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Cuprins

STUDII // MATERIALE // NOTE

Beneath the surface: Uncovering the social and biological significance of contemporary multiple burials in a Mediaeval sample from Wallachia

Franceska Știrbu[1], Gabriel Vasile[2]*

Abstract. Between 2020 and 2021, the Institute of Archaeology "Vasile Pârvan" from Bucharest excavated a large Mediaeval cemetery, as part of a preventive archaeological research, around the town of Buftea *La Cârna/Mănești* (Ilfov County, Romania), with more than 1000 graves, dated, so far, based on the analysed grave goods, between the 14th and the 17th centuries. The main focus of the research were the Mediaeval church and cemetery. This study presents results regarding less common funerary contexts, to which we have referred to, at least for this stage of the research, as double burials. This term defines funerary contexts in which two deceased individuals are simultaneously buried in the same grave. To date, 10 such situations have been identified. In terms of sex and age distribution, there were 16 subadults (one infant, eight children, and seven adolescents, of whom four were probably male and one was probably female) and five adults (four young adults and one old adult, of whom one was probably male, one male, two females, and one was indeterminate). The increased mortality among subadults has been particularly highlighted by three non-specific indicators of physiological stress: dental enamel hypoplasia, *cribra orbitalia*, and osteoperiostitis. All of these manifestations are linked to numerous aetiological factors, both hereditary and acquired, which are not yet fully understood. The absence of unhealed traumas, which suggests the possible existence of wars or massacres during this period, and the presence of a large number of infectious changes due to micronutrient deficiencies, led us to believe that the Early Mediaeval population of Buftea was affected either by epidemics (caused by bacteria and viruses) or famine, both of which are catastrophic factors likely to affect, first, the most vulnerable members of the population (the very young and the very old). The recording of the pathological manifestations observed in

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the analysed sample provides significant information regarding the socio-economic conditions and the way of life specific to the population of Wallachia in the Middle Ages.
Keywords: Wallachia, Middle Ages, cemetery, contemporary multiple burials, bioarchaeology.

Dincolo de suprafață: descifrarea semnificațiilor sociale și biologice ale înhumărilor contemporane multiple dintr-un eșantion din perioadă medievală din Țara Românească. În perioada 2020-2021, Institutul de Arheologie „Vasile Pârvan" din București, în cadrul unui proiect de cercetare arheologică preventivă, a investigat un mare cimitir medieval, cu peste 1000 de morminte, datate, până în prezent, pe baza inventarului funerar analizat, în intervalul secolelor XIV-XVII. Cercetarea a vizat, în principal, biserica și cimitirul medieval. Studiul de față prezintă rezultatele referitoare la unele contexte funerare mai puțin obișnuite, pe care le-am denumit, cel puțin pentru această etapă a cercetării, înmormântări duble. Acest termen definește contextele funerare în care două persoane decedate au fost îngropate simultan în același mormânt. Până în prezent, au fost identificate 10 astfel de situații. În ceea ce privește distribuția pe sexe și vârste, au fost identificați 16 subadulți (un sugar, opt copii și șapte adolescenți, dintre care patru probabil de sex masculin și unul probabil de sex feminin) și cinci adulți (patru adulți tineri și unul bătrân, dintre care unul probabil de sex masculin, un bărbat, două femei și un individ nedeterminabil). Mortalitatea crescută în rândul subadulților a fost evidențiată îndeosebi prin intermediul a trei indicatori nespecifici ai stresului fiziologic: hipoplazia smalțului dentar, *cribra orbitalia* și osteoperiostita. Toate aceste manifestări sunt legate de numeroși factori etiologici, atât ereditari, cât și dobândiți, care nu sunt încă deplin înțeleși. Absența traumatismelor nevindecate, care ne duce cu gândul la războaie sau masacre în această perioadă și prezența în număr ridicat a modificărilor infecțioase provocate de carențele de micronutrienți, ne fac să credem că populația medievală timpurie de la Buftea a fost afectată fie de epidemii (cauzate de bacterii și virusuri), fie de foamete, factori catastrofici susceptibili să afecteze, în primul rând, membrii cei mai vulnerabili din populație (cei foarte tineri și cei foarte bătrâni). Consemnarea manifestărilor patologice observate în eșantionul analizat oferă informații semnificative cu privire la condițiile socio-economice și la modul de viață specific populației din Muntenia evului mediu.
Cuvinte cheie: Țara Românească, evul mediu, cimitir, înmormântări multiple contemporane, bioarheologie.

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Introduction

The excavations carried out during 2020-2021 at Mediaeval burial grounds in Buftea *La Cârna/Mănești* yielded a remarkable discovery: the presence of a relatively rare burial practice in Mediaeval Europe, known as contemporary multiple burials. Similar cases have been reported in other regions, including, among others, Ireland, England, Finland, and Poland. Within one of the two burial grounds dating back to the 14th-15th centuries, ten contemporary double burials were identified in a specific location. Archaeological analyses of these burials are currently underway and will be published separately[3].

[3] Information provided by Alexandru Morintz, the coordinator of the excavation undertaken in 2020-2021.

The present paper adopts a physical anthropological approach, focusing on the examination of human remains retrieved from these unique burials. This study aims to shed light on the biological and social significance of the double burial practice in this specific mediaeval context. A double burial, also known as contemporary multiple burial, refers to a burial practice where two individuals are interred in close proximity or within the same burial site at the same time. In such cases, the two individuals are buried together and share the same grave, burial pit, tomb, or funerary context. Double burials can take various forms depending on culture, time period, and geographical location. The specific arrangements and orientations of bodies can carry cultural, religious, or symbolic meanings, which may vary across different societies and historical periods.

The analysis of skeletal remains will offer valuable insights into individuals' biological profiles, health status, and potential kinship relationships, providing a more comprehensive understanding of this intriguing burial custom and its implications within Mediaeval European societies.

Methodology

The anthropological analysis was carried out on a sample of 21 individuals originating from 10 double graves. One of the graves (Cpl. 119) contained skeletal remains from three individuals. Thus, in addition to double burials, we are also dealing with one reburial. Although the anthropological study has been completely carried out, in this paper we have chosen to present only some of the characteristics identified in the individuals analysed, among which, more appropriate, at this stage of the cemetery research, are the determination of the anthropological sex, the estimation of the age-at-death, the skeletal statures, and the identification of dental and bone pathologies. Aspects such as metric, non-metric, and morphoscopic traits, or the recording of the degree of development of enthesophytes, will be the object of further research when other skeletons from the cemetery are added to the analysed sample. Thus, the results will be more statistically relevant. In addition, the results of the anthropological study are briefly presented in the form of a catalogue for each individual, together with photographs showing the main pathological changes in the individuals from Buftea.

The anthropological analysis consisted of a preliminary phase in which the sediment was washed off the bones, and the human skeletal remains were separated from faunal remains or other materials, such as ceramics, adobe, or lithic materials. Additionally, bone restoration was performed using a polyvinyl acetate-based adhesive to determine the minimum number of individuals (MNI), take measurements, highlight certain taphonomic, morphological, and pathological aspects, and evaluate some indicators of biomechanical stress.

The actual analysis of the skeletal material followed. The first step was to identify the bones and teeth and determine their laterality/symmetry (White, Black, Folkens 2012). The next step was to record the degree of representation and preservation for each individual. Depending on the preserved skeletal inventory, individuals were classified into three categories: approximately complete, partially represented, and poorly represented. This process was accomplished by assigning corresponding numbers based on the percentage of preservation of a bone, as follows: 0 = bone not present for observation; 1 = present < 25%; 2 = present 26-50%; 3 = present 51-75%; 4 = present > 76%. In the case of teeth, the inventory considered their presence (unerupted; in occlusion), absence (postmortem; antemortem; congenital; not associated with alveolar bone), or degree of destruction (Nikita, Karligkioti 2019, p. 88-91).

The determination of the anthropological sex of the individuals was performed only in the case of adult and adolescent subjects who reached the age of 15.0 years, by observing the distinct morphological characteristics between the two sexes, primarily located in the pelvis and skull (Buikstra, Ubelaker 1994, p. 16-21). Additionally, the investigation included an examination of the overall appearance of the skeleton, focusing on a series of discriminatory features such as the general aspect of the skull, the degree of development of bone robusticity, and the size of the epiphyses (Ferembach, Schwidetsky, Stloukal 1980, p. 517-527). Furthermore, to ensure the highest accuracy in sex determination, a set of measurements of the coxal bones was also taken with the help of the DSP, V2 method (Brůžek *et alii* 2017).

The estimation of the age-at-death of the individuals in the analysed sample was performed using several methods, depending on the age group.

Thus, for subadults, with the exception of adolescents, age estimation was based on the sequence of formation, eruption, and development of teeth (Ubelaker 1978, p. 47), and on regression equations of the diaphyseal length of the long bones of the limbs (Facchini, Veschi 2004, p. 93). In the case of children (up to 12 years of age: I = 0-3.0 years; C = 3.0-12.0 years), the sequence of formation, eruption and development of teeth has always been given priority for age-at-death estimation, since dentition, in this age range, shows low sexual dimorphism and low intra- and interpopulation variability. In addition, as mentioned above, we also calculated age based on long bone diaphyses, but this was only secondary to the dentition method.

For adolescents (Ad = 12-20 years), the estimation of age-at-death was made based on the fusion of the primary and secondary ossification centres (cranial and postcranial) (Nikita, Karligkioti 2019, p. 31-34). In the case of adolescents, we considered the union of ossification centres as the main method, although

we also used the method concerning the sequence of formation, eruption, and development of teeth (Ubelaker 1978, p. 47).

