. Практиката да се погребва в урбанизирана среда, без ясна регулация, е тема, която все още не е анализирана цялостно. В контекста на новопроучените гробове са привлечени примери и от други сектори на Вътрешния град на Плиска, които дават възможност да поставим на дискусия широк кръг проблеми, свързани със стратиграфията и хронологията на интрамуралните гробове и връзката им с демографските и етнокултурните промени в средновековния град.

Гробните контексти са изследвани интердисциплинарно. Археологическото проучване предоставя данни за стратиграфията на гробовете и подробно документиране на гробните ями и скелетните останки. А антропологичното изследване предоставя информация за пола, възрастта, ръста на погребаните индивиди, анатомичните и антропологичните особености, болестни патологии, травми и лечебни манипулации, оставили следи по костните останки.

Резултатите от антропологичното изследване са обобщени. Изследвани са човешките костни останки на пет индивида – двама мъже на възраст 45 – 50 г. (гроб № 1) и 25 – 30 г. (гроб № 5), жена на възраст 18 – 20 до 25 г. (гроб № 4) и две деца на възраст 2 – 3 г. (гроб № 2) и 10 – 12 г. (гроб № 3). Мъжете в гробове № 1 и 5 са били с висок ръст – около 171 cm и 172 cm (таблица 3), имали са и добре развита мускулатура. Жената от гроб № 4 е с нисък ръст – около 152 cm, с грацилни кости и слабо развита мускулатура.

Изследваните индивиди показват разнообразни патологични изменения на черепните кости, съзъбията и посткраниалния скелет. Върху черепа на мъжа от гроб № 1 е установена следа от травма, както и посттравматична трепанация (обр. 6, стрелка). Дефекти, вероятно с травматичен произход, се установяват и на черепа на жената от гроб № 4 (обр. 19). Специален интерес представляват дефектите на костта, установени на вътрешната страна на пубисните кости на жената от гроб № 4, които много автори интерпретират като белег от родилен процес.

Съзъбието от гроб № 1 показва голям брой патологични изменения на зъбно-челюстния апарат (обр. 5: 4). Установени са пародонтозни изменения и напреднало абразиво на емайла на съзъбието на жената от гроб № 4 (обр. 5: 2, 3, 5), както и начални пародонтозни изменения при мъжа от гроб № 5 (обр. 5: 6, 7). Като следствие от периоди на неблагоприятни условия за развитието се интерпретират и дефектите от линейна хипоплазия на емайла на зъбите, обяснявани с прекарани дълги периоди на заболяване или с диетичен дефицит. Такива се откриват и на двете съзъбия, в които са представени постоянните зъби – от гроб № 4, където линиите отговарят на 2 – 2½ и 3 г. от развитието (обр. 5: 5), и от гроб № 3 с линии, отговарящи на подобна възраст. Възрастта на образуване на тези дефекти съпада с възрастта, на която е починал индивидът от гроб № 2. Тези резултати идентифицират периода като рисков за хората от популацията. Изглежда възрастта между две и три години е била преходна и бележи отбиването на детето от кърменето и преминаването му към общо хранене. Промяната на хранителния режим е индикация, че около 2 – 3-годишна възраст детето е поставено в нова социална позиция, която намалява тясната връзка с майката и процеса на кърмене, като майката вероятно е придобивала ново дете в кърмаческа възраст.

Развитие на *cribra orbitalia* се открива и при двата индивида в детска възраст от гробове № 2 и 3, като и в двата случая костната структура показва активна реакция при настъпване на смъртта. Деформацията на тилната кост на по-малкото дете, от гроб № 2, би могла да се свърже със сърповидно-клетъчна анемия, като не е изключено и развитие на таласемия. При индивида от гроб № 3 е възможно да става въпрос за анемично състояние, като не става ясна етиологията му – дефицит в храненето или наличие на вътрешни паразити. Възможно е обаче белегът и при този индивид да се обясни с унаследена сърповидно-клетъчна (хемолитична) анемия.

Черепът на израсналия индивид от гроб № 5 (мъж на 25 – 30 години) показва белези на рекомбинирана *cribra orbitalia*, форма, показваща преодоляване на периода на образуването ѝ, вероятно преживян в детска възраст, състояние, обяснимо с хранителния режим и прекарани заболявания.

