ANALELE BANATULUI, S.N., ARHEOLOGIE – ISTORIE, XXIX, 2021
http://analelebanatului.ro/aparitii-issues/analele-banatului-xxix-2021/

HUMAN SKELETAL REMAINS DISCOVERED IN MOŞNIŢA VECHE (WEST OF ROMANIA) BELONGING TO BODROGKERESZTÚR CULTURE

Ștefan Popa, Bogdan Craiovan**, Ionela Rădac****

Keywords: Eneolithic, physical anthropology, interment, burials, Carpathian Basin
Cuvinte cheie: eneolitic, antropologie fizică, înhumare, morminte, Bazinul Carpatic

(Abstract)

This article presents the anthropological analysis of six individuals belonging to the Bodrogkerestúr culture from an archaeological site situated in West Romania. These results will add new data to a cronocultural spectrum that has a gap in knowledge from this geographical region. Macroscopic observations were performed on the specific morphological aspects of the bones to determine the skeletal completeness, bone surface preservation, age at death, stature, biological sex, non-metric traits, bone pathologies and scoring entheseal changes. Our results indicate that there are 2 females, 3 males and one with ambiguous sex determination, age at death between 20 and 50 years old, and 162,08 ± 4,66 cm mean stature. Observed pathologies include *cribra orbitalia*, *cribra cranii*, dental pathologies and traumatic lesions on the cranial and post-cranial skeleton. Non-metric traits recorded like squatting facets, vastus notch, rhomboid fossae or femur plaque can be an indicator of the physical activities of this Eneolithic population. Entheses scoring shows a pattern on three skeletons from grave M7 on the insertion point for m. *brachioradialis.* The results may be an indicator that they had an agricultural lifestyle.

Introduction

The Eneolithic, and by extent the Bodrogkeresztúr culture, is one of the least researched topics regarding the prehistory of the Banat region, especially in terms of anthropological analyses. Thus, any type of added information, archaeological or anthropological, referencing this period can only be seen as an important step forward. One of the very first studies that addressed the subject of Bodrogkeresztúr culture in Banat was published in 1975 and it proved to be a starting point in regard to the study of this particular period of prehistory[1]. From an archaeological point of view, S.A. Luca's PhD thesis[2] represents to this day the cornerstone in regard to the study of Bodrogkeresztúr culture in Romania and implicitly in Banat, while D. Diaconescu's thesis further elaborated on certain aspects of the above-mentioned culture[3]. Other papers focused on pottery fragments and other types of artifacts discovered during archaeological excavations or field surveys[4]. The three graves analyzed in the following paper were all discovered within the archaeological site of Moşniţa Veche (Obiectiv 16 – *Dealu Sălaş*), Timiş County. The site itself was first discovered in 2010[5], while the first archaeological excavations took place here in 2014[6] and continued well into the present, the results being published with remarkable success in the following years[7].

The Bodrogkeresztúr culture mainly covered an area that corresponds to parts of modern-day Hungary and Romania, where the vast majority of funeral discoveries were made in the last 60–70 years, among these discoveries is the Eneolithic cemetery from the site of Tiszapolgár-Basatanya (Hungary) contains skeletal remains from the Early

* National Museum of Banat, Archaeology Department, Timișoara, Romania, e-mail: popa.stefan2811@gmail.com
** West University of Timișoara, Department of Archaeology, Romania, e-mail: bogdan.craiovan@e-uvt.ro
*** National Museum of Banat, Archaeology Department, Timișoara, Romania, e-mail: ionela.slejiuc@gmail.com

1 Lazarovici 1975, 9–33.

2 Luca 1999.

3 Diaconescu 2009.

4 Rusu 1971, 77–84; Lazarovici 1985, 83–89; Rogozea 2018, 147–168.

5 Măruia *et alii* 2012, 579–613.

6 Floca 2016, 38–39.

7 Floca 2016; Georgescu,Floca 2015, 239–255; Stavilă, Craiovan 2020,

and Middle Copper Age and is considered a representative site for the Bodrogkeresztúr culture[8]. Funeral discoveries belonging to this culture in present-day Romania are rare[9] and, to our knowledge, there is no published anthropological analysis on any of them. A series of anthropological data from Romania's Eneolithic period, with diverse cultural affiliations, has been published[10] and can help us create an image of their physical appearance, pathologies, demography or cultural aspects of their lives. From the Western part of Romania published analysed human remains are from the site Sântana "Cetatea Veche"[11]. A comprehensive case study about one of the skeletal samples presented in this paper was published in 2021 considering supernumerary teeth and highlighting developmental anomalies that can occur in the past population[12]. The small number of studied human remains from western Romania that belong to the Eneolithic period and the absence of those from the Bodrogkerestúr culture caused an obvious gap in our knowledge regarding their life history and cultural habits. Our study objective is to perform an anthropological analysis of the human remains yielded from the archaeological site Moşniţa Veche (Obiectiv 16 – *Dealul Sălaş*), the western part of Romania, by recording the state of preservation of the bones, completeness, estimated stature, sex determination, age at death, non-metric traits, pathologies and entheses.

Materials and methods

The osteological material was discovered in 2019, by a team of archaeologists from the West University of Timişoara, during a rescue excavation conducted within the archaeological site known as Moşniţa Veche 16 "Dealu Sălaş" (Moşniţa Veche, Timiş County, Romania). Six individuals were discovered in total, two of them were found within the same grave which was given the indicative M3, one was buried alone (M5), while the other three individuals were part of the single grave (M7). All six individuals were buried in accordance with the well-known funerary rites common within the Bodrogkeresztúr culture, as the human remains were placed in the grave pits on their side, in a crouching position with the knees bent towards the abdomen and surrounded by grave goods. All three of the graves were aligned on an east-west axis. The position of the individuals within the grave pits, the orientation of the graves as well as the characteristics of the grave goods discovered, all point to the fact that all three graves undoubtedly belong to the Bodrogkeresztúr.

All the research was made using a macroscopic inquiry of the bones. The bones were cleaned with water and dried avoiding direct sunlight after which we made the skeletal inventory and siding of the subjects using human osteology manuals[13]. The condition of the bones was recorded using a coding system, from 0 – 5, to express a visual representation of the abrasion/erosion of the bone surface[14]. To reflect the degree of completeness of the skeletons we recorded them as complete if >75% of the bones are present, partial if is between 25% –75%, and poor if <25% are present[15]. With the results of the long bones length from the available material, we estimated the stature of the individuals using a mathematical formula that utilizes the line of organic correlation[16]. Sex determination was made using specific dimorphic changes on the coxal bone and cranial morphology with the results indicating one of the following features: undetermined sex, female, probable female, ambiguous sex, probable male or male[17]. Age at death was estimated using chronological changes that can be observed on the innominate bone[18], dentition wear pattern and development, the union of the epiphysis, and the degree of cranial suture closure[19]. Observable non-metric traits were recorded as present or absent and in some cases the number of observable features for a specific trait[20], although the small number of analysed subjects from this series does not allow using them as markers for biological distance. Osteopathologies and trauma were recorded using specific guidelines[21].

[8] Bognár-Kutzián 1963; Derevenski 1997; Zoffmann 2000; Ubelaker – Pap 2009.

[9] Lazăr 2012, 109.