Considering that the sample from Buftea also contains some individuals at the border between the two age groups, we were faced with using two methods with correspondences at both: the timing of the epiphyseal union concerning the medial aspect of the clavicle (Shirley, Jantz 2010, p. 573-574, 578) and the fusion time of the iliac crest ossification centre (Nikita, Karligkioti 2019, p. 33).

Regarding the age-at-death of the adult individuals (over 20.0 years: YA = 20.0-35.0 years; MA = 35.0-50.0 years; OA = over 50.0 years), estimation was conducted using multiple methods, given the wide age ranges within this parameter during adulthood. Therefore, to obtain an age-at-death as close as possible to the chronological one, the degree of skeletal ageing was assessed using eight methods. Thus, the following were observed and interpreted: the timing of the epiphyseal union concerning the medial aspect of the clavicle (Shirley, Jantz 2010, p. 573-574, 578), the fusion time of the iliac crest ossification centre (Nikita, Karligkioti 2019, p. 33), the degree of fusion of the first two sacral vertebrae (Ríos *et alii* 2008, p. 111.e3-111.e4), the degenerative changes in the pubic symphyseal facets (Brooks, Suchey 1990), the morphological changes in the auricular surfaces (Lovejoy *et alii* 1985), the degree of obliteration of the cranial vault sutures in exocranial aspect (Meindl, Lovejoy 1985), the morphological changes in the sternal rib ends (Işcan *et alii* 1985; 1984), and the morphological changes of the geometry of the articular facet and the surface texture of the costal tubercle of the first pair of ribs (DiGangi *et alii* 2009). Of these eight methods, the first three (the timing of the epiphyseal union concerning the medial aspect of the clavicle, the fusion time of the iliac crest ossification centre, and the degree of fusion of the S1-S2 sacral vertebrae) served as indicators that the analysed individual was in the incipient stage of the young adult age category. Therefore, since they are more accurate than the remaining five, for they are based on timings of the epiphyseal unions (an aspect related to certain ages without giving in to the subjectivity of the researcher), when observable, the individual's age-at-death was established solely by using these three methods. To work with clear numbers rather than ranges, the age-at-death was estimated by averaging the values obtained using each method.

Skeletal stature was calculated using regression equations, based on the maximum dimensions of the long bones of the limbs, for both children (Visser 1998, p. 415) – Martin's numbers H1, F1, T1a and adults (Ruff *et alii* 2012) – Martin's numbers H1, R1, F1, T1a. For the latter, the values of the skeletal statures were categorised (Martin 1928, p. 246), taking into account the individuals' anthropological sex.

Our study also encompassed the identification of pathological and traumatic manifestations (dental and osteological) (Hillson 2005; Ortner 2003; Mann, Hunt 2005), as well as the observation of taphonomic aspects (Nikita, Karligkioti 2019, p. 70-73; Fernández-Jalvo, Andrews 2016). Regarding the state of preservation of the skeletons, a model with three degrees of general bone surface assessment was used: good, moderate, and poorly preserved condition (Connell 2008, p. 9).

Anthropological catalogue of the analysed sample

The results of the anthropological analysis have been synthesised in the following catalogue:

Cpl. 117 (MNI = 2)

117A – skeletal inventory: approximately complete; preservation: grade 1 (good); taphonomy: greenish staining (three ribs, one proximal hand phalanx); anthropological sex: indeterminable; age-at-death: 12.0 years (12.0 years – dentition; 10.4-12.3 years – long bones' diaphyses); age category: Ad; skeletal stature: 138.4 cm (136.6-140.2 cm); pathological conditions: 1. oral pathologies (a. dental calculus: LI^1 – lingual; LM^1 – buccal; RI^1 – lingual; LI_1 – labial, lingual; LM_1 – lingual; RI_1–RI_2 – labial, mesial; RM_1 – lingual; b. dental enamel hypoplasia: LI^1; $LC^{\#}$; RI^1; $RC^{\#}$; LI_1; $LC_{\#}$; RI_1–$RC_{\#}$); 2. metabolic diseases (a. *cribra orbitalia*: active lesions – orbital roofs, **Fig. 1**; b. *cribra cranii*: parietals; occipital).

Fig. 1. *Cribra orbitalia*: active porotic lesions, bilateral (frontal, inferior).
Fig. 1. *Cribra orbitalia*: leziuni porotice active, bilateral (frontal, inferior).

117B – skeletal inventory: approximately complete; preservation: grade 1 (good); taphonomy: greenish staining (two proximal hand phalanges); anthropological sex: indeterminable; age-at-death: 10.0-12.0 years (10.0-12.0 years – dentition; 10.4-11.6 years – long bones' diaphyses); age category: C; skeletal stature: 137.8 cm

(135.3-140.3 cm); pathological conditions: 1. oral pathologies (a. dental calculus: LI^1-$C^{\#}$ – labial; LP^1, LM^1 – buccal, **Fig. 2**; $RC^{\#}$ – buccal; LI_1-LP_1 – labial/buccal; RI_1-RI_2 – labial, lingual); 2. metabolic diseases (a. *cribra orbitalia*: healing lesions – left orbital roof; b. *cribra cranii*: parietal); 3. infectious diseases (periostitis: active reactions – parietals, **Fig. 3**; alveolar processes of $LC^{\#}$-LM^2, **Fig. 2**; alveolar processes of RM^2-RM^3; temporal squama; mastoid processes; greater wings of the sphenoid; femoral and tibial diaphyses, possible reactions).

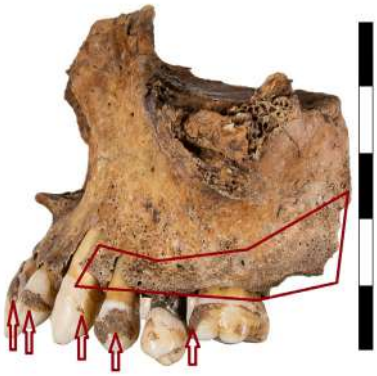

Fig. 2. Supragingival dental calculus (arrows) and active periostitis (irregular polygon) on the alveolar processes of the upper teeth (left maxilla, lateral).
Fig. 2. Tartru dentar supragingival (săgeți) și periostită activă (poligon neregulat) pe procesele alveolare ale dinților superiori (maxilar stâng, lateral).

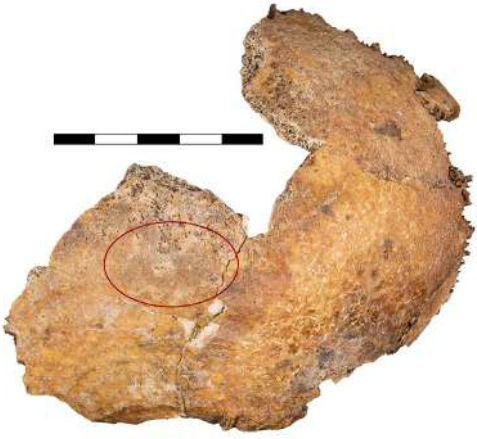

Fig. 3. Periostitis: active parietal bone reaction (left parietal, lateral).
Fig. 3. Periostită: reacție osoasă activă pe parietal (parietal stâng, lateral).

Cpl. 119 (MNI = 3)

119A – skeletal inventory: approximately complete; preservation: grade 4 (poor); taphonomy: blackish pigmentation (throughout the skeleton, especially on the skull and on the mandibular premolars and molars); anthropological sex: probably male (coxae; skull); age-at-death: 14.0-16.0 years (14.0-16.0 years – union of ossification centres); age category: Ad; skeletal stature: – ; pathological conditions: 1. oral pathologies (a. dental calculus: LI_1 – labial, lingual; LI_2 – lingual, mesial; RI_1-RI_2 – labial, lingual, mesial; b. caries: RM^2 – one distal; LM_1 – one buccal; RM_2 – one buccal); 2. metabolic diseases (*cribra orbitalia*: healed lesions – left orbital roof); 3. infectious diseases (*caries sicca* lesions: frontal, **Fig. 4**; left parietal; mastoid processes).

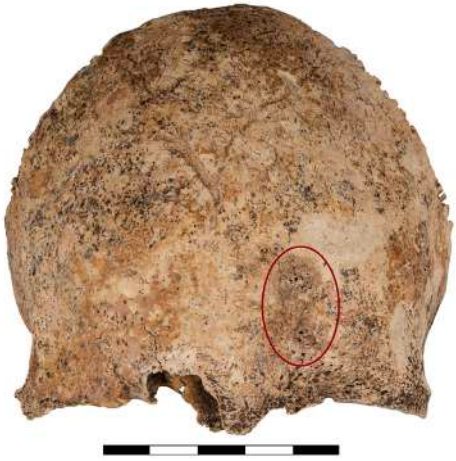

Fig. 4. *Caries sicca*: erosive lesions on the frontal bone (frontal, anterior).
Fig. 4. *Caries sicca*: leziuni erozive pe osul frontal (frontal, anterior).

119B – skeletal inventory: partially represented; preservation: grade 4 (poor); taphonomy: – ; anthropological sex: indeterminable; age-at-death: 6.0 years (6.0 years – dentition; 5.3 years – long bones' diaphyses); age category: C; skeletal stature: 97.5 cm; pathological conditions: 1. infectious diseases (*caries sicca* lesions: right parietal).

119C – skeletal inventory: partially represented; preservation: grade 3 (moderate); taphonomy: – ; anthropological sex: indeterminable; age-at-death: 6.0 years (6.0 years – dentition); age category: C; skeletal stature: – ; pathological conditions: 1. oral pathologies (hyperdontia: one additional left maxillary deciduous incisor, **Fig. 5**); 2. metabolic diseases (*cribra orbitalia*: possible active lesions – left orbital roof).