И при двата мъжки скелета се идентифицират ентезопатични изменения върху лявата малко-

пищялна кост. Върху дясната малкопищялна кост при изследваните мъжки скелети от Плиска не се наблюдава периостално формиране на хиперостози. Поради тази причина можем да предположим, че ентезопатиите върху левите малкопищялни кости се дължат по-скоро на получена травма или възможно хронично травмиране при определена дейност, претоварваща мускулите на подбедрицата на левия крак. Изменението на скелета на индивида от гроб № 1 се комбинира със силно изразени дегенеративно-дистрофични промени (остеохондроза, спондилоартроза и спондилоза) във всички области на гръбначния стълб. Едно обяснение на измененията може да се свърже с активна физическа дейност, натоварваща интензивно именно тази част от скелета – напр. повдигане и пренасяне на тежки товари, неудобна поза и силни вибрации на цялото тяло. При мъжкия скелет от гроб № 1 също се установи субтрохлеарен форамен на лявата раменна кост. Описаната находка може да е резултат от инцидентна травма или хронично натоварване на левия горен крайник.

Данните за антропологичния тип на индивидите са непълни. Трите черепа на израсналите индивиди могат да се определят като европеидни. Единствено черепът от гроб № 4 показва много висока стойност на черепния индекс (от категория утрабрахикран), което поставя монголоидния примес като едно от възможните обяснения. Според черепния индекс мъжът от гроб № 1 е определен като мезокран (таблица 6). И двата черепа са с относително голяма височина и попадат в рубриката на хипсикран. Горночелюстният индекс на черепите от гробове № 4 и 5 попада в рубриката брахикран. Долната челюст при същите индивиди е относително дълга, попадаща в рубриката долихостеномандибулар. Жената е с относително тесен нос, ниски, правоъгълни орбити; хоризонталната профилировка може да се опише като изразена със стойности на измерените назомаларен и зигомаксиларни ъгли, попадащи в рубриката на големите. Вертикалната профилировка, без да може да се измери, описва черепа като ортогнат.

Данните за антропологичния тип на популацията се вписват в познатото от по-ранни изследвания на гробове във Вътрешния град на Плиска. При изследвани 13 израснали индивида от некропола до Западната крепостна стена антропологичните данни показват смесен антропологичен тип. Расовите белези ги определят като европеиди с монголоидни примеси. Европеидните белези се отнасят до северната раса, но се срещат и примеси от примитивни белези на андроновския расов тип. Монголоидните белези са проявени от южносибирската или туранската раса, памиро-ферганския расов тип или расата на Средноазиатското междуречие и от уралската раса.

Както в новопроучената серия, така и в предходни изследвания на гробове от Плиска се наблюдава увеличение на честотата на заболявания като анемия, причинена от интестинални паразити, бруцелоза и туберкулоза. Високата им честота показва, че в изследвания период има споделена среда на обитаване на хората с домашните животни. Наблюдаваната заболяемост може да е предизвикана и от начините на обработка на месото, млякото и млечните продукти за консумация, свързани с недостатъчна топлинна обработка. Индиректните данни за метаболитни нарушения в изследваната серия и по-ясните белези на такива нарушения, свързани с недостиг на витамин С в по-рано изследвания материал, насочват към диетичен режим, беден на продукти от растителен произход.

Гробовете от обект „Дворцов център – изток“ са поставени в контекста на останалите интрамурални гробове във Вътрешния град на Плиска. Практиката да се погребва в урбанизирана среда, без ясна регулация, е тема, която все още не е анализирана цялостно. В контекста на новопроучените гробове са привлечени примери и от други сектори на Вътрешния град на Плиска, които дават възможност да поставим на дискусия широк кръг проблеми, свързани със стратиграфията и хронологията на интрамуралните гробове и връзката им с демографските и етнокултурните промени в средновековния град.

Описаният от проучвателите погребален обред представя едно сравнително бедно „християнизирано“ население. В гробовете рядко се открива инвентар, основно накити. Гробните ями са вкопани сравнително плитко, без да е влагана особена грижа за оформянето им. Документирани са отделни случаи на маркиране на гроба с камъни и частично ограждане на мъртвия. За гробове № 10 и 20 при южната крепостна стена И. Захариев е изказал предположение, че са езически, без да дава по-комплексни аргументи. Т. Балабанов говори за „отклонения“ от християнския обред или по-скоро за

голямо разнообразие в позицията на тялото, крайниците и главата, които според него свидетелстват за непълно християнизирано население. В сектора при северната порта Т. Балабанов разкрива четири гроба с ориентация север – юг, положени в обща траншея, които определя за печенежки.