[10] Muntean 1998; Gătej *et alii* 2007; Ion-Soficaru 2008; Lazăr *et alii* 2013; Sava *et alii* 2014; Lundberg-Gligor 2015; Crăciunescu-Lazăr 2018; Gligor *et alii* 2018; Vasile 2019.

[11] Sava *et alii* 2014.

[12] Beschiu *et alii* 2021.

[13] White – Folkens 2005.

[14] Brickley – Mckinley 2004, 14, fig. 6.

[15] Buikstra – Ubelaker 1994, 6.

[16] Sjøvold 1990.

[17] Phenice 1969, 297; Buikstra – Ubelaker 1994, 16; White – Folkens 2005, 385; Canty *et alii* 2016.

[18] Todd 1921; Lovejoy *et alii* 1985, 15; Katz – Suchey 1986, 427: Brooks – Suchey 1990, 227; Buikstra – Ubelaker 1994, 21.

[19] Buikstra – Ubelaker 1994, 32; White – Folkens 2005, 363.

[20] Finnegan – Faust, 1974; Pandey – Singh, 1990, 159; Buikstra – Ubelaker 1994, 85; Mann *et alii* 2016; Prasad – Rajasekhar, 2018.

[21] Lovell 1997, 139; Buikstra 2019.

Robusticity was recorded using a scoring method for 23 postcranial skeleton enthesis[22].

Results

There were identified six individual skeletons in relatively good condition, with grade 0 or 1 of skeletal preservation and partial or complete skeletal inventory. The excavation process determined the majority of the missing bone elements. All were adults with the age at death between 20 and 50, two probable female, one male, two probable males, and one with ambiguous sex determination. The entire studied group has a medium stature of 162,08 ± 4,66 cm (Table 1). We made a description of the skeletal inventory that emphasizes the elements that were used for the anthropological analysis.

M3/1 (age at death: 30 – 35; sex determination: probable male; stature: 159,2 ± 4,32 cm).

Skeletal inventory. The neurocranium is well represented: frontal and parietal bones are complete with small missing parts of the bones and sutures; the occipital bone is partially represented, without basilar and occipital condyles; temporals are partially represented, in a fragmentary state with missing parts at the zygomatic process and mastoid process; sphenoid is poorly represented being very fragmented; the ethmoid is missing. Viscerocranium is partially represented: mandible is complete with 4 teeth missing *post-mortem* (LI_1, RI_1, RI_2 and RM_3); zygomatic is represented by the left side and the maxillae are partially represented with 4 teeth missing *post-mortem* (IR^1, IR^2, MR^2, IL^2). Long bones are partially represented with complete femurs, tibia (left) and radius (right). The pelvic girdle has a completeness of >75% with missing fragments from the iliac and pubic parts. The vertebral column is partially represented with the thoracic vertebrae better represented.

Epigenetic traits (Table 2). Supraorbital structures, parietal foramen, medial extension of the trochlear surface of the talus, type B2 calcaneal articular facet of talus, type A2 articular facets of calcaneus, and shovel-shaped incisor (LI^1).

Osteological pathologies. *Cribra cranii* (figure 1, D), *cribra orbitalia*, mesiodens, healed trauma (23 mm in length) situated on sagittal suture approximated halfway between bregma and lambda (figure 1, B), a man-made circular perforation (11 mm in diameter) on right side of the mandible, posterior to the mental foramen (figure 1, C) and dental calculus on most of the teeth.

Entheses scoring (Table 3). Medium scoring was recorded on the clavicle (*m. pectoralis major* and m. *deltoideus*), ulna (*m. triceps brachii* and m. *brachialis*), patella (*quadriceps tendon*), tibia (*quadriceps tendon*) and calcaneus (*Achilles tendon*). A high degree was recorded only on the tibia (*m. soleus*).

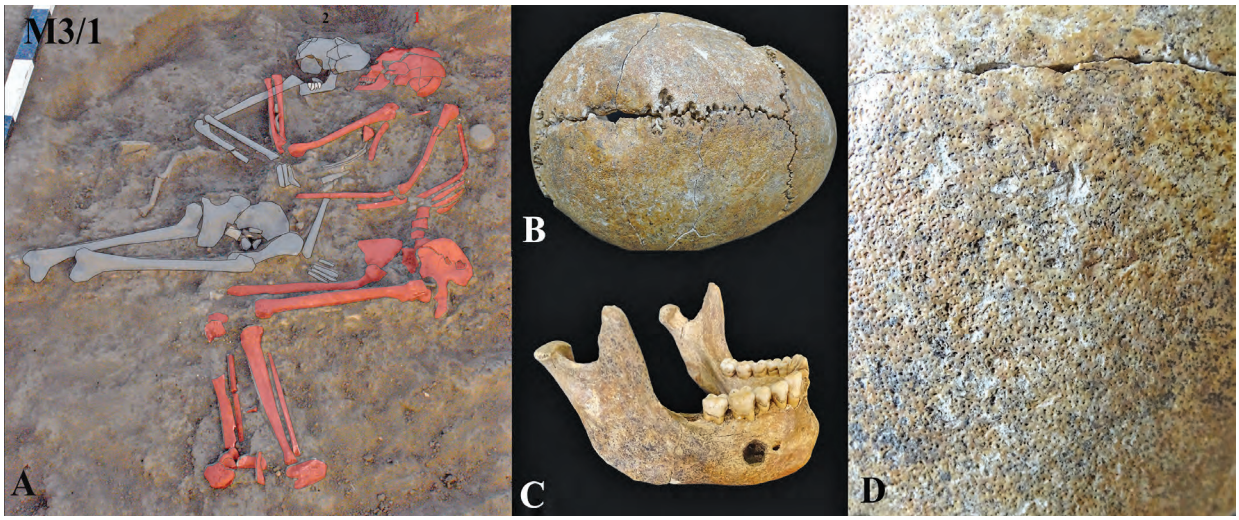

Figure 1. Grave M3, ind.1, where: A – *in situ* position (1 – red); B – healed traumatism on sagittal suture; C – circular perforation on the right side of the mandible; D – *cribra cranii* on parietal bone.

M3/2 (age at death: 40 – 45; sex determination: probable female; stature: 161,1 ± 4,73 cm).

Skeletal inventory. The skull is partially represented. The neurocranium is represented by complete frontal and parietals; the occipital is partially represented without the basilar part and the occipital condyles. Viscerocranium is represented

[22] Mariotti *et alii* 2007, 291.

only by the mandible that is complete, with condylar necks and its left coronoid process broken. The dentition is represented by 6 teeth: RP_4, RM_1, RM_2, RP^4, RM^1 and RM^3. Long bones are partially represented: complete femurs (the left femur has erosion on the greater trochanter, lesser trochanter and the medial condyle), partially represented humerus (bilateral) with missing parts from proximal epiphysis, left and right ulna are >75% preserved. Pelvic girdle was recovered >75% with missing parts from the iliac crest, pubic symphysis, posterior superior and inferior iliac spine. Vertebrae are partially represented, in general only by the vertebral body: 1 cervical, 10 thoracics, 5 lumbar and 1 sacral.

Epigenetic traits (Table 2). Supraorbital structures (bilateral) and parietal foramen (bilateral).