Fig. 5. Hyperdontia: one additional left upper deciduous incisor, unilateral (left maxilla, inferior).
Fig. 5. Hiperdonție: un incisiv superior stâng decidual suplimentar, unilateral (maxilar stâng, inferior).

Fig. 6. *Cribra cranii*: porotic active lesions on the parietal bone (left parietal, mid-lambdoid area).
Fig. 6. *Cribra cranii*: leziuni porotice active pe osul parietal (parietal stâng, zona medio-lambdoidă).

Cpl. 120 (MNI = 2)

120A – skeletal inventory: approximately complete; preservation: grade 3 (moderate); taphonomy: greenish staining (two proximal hand phalanges); anthropological sex: probably female (coxae); age-at-death: 12.0-15.0 years (12.0-15.0 years – union of ossification centres; 12.0-15.0 years – dentition); age category: Ad; skeletal stature: – ; pathological conditions: 1. oral pathologies (a. dental calculus: LI^1-LI^2 – labial, lingual; LP^1 – buccal; RP^1 – buccal; RM^1 – buccal, lingual; LI_1–$LC_{\#}$ – labial, lingual; LP_2-LM_1 – lingual; RI_1–RP_1 – labial/buccal, lingual; RP_2 – mesial; RM_1-RM_2 – buccal; b. caries: LM_1 – one occlusal; c. dental

enamel hypoplasia: LI^1-LI^2; RI^1; $RC^{\#}$; RI_1; $RC_{\#}$); 2. metabolic diseases (*cribra cranii*: parietals, **Fig. 6**); 3. infectious diseases (periostitis: active reactions – femoral and tibial diaphyses); 4. circulatory diseases (arachnoid granulation: multiple, frontal).

120B – skeletal inventory: approximately complete; preservation: grade 3 (moderate); taphonomy: – ; anthropological sex: indeterminable; age-at-death: 2.0-3.0 years (2.0-3.0 years – dentition); age category: I; skeletal stature: – ; pathological conditions: 1. metabolic diseases (*cribra orbitalia*: active lesions – left orbital roof); 2. infectious diseases (periostitis: active reactions – maxillary hard palate; right temporal squama; right mastoid process; greater wing of the sphenoid; left mandibular ramus; alveolar process of Lm_2).

Cpl. 556 (MNI = 2)

556A – skeletal inventory: approximately complete; preservation: grade 3 (moderate); taphonomy: greenish staining (one rib); anthropological sex: indeterminable; age-at-death: 10.0 years (10.0 years – dentition; 11.2-11.6 years – long bones' diaphyses); age category: C; skeletal stature: – ; pathological conditions: 1. oral pathologies (a. dental calculus: LI^1 – distal; RI^1 – distal; RI^2 – labial; RM^1 – buccal, lingual, mesial, distal; Lm_2 – buccal, lingual; LI_1-LI_2 – labial; LM_1 – lingual; RI_1-RI_2 – labial; RM_1 – lingual; b. dental enamel hypoplasia: LI^1-LI^2; RI^1-$RC^{\#}$; $LC_{\#}$; $RC_{\#}$); 2. metabolic diseases (*cribra orbitalia*: active lesions – orbital roofs); 3. infectious diseases (a. periostitis: active reactions – left parietal, infectious morphology or postmortem degradation?; alveolar processes of LM^1-LM^3; alveolar processes of RM^2-RM^3; left scapular spine, **Fig. 7**; b. *caries sicca* lesions: left parietal, infectious morphology or postmortem degradation?).

Fig. 7. Periostitis: abnormal porosity on the scapular spine (left scapula, posterior).
Fig. 7. Periostită: porozitate anormală la nivelul spinei scapulare (scapulă stângă, posterior).

556B – skeletal inventory: approximately complete; preservation: grade 4 (poor); taphonomy: greenish staining (two proximal hand phalanges); anthropological sex: female (coxae; skull); age-at-death: 20.0 years (17.0-23.0 years – iliac crest); age category: YA; skeletal stature: 156.1 cm, tall-medium; pathological conditions: 1. oral pathologies (a. dental calculus: LM^1 – buccal; LI_1 – distal; LI_2 – mesial; LM_1 – lingual; RI_1 – distal; RI_2 – mesial; RM_1 – lingual; b. caries: LM_1 – one distal; LM_2 – one mesial; c. dental enamel hypoplasia: LI_1-$LC_{\#}$; RI_1-$RC_{\#}$; d. congenital absences: LM_3; RM_3); 2. metabolic diseases (*cribra orbitalia*: healed lesions – orbital roofs); 3. joint diseases (degenerative joint disease: porous surface with irregular contour – right heel joint).

Cpl. 690 (MNI = 2)

690A – skeletal inventory: approximately complete; preservation: grade 3 (moderate); taphonomy: greenish staining (radii; one proximal hand phalanx); anthropological sex: probably male (coxae; skull; DSP V2 = 0.909); age-at-death: 22.0 years (18.4 years – clavicle; 25.6 years – S1-S2 vertebrae; 23.4 years – pubic symphyseal facets; 17.3 years – auricular surfaces; 17.3 years – sternal rib ends); age category: YA; skeletal stature: 160.3 cm (154.2-166.4 cm), small-medium; pathological conditions: 1. oral pathologies (a. dental calculus: LI^2-LM^2 – labial/buccal; RI^1-$RC^{\#}$ – labial; LI_1-LI_2 – labial, lingual, mesial; RI_1-RI_2 – labial, lingual, mesial; b. caries: LM_1 – radicular remain; c. dental enamel hypoplasia: LI^2-$LC^{\#}$; RI^2-$RC^{\#}$; LI_2-$LC_{\#}$; RI_2-$RC_{\#}$; d. congenital absences: RM_3); 2. joint diseases (a. degenerative joint disease: porous surface with irregular contour – one lumbar vertebra; osteophytes: one lumbar vertebra, **Fig. 8**; b. intervertebral hernia: Schmorl's nodes – one lumbar vertebra; c. compression fracture: one lumbar vertebra, **Fig. 8**).

Fig. 8. Spinal osteophytes (arrow) and vertebral compression fracture (ellipse) (lumbar vertebra, superior).
Fig. 8. Osteofite (săgeată) și fractură de compresie vertebrală (elipsă) (vertebră lombară, superior).

690B – skeletal inventory: approximately complete; preservation: grade 3 (moderate); taphonomy: greenish staining (three ribs; one proximal hand phalanx); anthropological sex: probably male (coxae; skull); age-at-death: 12.0-17.0 years (12.0-17.0 years – union of ossification centres; 12.0-15.0 years – dentition); age category: Ad; skeletal stature: – ; pathological conditions: 1. oral pathologies (a. caries: LM_1 – one occlusal and lingual; LM_2 – one mesial, one buccal; b. possible mulberry molars: LM^3; RM^3 – **Fig. 9**; LM_2-LM_3; RM_1; RM_3); 2. infectious diseases (a. periostitis: active reactions – tibial diaphyses; b. *caries sicca* lesions: frontal).

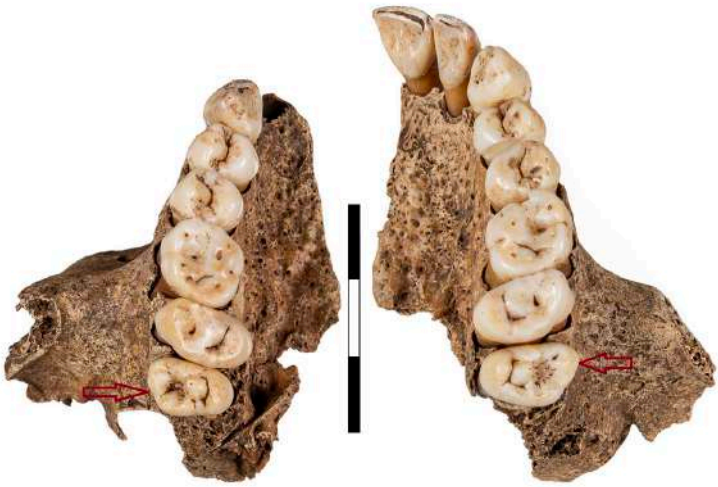

Fig. 9. Possible mulberry third molars (maxillae, inferior).
Fig. 9. Molarii de minte, posibil molari mulberry (maxile, inferior).

Cpl. 702 (MNI = 2)

702A – skeletal inventory: approximately complete; preservation: grade 2 (good); taphonomy: greenish staining (mandible; first ribs; right radius; three thoracic vertebrae); anthropological sex: indeterminable (coxae; skull; DSP V2 = 0.555); age-at-death: 53.1 years (59.9 years – auricular surfaces; 48.8 years – cranial vault sutures; 50.7 years – sternal rib ends); age category: OA; skeletal stature: 168.5 cm (165.2–171.8 cm), very tall; pathological conditions: 1. oral pathologies (a. dental calculus: $LC^{\#}$-LP^2 – labial/buccal, lingual; RI^1-RI^2 – labial; RM^1-RM^3 – whole surface of the crown; LP_1 – whole surface of the crown; LM_3 – whole surface of the crown; b. caries: $RC^{\#}$ – one occlusal; RP^2 – one mesial, one distal; LM_3 – one occlusal; RM_3 – one buccal, one mesial; c. dental abscess: RP^1; $LC_{\#}$-LP_1; d. antemortem tooth loss: LP_2-LM_2; RP_2-RM_2); 2. joint diseases (a. degenerative joint disease: porous

surface with irregular contour – right distal radial epiphysis; hamate; capitate; osteophytes – one lumbar vertebra; b. intervertebral hernia: Schmorl's nodes – one thoracic vertebra; c. compression fracture: one lumbar vertebra); 3. traumatic injuries (healed fracture: dislocation of the right wrist, **Fig. 10**); 4. circulatory diseases: arachnoid granulation – multiple, parietals).