Всички проучватели датират гробовете в най-късния период на Плиска, отнасят ги изключително след 30-те/40-те години на XI век или най-общо около средата и дори след средата на XI в. Те са предшествани от повсеместно изоставяне на жилищата от „византийския период“ (70-те години на X в. – 30-те/40-те години на XI в.), публикувани са и конкретни примери на опожарени постройки от това време. Данни за изоставяне на жилища има и от други проучени сектори – до северната и до източната крепостни стени. Този процес свидетелства за настъпилите промени в демографията, градоустройствената схема и организацията на живот в града. Археологическите проучвания са документирали многобройни следи от военни стълкновения в Плиска. Навсякъде по крепостните стени се откриват следи от пожари, които се датират след първата трета на XI в. По това време са преградени двете порти – северната и южната, извършени са и значителни ремонти и преустройства на крепостните кули.

Византийските хроники на Скилица, Йоан Зонара, Михаил Аталиат, Михаил Псел и Анна Комнина описват напрегната военно-политическа ситуация в региона. Масирани печенежки нападения са отбелязани през 1027 г., атаките се засилват през 1032, 1034, 1035 и 1036 г., за да достигнат своя апогей през 1048 г. Резултатът от тази инвазия е трайното настаняване на печенеги на юг от Дунав, в тема Паристрион, а Плиска и Плисковското поле вероятно се превръщат в един от основните центрове на печенежко заселване. Това се определя от благоприятното географско положение на Плиска и развитата градска и фортификационна инфраструктура.

Още при първите разкопки на Дворцовия център, в най-горните пластове проучвателите са откривали материали и градежи, които свързват с настанилите се в Плиска печенеги. Данни за обитаване от новодошло население има и за Външния град на Плиска, в района на Голямата базилика, както и в североизточния край на с. Войвода. Свидетелство за печенеги в Плиска е погребението на два коня и куче в една от ямите, открита през 1978 г. в пласта над „Крумовия дворец“. Две погребения на кучета, едното обезглавено, са открити и в най-късния стратиграфски пласт, над каменния площад, северно от Цитаделата.

Новото, което се наблюдава на обект „Дворцов център – изток“, е появата в последния стратиграфски хоризонт на постройки с лека дървена наземна конструкция. Открити са стенни мазилки (обр. 21) от глинобитни постройки. Друг важен археологически факт са останките от каменни настилки (обр. 22), които отбелязват съществуването на специфични наземни съоръжения, които вероятно са служели за подове на леки постройки с правоъгълна или заоблена (юртообразна) форма.

Едно от най-видимите археологически явления, насочващи ни към демографските и етнокултурните промени в Плиска след 30-те/40-те години на XI в., е свързано с масовата практика мъртвите да се погребват в обитаемото пространство. Към него трябва да се добавят и наблюденията на проучвателите, които забелязват редица специфики и „отклонения“ в погребалния обред.

Сред основните археологически находки, идентифициращи това население, проучвателите посочват глинени котли с вътрешни уши, глинени съдове, изработени на ръка, сфероконусните съдове. Обръща се внимание също на някои новопоявили се в Плиска метални находки като кръглите апликации, листовидните ажурни висулки, бронзовите фигурки на конник, бронзовите катинарчета с форма на куче, бронзовите огнива.

Интересна информация за стопанската структура и хранителните навици на населението в Плиска предоставиха и зооархеологическите изследвания на обект „Дворцов център – изток“. В последния стратиграфски хоризонт, към който принадлежат петте гроба, е отчетено съществено увеличение на относителния дял на костите от коне и диви животни, които са използвани основно за храна. Данните за хранителното меню на населението в Плиска от втората трета на XI в. показват значителна консумация на месо.

Антропологичното изследване установи метаболитни нарушения и заболявания, които се свързват с бедна на продукти от растителен произход кухня и различни дефицити в хранителното меню. Многобройните заболявания, причинени от небалансирания хранителен режим, са индикация, че

обитателите са изпитвали затруднения да разнообразят менюто си и в условията на постоянна военна активност са продължили да следват номадските си хранителни навици.

Свързването на гробовете от обект „Дворцов център – изток“ с настаните се в Плиска печенеги е само една хипотетична възможност, която се вписва добре в известните ни археологически и исторически данни. Отбелязаните в антропологичното изследване особености на расовия вид на индивидите, заболявания, бойни травми и лечебни манипулации също могат да се разглеждат като характерни за къснономадските племена у нас.

Ключови думи: Плиска, гробове, антропологично изследване, трепанация