Osteological pathologies. *Cribra cranii* on frontal and both parietals; possible healed traumatism (22 mm in length) on the right side of the frontal (or it may represent a non-metric trait made by an accessory vessel that forms grooves on the frontal bone), superior to the supraorbital margin and parallel with the temporal line (figure 2, B); dental calculus (figure 2, D) on the recovered teeth and dental abscess at the teeth LP_4 and LM^1 (figure 2, C).

Entheses scoring (Table 3). Medium degree of the entheses scoring was recorded on ulna (*m. triceps brachii, m. brachialis* and *m. supinator*) and femur (*m. gluteus maximus* and m. *vastus medialis*).

M5 (age at death: 40 – 50; sex determination: probable female; stature: 162,5 ± 4,73 cm).

Skeletal inventory. The skull is partially represented. From the neurocranium there were recovered: half of the frontal bone (supraorbital margin, glabella), parietal and occipital are poorly represented, partial sphenoid, complete temporal (zygomatic process and squama are missing from the left side). Viscerocranium is represented by: partial nasal, complete zygomatic, and partial maxillae (missing the left infraorbital foramen, frontal and zygomatic process). The recovered dentition is incomplete, with 5 teeth missing from the mandible (RI_1, RI_2, RM_1, LI_1 and LI_2) and 6 from the maxillae (RI^1, RI^2, RC^1, LI^1, LI^2, LC^1, LM^3), all were lost *post-mortem*. Recovered long bones are >75% represented: humerus, radius, ulna (left side is missing), femur and fibula (left side is partially represented). *Os Coxae* is fragmented and partially represented with missing parts from the iliac crest, ilium, greater sciatic notch, pubic symphysis, ischiopubic ramus and posterior inferior iliac spine. Vertebras and the shoulder girdle are partially represented.

Epigenetic traits (Table 2). Supraorbital notches, infraorbital suture, vastus notch, squatting facets on the distal tibia (medial facet), calcaneal articular facet of the talus is B2 type with a medial extension of the trochlear surface.

Osteological pathologies. The dental calculus on all the teeth, dental abscess (figure 3, C) and cavity on LM^2 (figure 3, D).

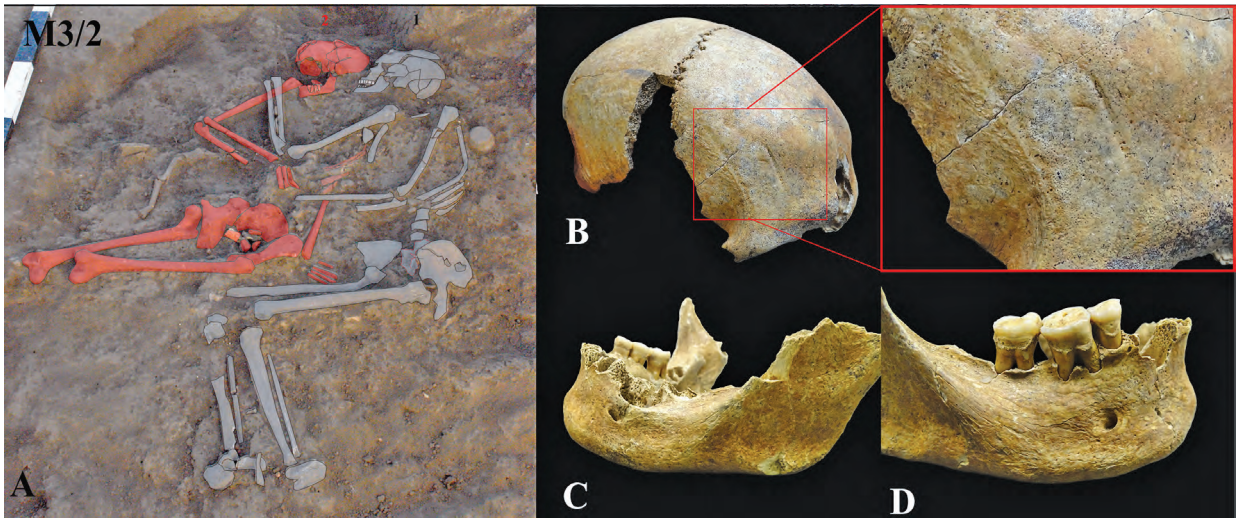

Figure 2. Grave M3, ind. 2, where: A – *in situ* position (2 – red); B – a possible healed traumatism on the frontal bone; C – dental abcess on the mandible; D – dental calculus.

Entheses scoring (Table 3). High degree development was recorded on the scapula (*m. triceps brachii*), clavicle (*m. pectoralis major*), humerus (*m. pectoralis major* and *m. deltoideus*), radius (*pronator teres* and *interosseous membrane*), ulna (*m. brachialis*), femur (*m. gluteus maximus* and m. *vastus*

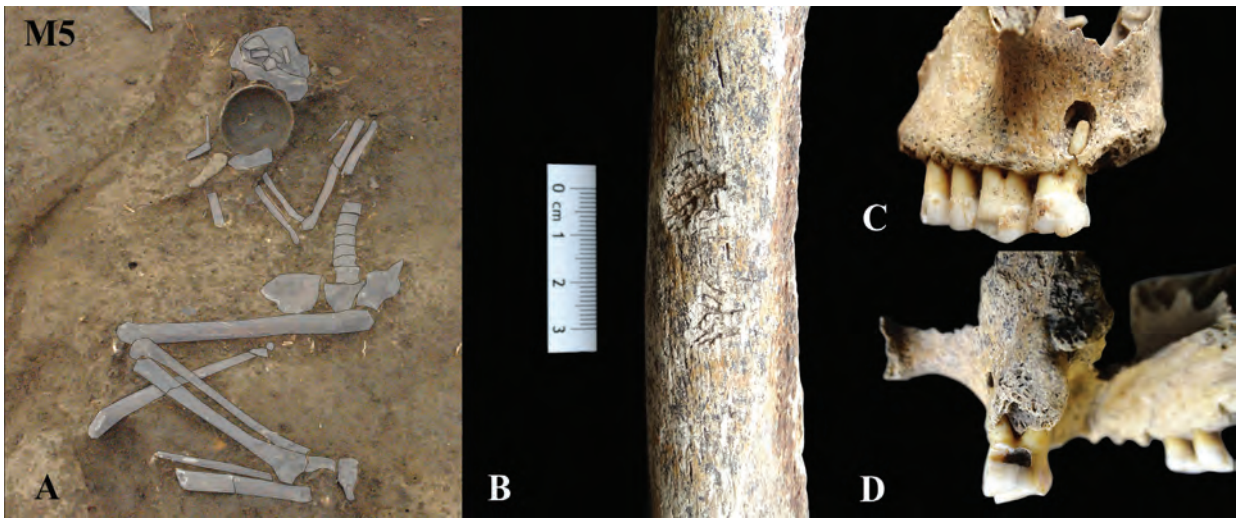

Figure 3. Grave M5, where: A – *in situ* position; B – animal gnawing marks on the left femur; C – dental abcess on the maxillae; D – dental cavity on LM^2.

medialis) and patella (*quadriceps tendon*) and very high degree on the calcaneus (*Achilles tendon*).

M7/1 (age at death: 40 – 45; sex determination: probable male; stature: 167,1 ± 4,69 cm).