Fig. 10. Traumatic injuries on the right wrist: ulnar distal diaphysis (star) and radial distal epyphisis (rectangle) (ulna, anterior, up; radius, medial, down).
Fig. 10. Leziuni traumatice la nivelul încheieturii mâinii drepte: diafiza distală ulnară (stea) și epifiza distală radială (dreptunghi) (ulnă, anterior, sus; radius, medial, jos).

702B – skeletal inventory: approximately complete; preservation: grade 2 (good); taphonomy: – ; anthropological sex: indeterminable; age-at-death: 7.0 years (7.0 years – dentition; 7.1-8.4 years – long bones' diaphyses); age category: C; skeletal stature: 110.5 cm (109.0-112.0 cm); pathological conditions: 1. oral pathologies (a. dental calculus: Lm^2 – buccal); 2. metabolic diseases (*cribra orbitalia*: active lesions – orbital roofs).

Cpl. 775 (MNI = 2)

775A – skeletal inventory: approximately complete; preservation: grade 2 (good); taphonomy: blackish pigmentation (throughout the skeleton); anthropological sex: indeterminable; age-at-death: 7.0-8.0 years (7.0-8.0 years – dentition; 7.1-7.2 years – long bones' diaphyses); age category: C; skeletal stature: 109.9 cm (108.7-111.2 cm); pathological conditions: 1. oral pathologies (a. dental calculus: Lm^1-Lm^2 – buccal; Rm^2 – buccal; RM^1 – mesial; LI_1 – labial; RI_1 – labial; b. caries: Lm_1 – one distal; Lm_2 – one mesial; Rm_2 – one mesial); 2. metabolic diseases (*cribra orbitalia*: active lesions – orbital roofs); 3. infectious diseases (a. periostitis: active reactions – alveolar processes of LI^1; RI^1; LM^2; RM^2; RI_2; possible active reactions – hard palate of the maxilla; temporal squama; mastoid processes; b. *caries sicca* lesions: frontal); 4. traumatic injuries (trepanation: healed lesions – left parietal, **Fig. 11**).

Fig. 11. Trepanation: surgical intervention in the middle of the parietal bone (left parietal, lateral).
Fig. 11. Trepanație: intervenție chirurgicală la mijlocul osului parietal (parietal stâng, lateral).

775B – skeletal inventory: approximately complete; preservation: grade 2 (good); taphonomy: – ; anthropological sex: indeterminable; age-at-death: 8.0 years (8.0 years – dentition; 7.0-7.3 years – long bones' diaphyses); age category: C; skeletal stature: – ; pathological conditions: 1. oral pathologies (a. dental calculus: RM^1 – buccal, lingual; LI_1 – labial, lingual; RI^1-RI^2 – labial, lingual; Rm_2 – buccal, lingual; RM_1 – buccal, lingual; b. caries: Lm^1 – one distal; Lm^2 – one mesial, one distal; LM^1 – one mesial; Rm_1 – one mesial); 2. metabolic diseases (*cribra orbitalia*: healed lesions – left orbital roof); 3. circulatory diseases (arachnoid granulation: single, frontal).

Cpl. 795 (MNI = 2)

795A – skeletal inventory: approximately complete; preservation: grade 2 (good); taphonomy: greenish staining (three proximal hand phalanges); anthropological sex: female (coxae; skull; DSP V2 = 1.000); age-at-death: 23.9 years (22.6 years – sternal rib ends; 25.3 years – first ribs); age category: YA; skeletal stature: 149.7 cm (147.1-152.3 cm), small-medium; pathological conditions: 1. oral pathologies (a. dental calculus: LP^2-LM^2 – buccal; LM^3 – lingual; RP^2-RM^3 – buccal, lingual; LI_1-LP_2 – mesial, distal; LM_2 – buccal, lingual, distal; RI_1-RP_2 – mesial, distal; RM_1-RM_3 – buccal, lingual; b. caries: LM_1 – radicular remain, **Fig. 12**; c. dental abscess: LM_1; d. congenital absences: LM_3, **Fig. 12**); 2. metabolic diseases (*cribra orbitalia*: healed lesions – orbital roofs); 3. circulatory diseases (arachnoid granulation: multiple, frontal, **Fig. 13**).

Fig. 12. Congenital unilateral absence of LM_3 and radicular remain of LM_1 (arrow) (mandible, superior).
Fig. 12. Absența unilaterală congenitală a M_3 stâng și rest radicular din M_1 stâng (săgeată) (mandibulă, superior).

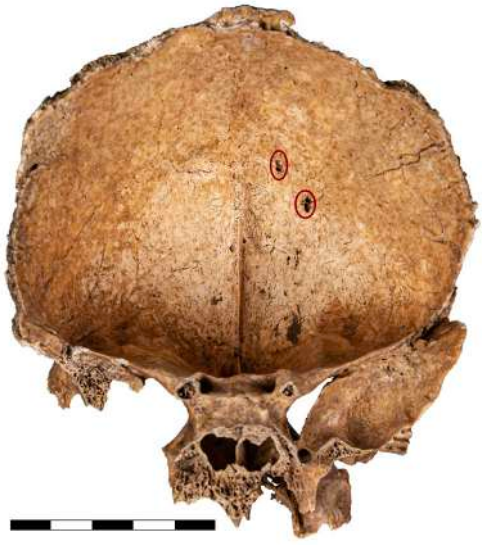

Fig. 13. Pacchionian depression: arachnoid foveolae located near the sagittal suture (frontal, posterior).
Fig. 13. Depresiuni Pacchioni: foveole arahnoide situate în apropierea suturii sagitale (frontal, posterior).

795B – skeletal inventory: approximately complete; preservation: grade 3 (moderate); taphonomy: violet staining (right orbital roof); anthropological sex: indeterminable; age-at-death: 12.0 years (12.0 years – dentition; 9.0-10.0 years – long bones' diaphyses); age category: Ad; skeletal stature: 125.8 cm (125.4-126.2 cm); pathological conditions: 1. oral pathologies (dental calculus: $LC^{\#}$-LM^{1} – labial/buccal; RP^{1}-RM^{1} – buccal; LI_{1}-$LC_{\#}$ – labial, lingual; LM_{1} – lingual; RI_{1}–RI_{2} – labial, lingual; RM_{1} – lingual); 2. metabolic diseases (*cribra orbitalia*: active lesions – orbital roofs); 3. infectious diseases (periostitis: active reactions – alveolar processes of M_{2}).

Cpl. 1164 (MNI = 2)

1164A – skeletal inventory: approximately complete; preservation: grade 2 (good); taphonomy: greenish staining (one proximal hand phalanx); anthropological sex: probably male (coxae; skull); age-at-death: 14.0-16.0 years (14.0-16.0 years – union of ossification centres; 15.0+ years – dentition); age category: Ad; skeletal stature: – ; pathological conditions: 1. oral pathologies (a. dental calculus: $LC^{\#}$-LM^{2} – labial/buccal; $RC^{\#}$-RM^{2} – labial/buccal; LI_{1}-$LC_{\#}$ – labial, lingual; LP_{2}-LM_{1} – lingual, mesial; RI_{1}-RP_{2} – labial/buccal, lingual; RM_{2} – mesial; b. dental enamel hypoplasia: $LC^{\#}$; $RC^{\#}$; $LC_{\#}$; $RC_{\#}$); 2. metabolic diseases (*cribra orbitalia*: healed lesions – orbital roofs); 3. infectious diseases (a. periostitis: active reactions – right parietal, infectious morphology or postmortem degradation?; left maxilla; alveolar processes of M^{3}; left zygomatic, **Fig. 14**; b. *caries sicca* lesions: right parietal, infectious morphology or postmortem degradation?); 4. circulatory diseases (arachnoid granulation: multiple, frontal).

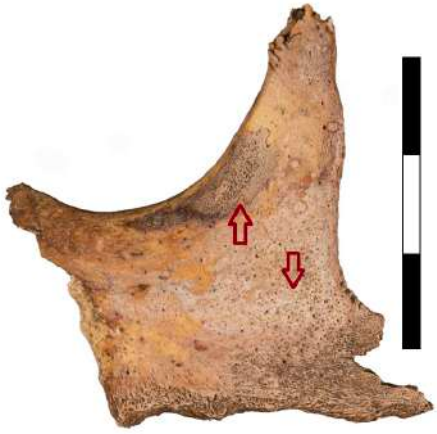

Fig. 14. Active periostitis: new bone formation on the zygomatic (left zygomatic, lateral).
Fig. 14. Periostită activă: formare de os nou pe zigomatic (zigomatic stâng, lateral).

1164B – skeletal inventory: poorly represented; preservation: grade 2 (good); taphonomy: – ; anthropological sex: indeterminable; age-at-death: 10.0 years (10.0 years – dentition; 10.0-11.0 years – long bones' diaphyses); age category: C; skeletal stature: 135.6 cm (134.1-137.2 cm); pathological conditions: 1. oral pathologies (a. dental calculus: $LC^{\#}$ – mesial; LP^{2} – buccal; LM^{1} – lingual, mesial, distal; RI^{2}-RP^{2} – labial/buccal; RM^{1} – labial, distal; LI_{1}-LP_{1} – labial/buccal, lingual; LM_{1} – lingual; RI_{1}-RI_{2} – labial, lingual; RP_{1} – buccal, lingual; RM_{1} – lingual; b. caries: RP^{1} – one mesial; c. dental enamel hypoplasia: LM^{2}, RM^{2}, **Fig. 15**); 2. infectious diseases (a. *caries sicca* lesions: right parietal, infectious morphology or postmortem degradation?; b. hypervascularization: three thoracic vertebrae; one lumbar vertebra; c. resorptive lesions: four thoracic vertebrae, **Fig. 16**).