Skeletal inventory. The neurocranium is represented by complete frontal and parietals (missing parts from sphenofrontal and coronal sutures), occipital (except basilar part and occipital condyles) and temporals with missing parts from squama and zygomatic process. Viscerocranium is represented by a complete mandible and partial maxillae (missing zygomatic process, frontal process and fragments and RM_3 are congenitally missing (hypodontia). Long bones are partially represented: the humerus is complete with missing parts from the proximal epiphysis and medial epicondyle on the right side; the ulna is complete except for the missing olecranon from the left side; the radius is complete but on the right is missing the head of the bone; femur is represented by the right side with missing elements from the femoral head and medial epicondyle. *Os coxae* is partially represented by parts of the ilium with acetabular fossa and auricular surface. Vertebras and the pectoral girdle are partially represented.

Epigenetic traits (Table 2). Supraorbital struc-

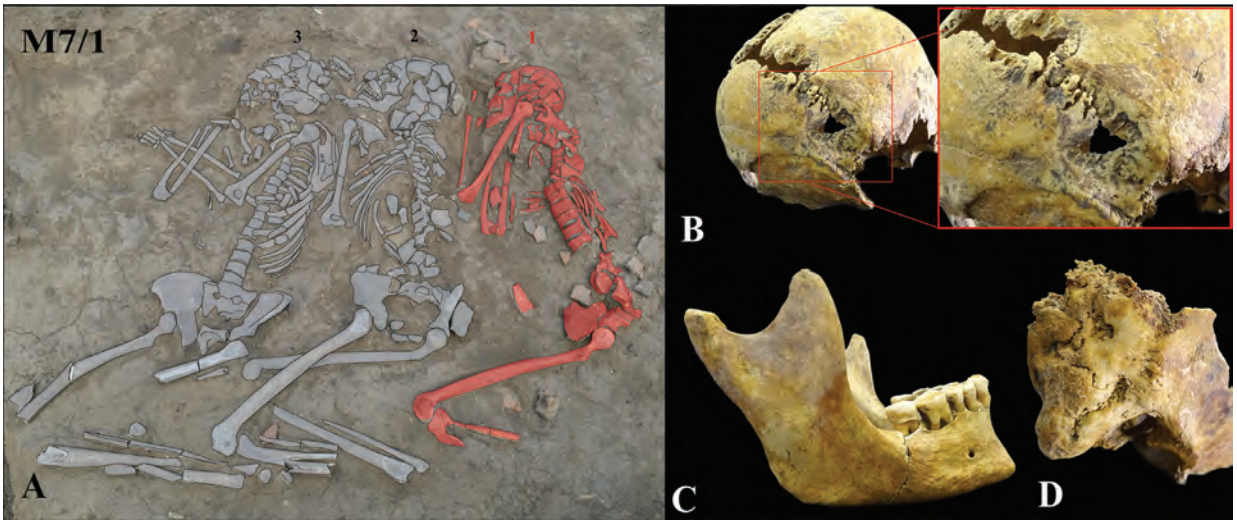

Figure 4. Grave 7, ind. 1, where: A – *in situ* position (1 –red); B – sutural bones on the lambdoid suture; C – dental calculus; D – remnant of the *sutura mastoideosquamoasa*.

from the posterior of the bone). Dentition is well represented, but LC_1 and one central incisor from the mandible could not be recovered (one was deteriorated and we couldn't establish its laterality). LM^3 tures, parietal foramen, sutural bones on the right side of the lambdoid suture (figure 4, B) and the remnant of the *sutura mastoideosquamoasa* (figure 4, D) on the mastoid process (bilateral).

Osteological pathologies. Dental calculus (figure 4, C) and *cribra cranii*.

Entheses scoring (Table 3). Medium development degree was recorded on the scapula (*m. triceps brachii*), clavicle (*conoid* and *trapezoid ligament*), ulna (*m. triceps brachii* and m. *supinator*), femur (*m. gluteus maximus)*, and tibia (*quadriceps tendon*); high degree on clavicle (*conoid ligament*) and humerus (*m. brachioradialis*).

M7/2 (age at death: 40 – 50; sex determination: male; stature: 163,4 ± 4,81 cm).

Skeletal inventory. The neurocranium is represented by: frontal and parietal with lost fragments around sphenofrontale, coronal and squamous suture; occipital is represented by external occipital protuberance and occipital planum with lambdoid suture and temporal by mastoid process and petrous pyramid. Viscerocranium is partially represented by the left zygomatic, a complete mandible and partially fragmented maxillae. Dentition is well represented with only 3 teeth lost *post-mortem* (RI_1, LI_1 and RI^2) and RM_3 – LM_3 congenitally missing (hypodontia). Long bones have many complete elements (humerus, ulna, radius and femur) and incomplete fibula. *Os coxae* are partially represented on the right side only by the ilium and the left side with lost parts from the iliac fossa, posterior superior and inferior iliac spine, half of the auricular surface and a great part from the pubic symphysis. The vertebral column is complete but the shoulder girdle has a poor representation.

Epigenetic traits (Table 2). Supraorbital structures, possible case of a separate neural arch on a lumbar vertebra (figure 5, C), femur plaque (figure 5, F) and vastus notch (figure 5, D).

Osteological pathologies. *Cribra cranii,* healed traumatism on the left humerus on the anterior central third of the diaphysis, oval traumatism on the left parietal (20,9 × 14,7 mm) with a begging of callus formation (figure 5, B), 2 dental caries (RM^2 and RM^3) and dental tartrum (figure 5, E).

Entheses scoring (Table 3). Medium development was recorded on the scapula (*m. triceps brachii*), clavicle (*conoid ligament* and m. *deltoideus*), radius (*m. pronator teres*), ulna (*m. triceps brachii*, m. *brachialis* and m. *supinator*), femur (*m. gluteus maximus*), patella (*quadriceps tendon*) and tibia (*quadriceps tendon* and m. *soleus*); a high degree was noted on clavicle (*m. pectoralis major* – right) and humerus (*m. brachioradialis*); a very high degree was recorded on clavicle (*m. pectoralis major*).

M7/3 (age at death: 20 – 29; sex determination: ambiguous; stature: 159,2 ± 4,69 cm).

Skeletal inventory. The neurocranium is represented by: complete frontal with missing glabella, complete parietals with lost parts from the sutures, partial occipital with unrecovered basilar part and occipital condyles, temporal bones are represented by the petrous pyramid and mastoid process and 2 fragments from the sphenoid bone. Viscerocranium has poor completeness: right half of the mandible, partial maxillae and right zygomatic. Dentition is incomplete, with 2 teeth missing from the maxillae *post-mortem* (LM^1 and LM^2) and from the mandible RI_1 and the entire left half. RM^3 and RM_3 are missing *ante-mortem* from hypodontia (on the left side the alveoli correspondent for M_3 are deteriorated). Complete long bones are the humerus, radius and ulna. Femur

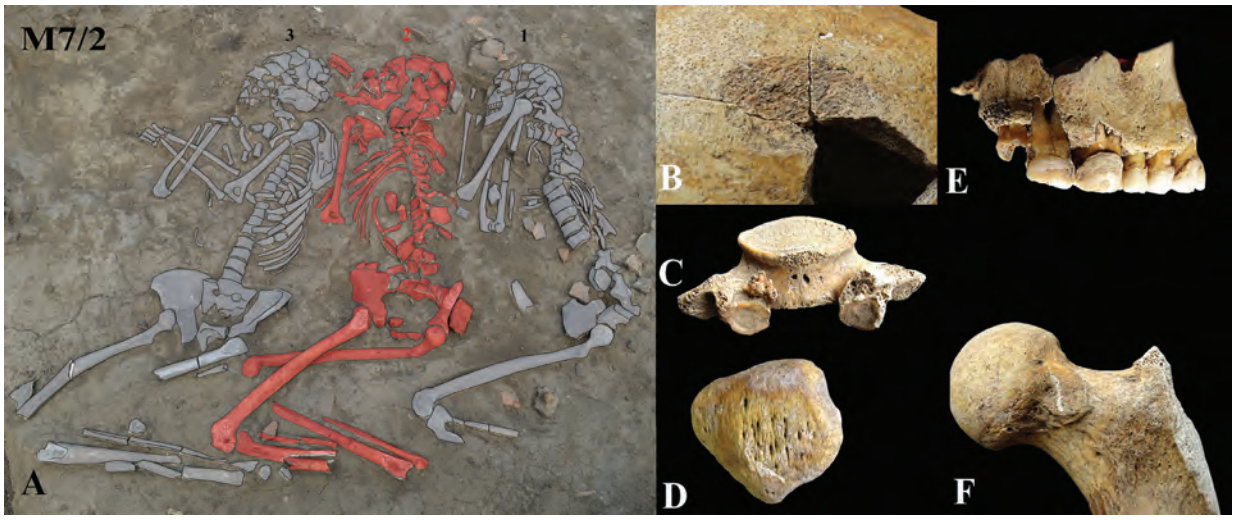

Figure 5. Grave 7, ind. 2, where: A – *in situ* position (2 – red); B – traumatism on the left parietal; C – separate neural arch on lumbar vertebra; D – vastus notch; E- dental cavity and dental tartrum on maxillae; F – femur plaque.

and fibula are partially represented. Innominate bone is >75% represented, with missing parts from: pubic bone, posterior superior and inferior iliac spine and segments from the acetabular fossa. The shoulder girdle and the vertebras are partially represented.

Epigenetic traits (Table 2). Supraorbital structures, vastus notch, rhomboid fossae on clavicle (figure 6, B) and type A2 articular surface of calcaneus.

Osteological pathologies. Dental calculus and *cribra cranii*, a lateral compression of a vertebral body from the lumbar region (figure 6, C).

Entheses scoring (Table 3). Medium development was recorded on the clavicle (*conoid ligament* – left, m. *pectoralis major* – right), humerus (*m. pectoralis major*, m. *lat. dorsii/teres major, m. deltoideus* – left), radius (*m. biceps brachii* – right), ulna (*m. triceps brachii* – right, m. *brachialis* – right), femur (*m. gluteus maximus, m. iliopsoas* – right), patella (*quadriceps tendon*); a high degree was noted on the humerus (*m. deltoideus – right, m. brachioradialis*), radius (*m. biceps brachii* – left), femur (*m. iliopsoas* – left), and calcaneus (*Achilles tendon*; figure 6, D).

Figure 6. Grave 7, ind. 3, where: A – *in situ* position (3 – red); B – rhomboid fossae on clavicle, lateral compression of a lumbar vertebra; D – *Achilles tendon* enthesis on the calcaneus.

Discussions

Green stains were recorded on M5 (right humerus) which is usually associated with the presence of a metal object that contains copper nearby the bone[23]. Multiple animal gnawing was recorded on the left femur shaft of the M5 subject (figure 3, B). The marks are square in shape and V-shaped – bottomed parallel, small grooves and are most likely made by micromammals[24].

Physical and pathological aspects that were recorded from the skeletal remains may be an indicator of cultural variables[25]. The relatively small stature found in our sample (mean = 162,08 ± 4,66 cm) can be an indication of prehistoric farmers, according to some authors[26]. In a comparison with available data from the same period and geographical region, differences can be observed: Alba Iulia – *Lumea Nouă* 2015 – mean: 154,84 ± 3,98 cm[27], Gumelniţa – mean: 156,93 cm[28] and Northeastern Hungary – males: 168,2 ± 4,57 cm; female: 156,7 ± 5,63 cm[29]. *Cribra orbitalia* and *cribra cranii* (porotic hyperostosis) were observed in our study on six out of seven subjects and in an archaeological context are most commonly attributed to iron deficiency anemia[30]. This pathological condition manifests macroscopically as a porosity made of small holes of different sizes on the bone surface of the skull vault and orbital roof and it is caused by stress due to pathogen load in the environment[31]. *Cribra cranii* was observed on other skeletons from Eneolithic sites from Romania: Măriuţa – La Movilă[32], Alba Iulia – Lumea Nouă[33],

[23] Buikstra – Ubelaker 1994, 96.

[24] Nikita – Karligkioti 2019, 71.
[25] Larsen 1995, Ubelaker – Pap 2009, 23.
[26] Mummert 2011.
[27] Lundberg –Gligor 2015, tab. 2.
[28] Vasile 2019.
[29] Ubelaker-Pap 2009, 31.
[30] Larsen 1995, 199.
[31] Stuart-MacAdam, 1992, 44.
[32] Gătej *et alii* 2007.
[33] Gligor *et alii* 2018, 35.

Sultana – Malu Roşu[34], Orbeasca de Sus[35] and Alba Iulia – Lumea Noua 2015[36]. Dental caries, recorded on two subjects in this study (M5 and M7/2), represent a process of enamel or dentine demineralization due to a diet rich in carbohydrates[37]. Abscesses, that indicate inflammation determined by dental caries or excessive attrition[38], were recorded from M5 and M3/2. Dental calculus was observed on all subjects and represents the mineralization of the plaque determined by genetic, dietary or other causes whose contribution is not fully understood.

Nonmetric traits (discrete or epigenetic traits) refer to minor anomalies of the skeleton that cannot be measured, with genetic or non-genetic (i.e. biomechanical forces) causation[39]. Supraorbital structures (notches and/or foramina) are located on the frontal bones of supraorbital margins and were recorded on the entire series of analysed subjects. The presence of these structures was linked with environmental factors like cold, temperate or warm climatic conditions. Infraorbital suture, recorded in a single instance (M5), appears as a mark of the infraorbital canal at the external surface of the maxillary, with no clear function other than probable permitting further growth of the bone in infancy[40]. Zygomatico-facial foramen pierces the zygomatic bone and through it passes a nerve and a small artery. We found this trait in one case with one foramen (M5) and is absent in 4 cases (M3/1; M7/1; M7/2 and M7/3). Parietal foramen was identified on 3 subjects (M3/1; M3/2 and M7/1) and is manifested by 2 small perforations of the parietal bone next to the sagittal suture, in the obelion area of the skull and its presence may be genetically influenced[41]. Sutural bones (wormian bones) were observed in one case (M7/1) on the lambdoid suture. The wormian bone formation may have multiple genetic causes or environmental factors (i.e., artificial cranial deformation)[42]. A clue of the physical activities of our subjects can be given by the presence of the squatting facets, recorded on the M5 and M7/3. These facets appear during prolonged hyper-dorsiflexion positions of the ankle and can be observed on the distal end of the tibia and on the talus[43]. The facet shape of the trochlear extension (M3/1 – medial; M5 – medial and M7/3 – lateral, medial, central) can be influenced by the squatting stress and emphasizes again the hyper-dorsiflexion of the ankle[44]. Vastus notch (in our sample: M5; M7/2 and M7/3) is an anatomical variant of the patella that can be found in the superior-lateral region of the bone with a smooth-edged and some studies show it to be more prevalent in males[45]. Rhomboid fossa forms on the sternal end of the clavicle in the attachment point of the costoclavicular ligament that connects it with the first rib, and it is gender-related, being more common in males[46]. Plaque formation was recorded on M7/2 and is a nonmetric trait described as a bony scar from the femoral head extended on the femoral neck and may be caused by femoroacetabular impingement[47]. The data obtained can be added to a more comprehensive future study related to non-metric traits from this period and geographic region.