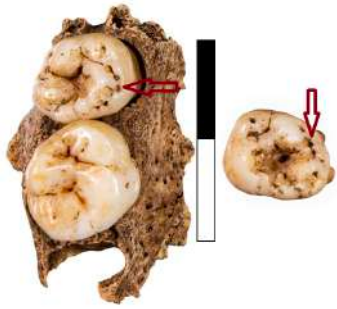

Fig. 15. Pitting enamel hypoplasia: small circular pinpricks on the occlusal secondary upper molars (maxilla, inferior).
Fig. 15. Hipoplazia punctiformă a smalțului dentar: mici înțepături circulare pe molarii superiori secundari, ocluzal (maxilar superior, inferior).

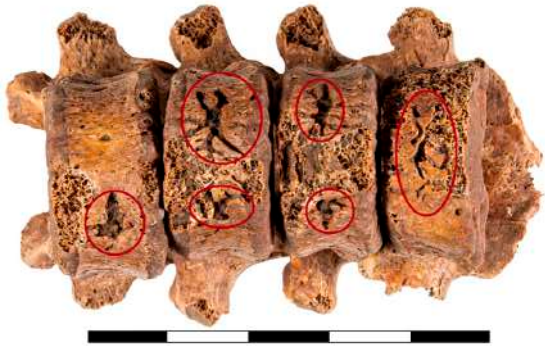

Fig. 16. Vertebral hypervascularisation: multiple, well-circumscribed osteolytic lesions on the vertebral bodies (thoracal vertebrae, anterior).
Fig. 16. Hipervascularizație vertebrală: multiple leziuni osteolitice, bine circumscrise, pe corpurile vertebrale (vertebre toracale, anterior).

Cpl. 1244 (MNI = 2)

1244A – skeletal inventory: poorly represented; preservation: grade 3 (moderate); taphonomy: greenish staining (one proximal hand phalanx); anthropological sex: probably male (coxae; skull); age-at-death: 16.0-20.0 years (16.0-20.0 years – union of ossification centres); age category: Ad; skeletal stature: – ; pathological conditions: 1. oral pathologies (a. dental calculus: $LC^{\#}$ – distal; LP^{1}-LM^{1} – buccal; LI_{2} – labial; b. dental enamel hypoplasia: LI^{2}-LM^{1}; $RC^{\#}$); 2. metabolic diseases (*cribra orbitalia*: healed lesions – left orbital roof); 3. infectious diseases (a. periostitis: active reactions – right tibial diaphysis; b. osteomyelitis: active reactions – right tibial diaphysis, **Fig. 17**).

1244B – skeletal inventory: approximately complete; preservation: grade 3 (moderate); taphonomy: greenish staining (right radius; ulnae; two left carpal bones; one right carpal bone; five left metacarpal bones; one right metacarpal bone; four proximal hand phalanges; four lumbar vertebral bodies; ilia); anthropological sex: male (coxae; skull; DSP V2 = 0.964); age-at-death: 24.6 years (24.6 years – clavicle; 21.9 years – sternal rib ends; 15.1 years – first ribs); age category: YA; skeletal stature: 169.8 cm (167.7-171.9 cm), tall-medium; pathological conditions: 1. oral pathologies (a. dental calculus: LI^{1} – mesial; $LC^{\#}$-LM^{1} – labial/buccal, lingual; $RC^{\#}$-RP^{1} – labial/buccal; LI_{1}-LM_{2} – labial/buccal, lingual; RI_{1}-RP_{2} – labial/buccal, lingual; b. dental enamel hypoplasia: LI^{1}; RI^{1}-RI^{2}; c. antemortem tooth loss: RM_{1}; d. congenital absences: LM^{3}; LM_{3}; RM_{3}); 2. metabolic diseases (*cribra orbitalia*: healing lesions – orbital roofs); 3. joint diseases (intervertebral hernia: Schmorl's nodes – three thoracic vertebrae); 4. infectious diseases (a. periostitis: active reactions – femoral diaphyses; tibial diaphyses; fibular diaphyses; b. osteomyelitis: femurs; left tibia, **Fig. 17**).

Fig. 17. Possible osteomyelitis: abnormal thickening of the cortical bone (right tibia, up; left tibia, down).
Fig. 17. Posibilă osteomielită: îngroșare anormală a osului cortical (tibie dreaptă, sus; tibie stângă, jos).

Results of the anthropological analysis

MNI, skeletal representativeness, state of preservation and taphonomy

The 10 inhumation burials from Buftea *La Cârna/Măneşti* selected for this study contain osteological remains of 21 individuals (MNI = 21). Most of the graves (nine) contain skeletal remains from two individuals (90%), and only one grave contains the remains of three individuals.

According to the osteological inventory of the individuals, more than three-quarters of them were approximately complete (17: 80.9%), while partially represented and poorly represented skeletons are found in equal amounts (2: 9.5%).

The state of preservation of the skeletal material is rather good, since both good (scores 1 and 2) and moderate (score 3) grades are found in equal amounts in the skeletal sample (9: 42.8%). Moreover, poorly preserved skeletons (score 4) are found in only a few cases (3: 14.3%) of the analysed material.

We also identified several taphonomic features that were unevenly distributed and localised throughout the skeletal surface (cranial and postcranial). Of the taphonomic features observed, we recorded staining (13: 61.9%) and pigmentations (2: 9.5%), even though discrete organic and inorganic marks could also be observed on the osteological material.

Distribution of the individuals by sex and age groups

The results rendered by the anthropological analysis, in terms of anthropological sex, provided us with more than a half indeterminable individuals (12: 57.1%). When considering the adults, there were identified: one individual, probably a male (4.8%), one male individual (4.8%), two female individuals (9.5%) and one indeterminable individual (4.8%). Nonetheless, in five cases, the anthropological sex of adolescents could be assessed, which provided us with four individuals, probably males (19.0%), and one individual, probably a female (4.8%).

The ratio between adult and subadult individuals identified following the estimation of age-at-death is 5/16 (0.3). Among the subadults, the highest frequency of death was recorded in the children group (8: 38.1%). The next highest is the adolescent group (7: 33.3%), closely followed by the young adult group (4: 19.0%). In one case each (4.8%), individuals from the infant and old adult groups were recorded.

Estimation of skeletal stature (Table 1)

Another parameter investigated in our research was skeletal stature. It was calculated for seven subadults and all five adults in this study.

Grave	Anthropological sex	Age group	Skeletal stature	Category
Cpl. 117A	Indet.	Ad	138.4 (136.6-140.2)	–
Cpl. 117B	Indet.	C	137.8 (135.3-140.3)	–
Cpl. 119B	Indet.	C	97.5	–
Cpl. 556B	F	YA	156.1	tall-medium
Cpl. 690A	M?	YA	160.3 (154.2-166.4)	small-medium
Cpl. 702A	Indet.	OA	168.5 (165.2-171.8)	very tall
Cpl. 702B	Indet.	C	110.5 (109.0-112.0)	–
Cpl. 775A	Indet.	C	109.9 (108.7-111.2)	–
Cpl. 795A	F	YA	149.7 (147.1-152.3)	small-medium
Cpl. 795B	Indet.	Ad	125.8 (125.4-126.2)	–
Cpl. 1164B	Indet.	C	135.6 (134.1-137.2)	–
Cpl. 1244B	M	YA	169.8 (167.7-171.9)	tall-medium

Table 1. Skeletal stature (cm) for the individuals at Buftea *La Cârna/Mănești* according to their anthropological sex and age group.
Tab. 1. Statura scheletică (cm) pentru indivizii de la Buftea *La Cârna/Mănești* în funcție de sexul antropologic și grupa de vârstă.

Pathologies

The skeletal material from Buftea *La Cârna/Mănești* exhibits a wide spectrum of pathological and traumatic bone and dental changes, both in the case of subadults and adults. The main categories of the diseases recorded are briefly outlined below.

Oral pathologies

The frequencies of dental diseases found in skeletal material from the double burials at Buftea *La Cârna/Mănești* are presented in **Table 2**. A total of 531 teeth were observed. Of these, 407 belong to subadults, and 124 to adult individuals (51 teeth from male individuals, 55 teeth from female individuals, and 18 teeth from indeterminable individuals). When considering some oral pathologies (hyperdontia, dental abscess, antemortem tooth loss), the total number of dental alveoli was required instead of the total number of present erupted teeth. As such, there were 441 dental alveoli for subadults, 56 for males, 61 for females, and 29 for indeterminable individuals.