A case of mesiodens (supernumerary teeth) was observed on M3/1 and it is part of a detailed article published on this specific aspect[48]. The traumatic injury was recorded on 3 subjects from our series (M3/1, M3/2 and M7/2). The skull of the M3/1 will be part of a separate study for a more complex approach and a better understanding of the cultural or medical reasoning behind this practice and the injury. In Bastanya Cemetery from Hungary, head wounds were frequent, with seven individuals belonging to the second period having such injuries.[49]

Entheses represent the place where the muscles attach to bones and their systematic recording of developmental degree is used in an attempt to reconstruct the physical activities of past human populations[50]. Some authors suggest caution when scoring entheses as long as we do not account for potential factors that may affect their development, such as body mass, genetic factors, skeletal maturity, and contractile rate of muscle[51]. The small number of individuals from our study and their entheses preservation does not allow us to make a statistical analysis but the data may be inte-

34 Ion-Soficaru 2008, 155.
35 Lazăr *et alii* 2017, 17.
36 Lundberg-Gligor 2015, 92.
37 White – Folkens 2005, 329.
38 Buikstra – Ubelaker 1991, 55.
39 Mays 1998, 102.
40 Hauser – De Stefano 1989, 67.
41 Hauser – De Stefano 1989, 80.
42 Bellary *et alii* 2013.
43 Ari *et alii* 2003.
44 Pandey – Singh 1990, 159.
45 Anderson 2002, 298.
46 Rogers *et alii* 2000, 61.
47 Vyas *et alii* 2013.
48 Beschiu *et alii* 2021.
49 Bognár-Kutzián 1963, 394.
50 Mariotti *et alii* 2007.
51 Schlecht 2012, 1245.

grated into future studies. Although in our study a complete recording was not possible, a pattern can be observed on M7 subjects at humerus (*m. brachioradialis*), all receiving a high degree of entheseal development. *M. brachioradialis* is a muscle for the forearm and has the function to flex the elbow when this is in semi-pronation[52].

Conclusions

The study of the human remains excavated from Moşniţa Veche brings new anthropological data from a crono-cultural spectrum that has a shortage of information in Romania, but to better understand their diet, migration or kinship, future studies are needed. The short estimated stature, dental pathologies and porotic hyperostosis can be an indicator of a predominantly agricultural-based diet. The results of the traumatic injuries observed on the bones can be an indicator of their lifestyle and cultural customs. Further studies of entheses from a large number of skeletons that belong to Bodrogkeresztúr culture can highlight if there is a pattern between activity markers and the interment.

REFERENCES

Anderson 2002
T. Anderson, A bipartite patella in a juvenile from a medieval context. *International Journal of Osteoarchaeology* 12 (2002), 297 – 302.

Ari *et alii* 2003
I. Ari, I. H. Oygucu, E. Sendemir, The squatting facets on the tibia of Byzantine (13th) skeletons. *European Journal of Anatomy* 7 (3) (2003), 143 – 146.

Barckley – McKinley 2004
M. Brickley, J. I. McKinley, *Guidelines to the Standards for Recording Human Remains. Institute of Field Archaeologists*, Southampton (2004).

Barlai 2008
K. Barlai, Basatanya revisited: two periods of a Copper Age cemetery in the Carpathian Basin. *ARCHAEOLOGIA BALTICA* 10 (2008), 207 – 210.

Bellary *et alli* 2013
S. S. Bellary, A. Steinberg, N. Mirzayan, M. Shirak, S. R. Tubbs, A. A. Cohen-Gadol, M. Loukas, Wormian Bones: A Review. *Clinical Anatomy, 26* (2013), 922–927.

Berry – Berry 1967
A. C. Berry, R. J. Berry, Epigenetic variation in the human cranium. *Journal of Anatomy,* 101/2 (1967), 361–379.

Beschiu *et alii* 2021
L. M. Beschiu, B. A. Craiovan, Ş. Popa, D. Micle, L. C. Ardelean, L. C. Rusu, An ancient mesiodens investigated by Cone Beam CT. *Applied Sciences* 11 (2021), 11703.

Bognár-Kutzián 1963
I. Bognár-Kutzián, *The copper age cemetery of Tiszapolgár-Basatanya*. Budapest (1963).

Brooks – Suchey 1990
S. Brooks, J. M. Suchey, Skeletal age determination based on the os pubis: a comparison of the Acsádi-Nemeskéri and Suchey-Brooks methods. *Journal of Human Evolution, 5/3* (1990), 227–238.

Bukstra – Ubelaker 1994
J. E. Buikstra, D. H. Ubelaker, *Standards for Data Collection from Human Skeletal Remains*. Arkansas (1994).

Buikstra 2019
J. E. Buikstra (Ed.), *Ortner's Identification of Pathological Conditions in Human Skeletal Remains*, Phoenix (2019).

Canty *et alii* 2016
E. Canty, C. Eliopoulos, M. Borrini, The preauricular sulcus and its link to sex and parturition: a test on a British Medieval collection. *American Journal of Physical Anthropology* (2016). 159, 108, (conference poster).

Crăciunescu-Lazăr 2018,
I. Crăciunescu, C. Lazăr, The women among the others: Some insights regarding women's status in Eneolithic society based on evidence from Sultana – *Malu Roşu* cemetery (Romania). *Annales Universitatis Apulensis. Series Historica,* 22/I (2018), 97–115.

Derevenski 1997
J. S. Derevenski, Age and gender at the site of Tiszapolgár-Basatanya, Hungary. *ANTIQUITY,* 71 (1997), 875 – 889.

Diaconescu 2009
D. Diaconescu, *Cultura Tiszapolgár în România*, Sibiu (2009).

Drake *et alii* 2019
L. R. Drake, A. W. Vogl, A. W. M. Mitchell, *Anatomia lui Gray pentru studenti*. 4th edition, Bucureşti (2019).

Finnegan – Faust 1974
M. Finnegan, M. A. Faust, Variants of the Femur. *Research Report 14: Bibliography of Human and Non-human, Non-Metric Variation,* 3 (1974).

Floca 2015,
C. Floca, *Şapte milenii de istorie în zona Moşniţa (jud.*

[52] Drake *et alii* 2019, 777.

Timiş). Cercetările arheologice de salvare din perioada 2010–2015, Timişoara (2016).