Some subadults (14) have a mixed dentition. Therefore, 283 of the 407 teeth belonging to subadults are permanent erupted teeth, while 59 of them are permanent unerupted teeth. The remaining 65 teeth are deciduous teeth.

a. Dental calculus – present in 17 individuals (12 subadults and five adults). The deposits, mostly supragingival, affect 192 teeth: 121 teeth of subadults (six deciduous and 115 permanent) and 71 teeth belonging to adults (32 for males, 29 for females, 10 for indeterminable individuals).

b. Caries – observed in 10 individuals (six subadults and four adults). They were identified in 22 teeth: six deciduous and 16 permanent (14 teeth affected for

Dental pathologies	Subadults		Adult males		Adult females		Indeterminable	
	n/N-S	%	n/N-S	%	n/N-S	%	n/N-S	%
Dental calculus	121/407	29.7	32/51	62.7	29/55	52.7	10/18	55.6
Caries	14/407	3.4	1/51	1.9	3/55	5.4	4/18	22.2
Dental enamel hypoplasia	39/407	9.6	11/51	21.6	6/55	10.9	0/18	0.0
Hyperdontia	1/441	0.2	0/56	0.0	0/61	0.0	0/29	0.0
Dental abscess	0/441	0.0	0/56	0.0	1/61	1.6	2/29	6.9
Antemortem tooth loss	0/441	0.0	1/56	1.8	0/61	0.0	6/29	20.7
Congenital absences	0/126	0.0	4/20	20.0	3/24	12.5	0/11	0.0
Mulberry molars	2/97	2.0	0/0	0.0	0/0	0.0	0/0	0.0

Table 2. The distribution of dental pathologies, where: n = number of teeth with dental pathologies; N = number of examined teeth; S = number of observed dental alveoli.
Tab. 2. Distribuția patologiilor dentare, unde: n = numărul de dinți cu patologii dentare; N = numărul de dinți examinați; S = numărul de alveole dentare observate.

subadult individuals and eight teeth affected for adult individuals). However, some teeth (four) present more than one lesion. Thus, the total number of caries lesions is 26: 16 for subadults (seven deciduous and nine permanent) and 10 for adults. The caries frequency for the entire skeletal group is 4.1% (22 teeth affected by caries out of 531 observed). For subadult individuals it has a value of 3.4% (14/407), and for adults it is 6.4% (8/124). Radicular remains were identified exclusively in adults (two individuals – one male and one female): 2/124 – 1.6%.

c. Dental enamel hypoplasia – affects 56 teeth (39 in subadults and 17 in adults): 56/531 – 10.5%. The lesions were mostly linear (50 teeth), but six cases of pitting enamel hypoplasia also occurred in one individual.

d. Hyperdontia – was recorded in the case of a subadult and was indicated by the appearance of an additional deciduous maxillary incisive.

e. Dental abscess – was observed exclusively in adult individuals. Three dental abscesses were identified in one YA female (one abscess) and one OA individual (two abscesses).

f. Antemortem tooth loss – seven antemortem tooth losses were identified, exclusively in adults (observed, specifically in only two: one in the case of a YA male, and six in the case of an OA individual), while 73 tooth losses (13 in adults and 60 in subadults) were postmortem.

g. Congenital absences – were identified exclusively in adults (four individuals – two males and two females). The total number of congenital absences was seven, the only tooth recorded as such in this sample being the third molar. The total number of possible congenital absences was evaluated (Turner II *et alii* 1991, p. 21). Thus, the sum of present dental alveoli was calculated for the 12 possible bilateral congenital absences per individual (I^2, $C^{\#}$, M^3, I_2, $C_{\#}$, M_3). The results were 126

possible congenital absences for subadults, 20 for males, 24 for females and 11 for indeterminable individuals.

h. Mulberry molars – two teeth out of the total 97 subadult erupted permanent molars could be observed in one subadult individual.

Metabolic diseases

Regarding the category of pathologies represented by metabolic diseases, we could identify, in the sample from Buftea, *cribra orbitalia* and *cribra cranii*.

a. *Cribra orbitalia* – affected 12 subadults (one infant, six children, five adolescents) and three adults (one male and two females). Of the 12 subadults, eight had active lesions (one was in the process of healing), while four individuals had healed lesions. When considering the adults, two individuals manifested healed lesions, while one exhibited active lesions in the process of healing. The location of these lesions was recorded in all its forms, be it bilateral, on the right orbital roof, or on the left orbital roof.

b. *Cribra cranii* – present only in subadult individuals (one child, two adolescents). All three cases involved the parietal bones, with only one case of occipital lesions.

Traumatic injuries

a. Healed lesions. Among the 21 analysed individuals from Buftea, two traumatic injuries were observed, both of them healed lesions. They were identified in one subadult and one adult, as follows:

– Cpl. 702A (OA): healed fracture at the wrist of the right hand (radius-ulnar joint) resulting in the dislocation of the joint, the generation of a new articular surface on the radius, and the absence of fusion for the distal ulnar epiphysis;

– Cpl. 775A (C): presents a lesion showing traces of healing on the left parietal bone; truncated conical quasi-circular shape (upper exocranial diameter: 8.04 mm; lower endocranial diameter: 5.27 mm).

Joint diseases

Joint diseases were observed exclusively in adults. In the sample from Buftea, they are comprised of degenerative joint diseases, intervertebral hernia and compression fractures.

a. Degenerative joint diseases were identified in three adults: Cpl. 556B (YA female), Cpl. 690A (YA, probably male) and Cpl. 702A (OA). In these three cases, degenerative joint diseases expressed themselves in the form of osteophytes (Cpl. 690A and Cpl. 702A – on the vertebral body of one lumbar vertebra) and porous surfaces (Cpl. 556B – on the right side, at the level of the talar joint in front of the double anterior calcaneal facets; Cpl. 690A – on the vertebral body of one lumbar vertebra; Cpl. 702A – on the right distal radial epiphysis and on the hamate and capitate).

b. Intervertebral hernia was identified in three adult individuals: Cpl. 690A (YA, probably male), Cpl. 702A (OA), and Cpl. 1244B (YA male). Intervertebral hernia was expressed by Schmorl's nodes on the vertebral bodies of four thoracic (one vertebra in the case of Cpl. 702A and three in the case of Cpl. 1244B) and one lumbar vertebra (Cpl. 690A).

c. Compression fractures were identified in two adult individuals: Cpl. 690A (YA, probably male) and Cpl. 702A (OA). In both cases, a lumbar vertebra is affected by this pathology.

Infectious diseases

a. Periostitis was identified in 13 individuals: 12 subadults and one adult (**Table 3**). The significantly affected skeletal segment is the skull, but periosteal lesions in the postcranial sector were also recorded. From a cranial point of view, the most affected bone is the parietal (six cases), followed by the maxilla (five), the temporal (four), frontal and mandible (three each), sphenoid (two) and zygomatic (one case). In the postcranial segment, periostitis most commonly affects the tibia (five cases), followed by the femur (three) and the scapula and fibula with one case each.

Complex/Bone	Ft	Tm	Pt	Mx	Zg	Sp	Md	Sc	Fm	Tb	Fb	Total
690B	X									X		2
120A									X	X		2
120B		X		X		X	X					4
119A	X	X	X									3
119B			X									1
775A	X	X		X			X					4
117B		X	X	X		X			X	X		6
556A			X	X				X				3
1244A										X		1
795B							X					1
1164B			X									3
1164A			X	X	X							3
1244B									X	X	X	3
Total	3	4	6	5	1	2	3	1	3	5	1	**37**

Table 3. The distribution and location of periostitis in the skeletal sample from Buftea, where: Ft = frontal; Tm = temporal; Pt = parietal; Mx = maxilla; Zg = zygomatic; Sp = sphenoid; Md = mandible; Sc = scapula; Fm = femur; Tb = tibia; Fb = fibula.

Tab. 3. Distribuția și localizarea periostitei în eșantionul scheletic de la Buftea, unde: Ft = frontal; Tm = temporal; Pt = parietal; Mx = maxilar; Zg = zigomatic; Sp = sfenoid; Md = mandibulă; Sc = omoplat; Fm = femur; Tb = tibie; Fb = fibulă.

b. *Caries sicca* lesions. Seven possible cases of the infamous *caries sicca* lesions could be observed on the individuals' frontal or parietals. The reason for referring to them as being "possible lesions" is the uncertain morphology which could be attributed to either postmortem degradations or infectious diseases.

c. Hypervascularization and resorptive lesions. A case of hypervascularization and resorptive lesions on the vertebrae was recorded. This pathological marker could be observed on three thoracic vertebrae and one lumbar vertebra, while the resorptive lesions could be identified on four thoracic vertebrae, all of them belonging to a 10 year old child.

d. Osteomyelitis. There were recorded two cases, an adolescent and a YA male. The individuals' bones increased in size and diameter and there were at least three drainage foramina on the adult's left femur, one on the right femur, and three on the left tibia.

Circulatory diseases

a. Arachnoid granulation affected five individuals from Buftea: three subadults (one child and two adolescents – one probably male and one probably female) and two adults (one YA female and one OA). They were located on either the frontal (four) or the parietals (one) and manifested themselves in the form of single (one) or multiple (four) insulae/foci.

Discussions and conclusions

The recently excavated mediaeval cemetery from Buftea stands out for a very large number of funerary structures (1053), making it one of the largest mediaeval cemeteries in Greater Wallachia (Muntenia). Needless to say, considering how it was only excavated in 2020-2021, its research and publication are at a starting point. As mentioned before, in this article, we will deal with less common burials, namely, double graves. These attract archaeologists and anthropologists alike since they are contemporary/simultaneous burials, and it becomes provocative and intriguing to find out the cause of death of the individuals, the main objective of our research.

The reasons behind double burials can be multifaceted and not always entirely clear. Some possibilities include social and family relationships, where double burials may indicate such connections between the two individuals, as either relatives, spouses, or close friends who were laid to rest together to signify their bond, even in death. Another possibility is simultaneous deaths, where both individuals in a double burial may have died simultaneously or within a short period, leading to their joint burial. Cultural or religious practices could also be a reason, as double burials may be rooted in beliefs and practices that hold a specific significance for burying individuals together. In certain societies, double

burials might reflect communal burial traditions in which multiple individuals are buried together as part of a shared community or group burial practice. Additionally, double burials can have symbolic or ritualistic meanings related to beliefs about the afterlife, rebirth, or the connection between the deceased and the living. However, since we are dealing with a Christian Community at Buftea, the most plausible reasons for double burials are likely to be the first two possibilities (Duday, Cipriani, Pearce 2009, p. 72-88).