Gătej *et alii* 2007
M. Gătej, A. Soficaru, N. Miriţoiu, Expertiza antropologică a osemintelor umane de la Măriuţa – *La Movilă* (com. Belciugatele, jud. Călăraşi). *Studii de Preistorie,* 4 (2007), 159–167.

Georgescu – Floca 2015
A. Georgescu, C. Floca, Habitat structures in the early and middle La Tène period from the Banat region. Feature no. 14 discovered at Moşniţa Veche-Dealul Sălaş. *Arheovest, III* (2015), 299–330.

Gligor *et alii* 2018
M. Gligor, A. D. Soficaru, A. Fetcu, Cranial fractures in 2005 early Eneolithic multiple burial from Alba Iulia – *Lumea Nouă* (Romania). *Annales Universitatis Apulensis. Series Historica,* 22/I (2018), 27–96.

Hauser – De Stefano 1989,
G. Hauser, G. F. De Stefano, *Epigenetic variants of the human skull*, Stuttgar, (1989).

Hillson 2005,
S. Hillson, *Teeth*. Second Edition, Londo, (2005).

Ion – Soficaru 2008
A. Ion, A. D. Soficaru, Paleopathological conditions in an Eneolithic community from Sultana – *Malu Roşu*. *Studii de Preistorie,* 5 (2008), 153–157.

Katz – Suchey 1986
D. Katz, J. M. Suchey, Age determination of the male os pubis. *American Journal of Physical Anthropology,* 69/4 (1986), 427–435.

Larsen 1995
C. S. Larsen, Biological changes in human population with agriculture. *Annual Review of Anthropology,* 24 (1995), 185–213.

Lazăr 2012
C. Lazăr (Ed.), *The catalogue of the Neolithic and Eneolithic funerary findings from Romania*. Târgovişte (2012).

Lazăr *et alii* 2013
C. Lazăr, E. C. Ştefan, G. Vasile, Consideraţii privind resturile osteologice umane din cadrul unor aşezări eneolitice din sud-estul României. *Studii de Preistorie,* 10 (2013), 67–88.

Lazăr *et alii* 2017
C. Lazăr, P. Mirea, A. Soficaru, M. Culea, Despre un mormânt eneolitic descoperit la Orbeasca de Sus (com. Orbeasca, jud. Teleorman). *Buletinul Muzeului Judeţean Teleorman. Seria Arheologie,* 9 (2017), 15–27.

Lovejoy *et alii* 1985
C. O. Lovejoy, R. S. Meindl, T. R. Pryzbeck, R. P. 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,* 68/1 (1985), 15–28.

Lovell 1997
N. C. Lovell, Trauma analysis in paleopathology. *American Journal of Physical Anthropology,* 104 (S25) (1997), 139–170.

Lundberg-Gligor 2015
C. Lundberg, M. Gligor, Place of death and place of rest: commingled human remains from Alba Iulia – *Lumea Nouă* 2015 early eneolithic funerary discovery. *Annales Universitatis Apulensis, Series Historica,* 19/II (2015), 71–103.

Mann *et alii* 2016
R. W. Mann, D. R. Hunt, S. Lozanoff, *Photographic regional atlas of non-metric traits and anatomical variants in the human skeleton*, Illinois (2016).

Mariotti *et alii* 2007
V. Mariotti, F. Facchini, M. G. Belcastro, The study of entheses: proposal of a standardised scoring method for twenty-three entheses of the postcranial skeleton. *Collegium Antropologicum,* 31/1 (2007), 291–313.

Mays 2021
S. Mays, *The archaeology of human bones* (3rd ed.), New York (2021).

Măruia *et alii* 2012
L. Măruia, D. Micle, C. Floca, A. Stavilă, A. Berzovan, L. Bolcu, O. Borlea, *Geografia istorică a zonei Moşniţa Veche. Rezultatele cercetărilor arheologice de teren*, Cluj-Napoca (2012).

Mummert 2011
A. Mummert, E. Esche, J. Robinson, G. J. Armelagos, Stature and robusticityduring the agricultural trasition: Evidence from bioarchaeological record. *Economics and Human Biology,* 9 (2011), 284–301.

Muntean 1998
M. Muntean, Consideraţii antropologice asupra unor fragmente osoase provenite din morminte tumulare din eneolitic. *Analele Banatului, Arheologie-Istorie,* VI (1998), 167 – 170.

Nikita – Karligkioti 2019
E. Nikita, A. Karligkioti, *Basic guidelines for the excavation and study of human skeletal remains*, Nicosia (2019).

Lazarovici 1975
G. Lazarovici, Despre eneoliticul timpuriu în Banat. *Tibiscus,* VII (1975), 9–33.

Lazarovici 1985
G. Lazarovici, Noi descoperiri Bodrogkeresztúr în Banat. *Banatica,* VIII (1985), 83–89.

Luca 1999,
S. A. Luca, *Sfârşitul Eneoliticului pe teritoriul intracarpatic al României – Cultura Bodrogkeresztúr*, Alba Iulia (1999).

Pandey – Singh 1990
S. K. Pandey, S. Singh, Study of squatting facet/extension of talus in both sexes. *Medicine, Science and the Law* 30/2 (1990), 159–164.

Prasad – Rajasekhar 2018
S. A. Prasad, S. S. S. N. Rajasekhar, Morphometric analysis of talus and calcaneus. *Surgical and Radiologic Anatomy* 41/1 (2018), 9–24.

Rogers *et alii* 2000
N. L. Rogers, L. E. Flournoy, W. F. McCormick, The rhomboid fossa of the clavicle as a sex and age estimator. *Journal of Forensic Sciences,* 45/1 (2000), 61–67.

Rogozea 2018
O. C. Rogozea, Descoperiri neolitice şi eneolitice recente din vestul României (II). *Arheovest,* VI (2018), 147–168.

Rusu 1971
M. Rusu, Cultura Tisa. *Banatica,* I (1971), 77–84.

Phenice 1969,
T. W. Phenice, A newly developed visual method of sexing the os pubis. *American Journal of Physical Anthropology,* 30/2 (1969), 297–301.

Sava *et alii* 2014
V. Sava, L. Andreica, X. Pop, F. Gogâldan, Out of ordinary or common burial practice? A funerary discovery from the Baden settlemen at Sântana "Cetatea Veche". *Ziridava Studia Archaeologica* 28 (2014), 39–76.

Schlecht 2012
S. H. Schlecht, Understanding entheses: bridging the gap between clinical and anthropological perspectives. *The Anatomical Record,* 295 (2012), 1239 – 1251.

Sjøvold 1990
T. Sjøvold, Estimation of stature from long bones utilizing the line of organic correlation. *Journal of Human Evolution,* 5/5 (1990), 431–447.

Stavilă – Craiovan 2020
A. Stavilă, B. A. Craiovan, Sarmatian graves discovered within the archaeological site of Moşniţa Veche –" Dealu Sălaş" (Timiş County, Romania). *Banatica,* 30 (2020), 297–312.

Stuart-MacAdam 1992
P. Stuart-MacAdam, Porotic Hyperostosis: A New Perspective. *American Journal of Physical Anthropology,* 87 (1992), 39 – 47.