After establishing the minimum number of individuals for each funerary complex, 21 individuals were identified in the 10 burials belonging to the analysed sample from Buftea. In one grave (Cpl. 119) we identified skeletal remains from three individuals. Despite this, we consider that all of the sample's graves are in fact double burials. The third individual represents only a reburial and not a funerary context in which three deceased individuals were buried simultaneously in the same grave. Thus, the incidence of double burials in the sample is still 100%.

The majority of the skeletons are well represented, and more than three-quarters are approximately complete. Partially represented and poorly represented individuals occurred only in the case of subadults (three children and one adolescent), a situation which could be explained by the frailty and fragility of their skeletons, which are easy to carry away by animals inside graves.

Regarding the state of preservation, it is rather good, since both good and moderate scores amount to almost 90% of the skeletal sample. This could be due to the soil's pH and other organic and inorganic agents which are also in accordance with the discrete organic and inorganic marks observed on the osteological material. Because of this, we decided not to record them from a taphonomic perspective. Instead, the staining and pigmentations were documented, which are produced by either the soil's chemical modifications (violet staining, blackish pigmentation) or by traces of bronze and copper in the deposited individuals' funerary inventory (greenish staining) (Fernández-Jalvo, Andrews 2016, p. 155-166; Cole, Waldron 2016).

Sex could only be determined for four individuals in the entire analysed sample. This can be explained by the age of the indeterminable individuals: considering how they are either children or infants, for anthropological sex to be indeterminable is a rather natural occurrence. Thus, the results were two male individuals and two female individuals (sex ratio = 1.0).

One of the defining characteristics of the skeletal sample from Buftea, apart from its great prevalence of metabolic and infectious diseases, is the high number of deaths among subadults (16), in relation to the underrepresented adults (five). This results in a ratio equal to 0.3. However, considering that this is not a representative sample of the population in Buftea, life expectancy at birth was

not calculated. Consequently, neither was the mortality profile curve. The highest frequency of death was recorded in the children group (eight), closely followed by the adolescent group (seven). The next up are young adults (four). Finally, in one case each, individuals from the infant and old adult groups were recorded.

In the analysed burials, we have not identified a standard burial practice. Most often, we encountered the C–Ad combination (three: Cpl. 117, Cpl. 119, Cpl. 1164) and Ad–YA (three: Cpl. 690, Cpl. 795, Cpl. 1244), as well as occasional singular associations like: C–C (Cpl. 775), C–YA (Cpl 556), C–OA (Cpl. 702), Ad–I (Cpl. 120). As for sex associations among individuals buried in double graves, there can not be talk of a standard here either (F–C, M–Ad, F–Ad, M–Ad), especially considering the uncertain anthropological sex of the deposited children and adolescents.

Even though stature and body weight are two of the fundamental parameters used in anthropological studies to assess an individual's health status, at this moment of the research it is precarious and inefficient to discuss skeletal statures from a statistical point of view. Thus, after a more thorough investigation, possible sexual dimorphism between females and males or delays in growth and development in children might be observed.

With regard to biometrics, non-metric traits, markers of biomechanical stress, morphoscopy, all these characteristics were recorded. However considering the small number of individuals in this skeletal sample, we decided not to present them in this study and instead set them aside for future research in which a larger group of burials from this cemetery would be analysed to form the basis for a correct and advantageous statistical inquiry.

Another defining feature of the skeletal sample from Buftea is its high prevalence of pathological conditions, especially in the case of subadults. Although most of the known dental or bone diseases do not induce changes in the skeleton, all individuals present at least one pathological manifestation. If some categories of diseases are found in both subadults and adults (oral, metabolic, and circulatory pathologies), other pathological conditions are exclusive in the skeletal group from Buftea: infectious diseases in the case of subadults, and joint diseases in adults.

Concerning oral pathologies, eight manifestations could be observed. The most frequent was dental calculus, deposits of mineralised bacterial plaque. It was present in more than three-quarters of the individuals from the skeletal sample. As such, it affected 17 individuals, of which 12 were subadults and five were adults. The presence of this condition, through the progressive demineralisation of tooth enamel, dentin, and cementum, under the action of organic acids, could lead to the appearance of dental caries (Hillson 2005, p. 290-291). Sometimes caries attack

several dental surfaces, a process that over time is manifested by the transformation of the damaged tooth into a radicular remain, which results in the loss of teeth. This can also be observed in female individuals from Buftea, considering how they are most affected by both caries and antemortem tooth losses. Moreover, females were the only individuals in this sample that presented radicular remains.

Furthermore, enamel defects, known as dental enamel hypoplasia, have been observed in a little more over 10% of individuals from Buftea, expressed morphologically by either transverse lines (7: 33.3%) on the surface of the dental crowns or pits (1: 4.8%) in the occlusal surface of teeth, varying in number, thickness, and depth. Dental enamel hypoplasia can be considered as a marker of non-specific physiological stress that occurs during the period of dental enamel formation (Hillson 2005, p. 169-176). Insufficient intake of essential nutrients, including folic acid (vitamin B_9), B–complex vitamins, vitamin A (retinol), vitamin C acid (ascorbic acid), vitamin D (D_2 and D_3), calcium, fluoride, and specific proteins, can lead to various health issues such dental enamel hypoplasia, but also scurvy and dental caries (Schroth *et alii* 2021; Swapna, Abdulsalam 2021; Pflipsen, Zenchenko 2017).

Another dental pathological manifestation identified is dental abscess, present in two adults. The term "abscess" was used for situations where we observed cavities that perforate the dental alveoli, although it is very difficult to differentiate between abscesses and granulomas or cysts in skeletal materials, the distinctive feature of an abscess being the presence of pus (Hillson 2005, p. 313-314).

Other observed dental conditions are of the anomaly type. The first manifestations are related to the presence of a higher-than-normal number of teeth – extra teeth (congenital supernumerary teeth or hyperdontia). We have also observed the congenital absence of teeth. In the case of hyperdontia, it was an additional deciduous maxillary incisor, whereas in the case of congenital absence, the only tooth recorded as such was the third molar.

In addition, we recorded in our study another dental anomaly, represented by mulberry molars, which is usually considered a pathognomonic marker of congenital syphilis. They are characterised by the abnormal shape and appearance of the molars represented by multiple cusps that resemble the shape of mulberries, hence the name. These teeth often have a rough, irregular surface with a combination of deep grooves and pits (Hillson, Grigson, Bond 1998). They result from disturbances in tooth development caused by syphilis infection transmitted from the mother to the fœtus during pregnancy. Thus, they are one of the dental manifestations of congenital syphilis and are typically observed in children affected by the disease. They could be observed on two teeth belonging to one subadult individual (out of the total 97 subadult erupted permanent molars).

We also mention that almost three-quarters of the analysed individuals also present metabolic conditions, represented by *cribra orbitalia* and *cribra cranii*, also known as *hyperostosa porotica*. In the case of *cribra orbitalia*, the lesions are visible macroscopically in the form of a thickened bone with a porous surface, located on the roof of the orbits, in either healed, active, or healing form, whereas in the case of *hyperostosa porotica*, the lesions are located on the ectocranial surface of the parietals or the occipital (Walker *et alii* 2009). In bioarchaeological contexts, such lesions are usually associated with iron deficiency anaemia, whether genetic (thalassemia major or Cooley's anaemia and sickle cell anaemia or sickle cell disease) or acquired (lack of vitamins A, B_6 – pyridoxine, B_9, B_{12} – cobalamin, nutrients necessary to maintain erythrocyte homeostasis) (Rivera, Lahr 2017, p. 87). According to research conducted by Walker *et alii* in 2009, iron deficiency anaemia alone is insufficient to account for the significant production of red blood cells necessary for the expansion of the bone marrow, which is responsible for the observed lesions. Instead, recent haematological studies have indicated that conditions such as hemolytic and megaloblastic anemias (specifically caused by deficiencies in folate and vitamin B_{12}) are more likely to cause *cribra orbitalia* and *hyperostosa porotica*. These conditions involve an accelerated loss of red blood cells and compensatory overproduction, which contribute to the development of bone abnormalities.

Among the 21 analysed individuals from Buftea, two traumatic injuries were observed in two individuals, both of which belong to the category of healed traumatic lesions. One was in an old adult and was on the wrist of the right hand, resulting in dislocation of the joint, formation of a new articular surface on the radius, and absence of fusion for the distal ulnar epiphysis. The second is a lesion showing signs of healing on the left parietal bone of a child. Although the first traumatic injury was, most probably, the result of a fall, the second one might be explained as a possible trepanation obtained through drilling. Although trepanation is not as uncommon in Europe as one might think (Simalcsik *et alii* 2014), we have not come across a similar case from the Carpathian–Danubian–Pontic region during the Early Middle Ages. This procedure was likely performed for curative/therapeutic purposes, aiming to relieve intracranial pressure, as evidenced by postoperative bone healing with minimal remodelling of the bone wall. Based on our observations, we infer that the individual did not survive long after the operation. Therefore, a more comprehensive bioarchaeological study focusing on this craniotomy is necessary, an endeavour that we hope to undertake soon.

In the sample from Buftea, when considering joint diseases, three manifestations observed solely on adults could be identified: degenerative joint diseases, intervertebral hernia, and compression fractures. The pathological

manifestations exhibit mild intensity, with osteoarthrosis appearing as osteophytes and porous surfaces (lack of eburnation, which is indicative of osteoarthrosis), while intervertebral hernia was indicated by Schmorl's nodes, and compression fractures by collapsed vertebrae. The exact cause of these joint manifestations remains unclear. However, several factors, including age, genetic background, sex, obesity, trauma, and, particularly, movement and stress are undoubtedly influential. Among these factors, movement and stress are deemed the most crucial, as they also relate to the development of Schmorl's nodes (Ortner 2003, p. 550).

Infectious diseases are highly prevalent in the sample from Buftea, especially in the case of subadults. Periosteal lesions could be identified in 12 subadults and one adult and were, in all cases, represented by active manifestations. The affected bones were: the parietal (six), the tibia (five), the maxilla (five), the temporal (four), the frontal (three), the mandible (three), the femur (three), the sphenoid (two), the zygomatic (one), the scapula (one) and the fibula (one). It is very difficult to change the non-specific nature of an infection and attribute it to a specific infection because diagnosis in bioarchaeological investigations is often complex. These periosteal manifestations seem more consistent with scurvy than rickets. This is particularly the case if we consider the location and periosteal lesions and the range and expression of the lesions, rather than the number of lesions, which determine whether an individual is assigned to a particular diagnostic category (Brickley, Morgan 2023; Halcrow *et alii* 2014; Brickley, Ives 2006). Nonetheless, one case of high consistency with scurvy was identified when analysing the skeletal remains of a child aged 10.0-12.0 years old (Cpl. 117B), whose pathological conditions consisted of metabolic diseases manifestations (*cribra orbitalia*, *hyperostosa porotica*) and infectious diseases manifestations (periostitis: active reactions – parietals, alveolar processes of $LC^{\#}$-LM^{2}, alveolar processes of RM^{2}-RM^{3}, temporal squama, mastoid processes, greater wings of the sphenoid, and possible reactions on the femoral and tibial diaphyses), all of which firmly support the diagnostic of scurvy.

At the same time, several cranial lesions similar to the generally acknowledged *caries sicca* could be observed on the skeletal sample from Buftea. However, at this point of the research, it is not clear whether we are dealing with infectious morphology or postmortem degradation. Considering that there is also one case of an individual presenting the morphology of mulberry molars, which are commonly associated with congenital syphilis, the probability of this treponematosis affecting the mediaeval population from Buftea cannot be excluded. Moreover, the fact that the afflicted individuals are, in most cases, subadults should not be disregarded, since, in this particular age group, bone involvement is less prevalent but does bear some resemblance to the distribution and appearance of acquired syphilis. These bone lesions are most commonly found in the tibia, ulna, and radius. While skull

lesions do occur, they typically manifest as multiple, rounded, and destructive foci, lacking the characteristic features of the *caries sicca* sequence (Ortner 2003, p. 293).

A single instance of hypervascularisation and resorptive lesions on the vertebrae was documented. Hypervascularisation was observed on three thoracic vertebrae and one lumbar vertebra, while resorptive lesions were found on four thoracic vertebrae. These affected vertebrae were all from a 10 year old child and are reported to be pathognomonic of tuberculosis (early stage of tuberculosis spondylitis of Pott's disease), a chronic disease caused by infection with a *Mycobacterium tuberculosis* complex bacillus species (Larentis, Pangrazzi, Tonina 2023; Mariotti *et alii* 2015; Pálfi *et alii* 2012). However, the individual under investigation does not exhibit any classic pathological signs of tuberculosis, such as vertebral fusion, Pott's disease with compression fractures, knee joint ankylosis, hip joint destruction, or endocranial tuberculosis (Masson *et alii* 2015, p. S16). To establish a definitive diagnosis, further confirmation through DNA analyses is required, given the absence of these typical manifestations. Interestingly enough though, the individual displaying these manifestations is the same one which presents mulberry molars, and, in the case of both syphilis and tuberculosis, the vertebral bodies are most frequently affected, with arches and processes rarely involved. Thus, once again, we face the uncertainty of this individual's pathological diagnosis.

Finally, in terms of infectious diseases, we were able to identify two osteomyelitic manifestations in two individuals from the Buftea skeletal sample. The diagnosis was based on the individuals' leg bones which were increased in size and diameter. Moreover, there were at least three drainage foramina on the adult's left femur, one on the right femur, and three on the left tibia. Notably, the two individuals belonged to a single double burial. Since osteomyelitis is linked to the hematogenous spread of an infection into the body and, more precisely, the bone, the probability of these two individuals being infected with the same bacteria should not be disregarded. While osteomyelitis can have different causes, it is typically not associated with syphilis, except in cases of late or tertiary syphilis. However, the occurrence of osteomyelitis in congenital syphilis is not to be deemed unlikely in adolescent subjects or older children (Ortner 2003, p. 293).

The last category of diseases identified in the skeletal sample from Buftea are the circulatory disorders. They are represented by arachnoid granulations (Pacchionian granulations), specialised projections of the arachnoid mater (Mann, Hunt 2005, p. 34-38), and one of the three meningeal layers that envelop the brain and spinal cord. Over the years, researchers have dedicated significant efforts to elucidate the structural characteristics, physiological functions, and evolutionary significance of arachnoid granulations. Despite substantial progress, several questions surrounding these enigmatic structures remain unanswered. While arachnoid granulations are

a rather natural occurrence and are not directly linked to circulatory diseases, the health and proper functioning of the circulatory system can indirectly impact the function of arachnoid granulations, resulting in the formation of foci on the endocranial surface of the skull. Lastly, there seems to be a connection between the formation of these foci and the individual's health, particularly in terms of infectious diseases, which certainly is the case for most double burials from the Buftea skeletal sample (Mann, Hunt 2005, p. 34-38; Branan, Wilson 1976, p. 524).

The comprehensive analysis of the skeletal sample presented in this study has provided valuable insights into the lives and experiences of individuals from a bygone era, key findings that shed light on various aspects of human biology, health, and behaviour within the context of the past.

The examination of pathological markers on skeletal remains revealed evidence of various diseases and health conditions that afflicted the population under study. From morphologies characteristic of infectious diseases to signs of degenerative disorders, these findings offer a glimpse into the challenges faced by individuals and their communities in the ancient past. Unfortunately, without the help of ancient DNA analyses, we face significant limitations in our ability to fully comprehend the historical impact of infectious diseases on human populations. The absence of aDNA data hinders our ability to directly identify and characterise ancient pathogens, leaving us reliant on more indirect methods, such as palaeopathological observations and historical records, which may not always provide a complete or accurate picture of past disease dynamics. Moreover, this limitation also extends to our ability to fully comprehend the significance of the double burials presented in this study, since the absence of genetic data hinders our capacity to directly ascertain the genetic relationships between individuals buried together. Without aDNA information, we are unable to confirm or refute the possibility of familial ties or other genetic connections that could shed light on social dynamics and kinship structures within the ancient community.

Additionally, the investigation into age-at-death distribution and sex estimation provided a demographic profile of the population. These demographic data contribute to our understanding of population dynamics and mortality rates, offering a broader perspective on historical living conditions and societal challenges. Through examination of cranial and dental traits, we also gained insights into the biological affinities and potential relationships between individuals. Such information contributes to our understanding of population interactions, gene flow, and human evolutionary history. However, these data are to make the study of subsequent articles, once a larger number of the burials of the cemetery would be analysed, since the demographic patterns and non-metric traits observed in this study offer a promising avenue for future research, considering how they could

provide valuable reference points for comparative analyses with other historical populations.

To conclude, during the 2020-2021 campaign, the double graves discovered at Buftea *La Cârna/Mănești* were of a unique nature. Our investigation into the cause of death of individuals buried in these graves points to a probable epidemic, possibly exacerbated by challenging living conditions, such as natural disasters and famine, which could have deprived the human body of essential minerals and vitamins necessary for growth and development. Several pieces of evidence support this hypothesis. One significant indication is the high number of subadults (16) and old adults (one) with markers of infectious diseases. These age groups are known to be more susceptible to acute viral and bacterial infections due to their comparatively weaker immune systems than young or middle adults (Simon, Hollander, McMichael 2015). The majority of deaths in the analysed sample occurred in the children age category (eight), followed closely by the adolescent age group (seven), as children's immune systems are immature and continue to develop until around the age of 11.0-12.0 years. Furthermore, the absence of unhealed trauma that could have led to simultaneous deaths in buried individuals suggests that infection with pathogens like bacteria or viruses might have been the primary cause of death.

The skeletal material from Buftea exhibited various lesions, which are commonly associated in paleopathological literature with specific pathological conditions, such as *cribra cranii* and *cribra orbitalia* linked to iron deficiency anaemia (congenital or acquired), megaloblastic anaemia, respiratory infections (pneumonia, bronchitis – O'Donnell *et alii* 2020), and more. Additionally, markers such as *Mycobacterium tuberculosis* complex point to tuberculosis, while conditions such mulberry molars and *caries sicca* indicate congenital syphilis, and the localisation of periostitis suggests infantile scurvy. It is also worth noting that some individuals (nine) likely suffered from co-morbidities, considering the association between scurvy and *cribra orbitalia* (Brickley, Ives 2006, p. 170). However, in order to gain a more comprehensive understanding of the Middle Ages in 14th-15th century Wallachia, the findings from this study must be combined with both archaeological and historical data, and molecular genetic analyses.

The present study's multifaceted approach has significantly contributed to our understanding of historical contexts and demonstrates the substantial contributions of physical anthropology to the reconstruction of ancestral lifeways. Through the integration of osteological and palaeopathological analyses, a comprehensive exploration of the various facets of human existence has been achieved, thereby yielding a nuanced understanding of past populations and their adaptive strategies.

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