Tomaszewska *et alii* 2012
A. Tomaszewska, B. Kwiatkowska, R. Jankauskas, The localization of the supraorbital notch or foramen is crucial for headache ans supraorbital neuralgia avoiding and treatment. *The Anatomical Record,* 295 (2012), 1484 – 1503.

Tood 1921
T. W. Tood, Age changes in the pubic bone. *American Journal of Physical Anthropology,* 1/4 (1921), 1–70.

Ubelaker – Pap 2009
D. H. Ubelaker, I. Pap, Skeletal evidence for morbidity and mortality in Copper Age samples from Northeastern Hungary. *International Journal of Osteoarchaeology,* 19 (2009), 23 –35.

Vasile 2019
G. Vasile, Analiza antropologică a scheletelor eneolitice din necropola aşezării eponime de la Gumelniţa (jud. Călăraş, România). *Revista de Arheologie, Antropologie şi Studii Interdisciplinare,* 1 (2019), 43 –57.

Vyas *et alii* 2013
K. Vyas, V. Patel, A. Joshi, B. Shroff, An osseous study of non-metric variation of the neck of the femur. *International Journal of Research in Medicine,* 2/1 (2013), 98 –102.

White – Folkens 2005
T. D. White, P. A. Folkens, *The human bone manual*, Amsterdam (2005).

Zoffmann 2000
Z. K. Zoffmann, Anthropological sketch of the prehistoric population of the Carpathian basin. *Acta Biologica Szegediensis,* 44/1–4 (2000), 75 –79.

Table 1. The summary of the anthropological findings for the studied samples.

Grave	Surface preservation (grade)	Completeness (%)	Taphonomic changes	Stature (cm)	Sex determination	Age at death	Position *in situ*
M3/1	0	partial	-	159,2 ± 4,32	probable ♂	30 – 35	contracted – right
M3/2	1	partial	erosion	161,1 ± 4,73	Probable ♀	40 – 45	supine
M5	1	complete	erosion animal gnawing green color	162,5 ± 4,73	Probable ♀	40 – 50	contracted – right
M7/1	1	partial	erosion	167,1 ± 4,69	probable ♂	40 – 45	contracted – right
M7/2	1	complete	erosion	163,4 ± 4,81	♂	40 – 50	contracted – right
M7/3	0	complete	-	159,2 ± 4,69	ambiguous	20 – 29	contracted – right

Table 2. The list of epigenetic traits, where: L = left; R = right; A = absent feature; P = present; C = complete; NR = not recordable; L = lateral; M = medial; Ct. = central and X = missing bone.

Nonmetric traits		**M3, ind. 1**		**M3, ind. 2**		**M5**		**M7, ind. 1**		**M7, ind. 2**		**M7, ind. 3**	
L		**R**	**L**	**R**	**L**	**R**	**L**	**R**	**L**	**R**	**L**	**R**	
1	Supraorbital structures	P	P	P	P	P	P	P	P	P	P	X	P
2	Infraorbital suture	X	X	X	X	X	P, C	X	X	X	X	X	X
3	Zygomatico-facial foramina	A	X	X	X	1	1	A	X	A	X	X	A
4	Parietal foramen	1	1	1	1	X	X	1	X	A	A	A	A
5	Sutural bones	A		A		X		P – 2		A		A	
6	Mastoid foramen	X	X	X	X	A	A	P	A	A	A	P	NR
7	Mental foramen number	1	1	1	1	1	1	1	1	1	1	X	1
8	Squatting facets on distal tibia	X	X	X	X	M	M	X	X	X	X	M+L	M+L
9	Talus – trochlerar extension	M	M	X	X	M	M	X	X	X	X	X	L+M+Ct.
10	Talus – calcaneal articular surfaces	B2	B2	X	X	B2	B2	X	X	X	X	X	B2
11	Vastus notch	X	X	X	X	P	X	X	X	P	P	P	X
12	Calcaneus articular surface	A2	A2	X	X	X	X	X	X	X	X	A2	A2
13	Clavicle – rhomboid fossae	X	X	X	X	X	X	X	X	X	X	P	P
14	Petrosquamousus suture	X	X	X	X	X	X	P	P	X	X	X	X
15	Femur plaque	X	X	X	X	X	X	X	X	P	A	X	X

Table 3. The entheses scoring, where: L = left; R = right; X = missing bone; NR = not recordable; 1a = extremely low degree; 1b = low degree; 1c = medium degree; 2 = high degree and 3 = very high degree.

ENTHESIS	**M3, ind. 1**		**M3, ind. 2**		**M5**		**M7, ind. 1**		**M7, ind. 2**		**M7, ind. 3**	
	L	**R**	**L**	**R**	**L**	**R**	**L**	**R**	**L**	**R**	**L**	**R**
Scapula – m. *triceps brachii*	X	X	X	X	X	2	X	1c	1c	1b	1b	1b
Clavicle – *costoclavicular lig.*	X	X	1b	X	1a	NR	1a	1a	1b	1b	X	X
Clavicle – *conoid lig.*	X	X	1a	X	X	1b	2	1c	X	1c	1c	X
Clavicle – *trapezoid lig.*	X	X	1b	X	X	1c	X	1c	X	X	X	X
Clavicle – m. *pectoralis major*	1c	X	NR	X	X	2	1b	1b	3	2	1b	1c
Clavicle – m. *deltoideus*	1c	X	1a	X	X	1b	1a	1a	1c	X	1a	X
Humerus – m. *pectoralis major*	NR	NR	X	X	2	2	1b	1b	1b	1b	1b	1c
Humerus – m. *lat.dorsii/teres major*	NR	NR	X	X	1b	1b	1b	1b	1b	1b	NR	1c
Humerus – m. *deltoideus*	NR	NR	X	X	2	2	1b	1b	NR	1b	1c	2
Humerus – m. *brachioradialis*	NR	NR	X	X	1b	1c	2	2	2	2	2	2
Radius – m. *biceps brachii*	1b	1b	X	1b	1b	1b	1b	1b	1b	NR	2	1c
Radius – m. *pronator teres*	1a	1a	X	1a	2	1c	1b	1b	X	1c	1a	1a
Radius – *interosseous membrane*	1a	1a	X	1a	2	1b	1a	NR	1b	1b	1b	1b
Ulna – m. *triceps brachii*	X	1c	1c	1c	X	1c	X	1c	1c	1c	NR	1c
Ulna – m. *brachialis*	X	2	1b	1c	X	2	1b	1b	1c	1b	1a	1c
Ulna – m. *supinator*	X	1c	1c	1c	X	1c	1c	1c	1c	1c	1a	1a
Femur – m. *gluteus maximus*	1a	1a	1c	1c	2	2	X	1c	1c	1c	1c	1c
Femur – m. *iliopsoas*	1b	1b	1b	NR	X	1c	X	1b	1b	1b	2	1c
Femur – m. *vastus medialis*	1b	1b	1b	1c	X	2	X	1b	1b	1b	1a	1a
Patella – *quadriceps tendon*	1c	X	X	X	2	X	X	1b	1c	1c	X	1c
Tibia – *quadriceps tendon*	X	1c	X	X	X	X	X	1c	1c	1c	X	X
Tibia – m. *soleus*	X	2	X	X	X	X	X	X	1b	1c	X	X
Calcaneus – *Achilles tendon*	1c	1c	X	X	3	NR	X	X	X	X	2	2