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OSTEOLOGICAL REPORT ON THE HUMAN REMAINS FROM THE MILITARY HOSPITAL AREA AT NOVAE[1]

Abstract: During the 2016 mission at Novae, some of the remains from the 97 explored burials from the 2002–2006 missions, led by the University of Warsaw's Center for Research on the Antiquity of Southeastern Europe, were analyzed and documented. The Late Antiquity town cemetery, created on the grounds of the former military hospital at Sector IV at Novae, was in use until the early medieval period according to relative dating methods and radiocarbon dating. The disarticulated nature and poor preservation of the remains made it difficult for sex determination and age-at-death estimation. Pathologies were also recorded, among them degenerative processes such as osteophyte formation, spondylosis and Schmörl's nodes were observed on all adult individuals. Spina bifida was also observed on two individuals. The graves followed stereotypical Roman inhumations discovered across the lower Danube region in Bulgaria, however, the small amount of grave goods found in the burials do not provide enough evidence to determine the social class of the individuals. Further research to reconstruct the diet through enamel microwear pattern analysis would be recommended.

Key words: bioarchaeology, paleopathology, burial customs, Novae cemetery, Roman fortress

Located just 4 km from the new center of Svishtov, Novae was a key Roman legionary fortress and later settlement on the Lower Danube.[2] A key feature in the *praetentura* of the legionary fortress in Sector IV is the army hospital, excavated by the University of Warsaw's Center for Research on the Antiquity of Southeastern Europe from 1970 to 2010.[3] Abandoned as a fortress in the fourth century CE, Novae continued as a town with a small cemetery until the early medieval period.[4]

In 2002–2006, the excavation project explored and recorded approximately 97 burials.[5] The graves were close to one another and aligned east–west. Bodies were laid to rest supine, hands on the pelvis.[6] Grave goods were present throughout the cemetery, adult graves typically having only earrings, whereas children's graves were the richest with earrings and necklaces.[7] Potsherds and coins were discovered throughout the area, facilitating a relative dating of the cemetery. Radiocarbon dates from bone fragments place the cemetery from the seventh to the fourteenth century CE.[8]

[1] The project has been financed with resources provided by the National Science Center, Poland, allotted on the basis of decision DEC-2014/13/B/HS3/04836.
[2] Derda, Dyczek, Kolendo (ed.) 2008; Sarnowski *et alii* 2012.
[3] Dyczek 2008a.
[4] Lemke 2005; Lemke 2006, p. 53; Dyczek 2008b; Dyczek 2008c.
[5] Dyczek 2006, p. 138.
[6] *Ibidem*, p. 140.
[7] *Ibidem*, pp. 140–141.
[8] Dyczek 2006; Dyczek 2008c.

aDNA analysis of samples from the cemetery assigned the exhumed remains to haplogroup H, which is typical of European populations. The sequences of the results indicate that the samples are characteristic of northern Europe, Germanic tribes, and the Northern Balkan people.[9]

Nine boxes containing some of the remains from the 2004 and 2005 excavation season were subjected to osteological analysis during the 2016 season. Sex determination methods described by Buikstra and Ubelaker were followed.[10] Age-at-death determination drew on additional methods for subadults[11] and adults.[12] Paleopathological changes were observed and documented using supplementary methods.[13] Completeness was determined based on the total percentage of remains: less than 25%, 25–50%, 50–75%, and more than 75% (marked as ––, –, +, and ++ respectively). Table 1 summarizes the palaeodemographic data.

Table 1. Age-at-death and sex determination of the studied skeletons

Age-at-death (years)	Male	Female	Unknown	Total
0–2			2	**2**
2.5–14			2	**2**
14.5–21	1			**1**
21.5–30		1		**1**
30.5–55	1	1		**2**
Adult	1	1	7	**9**
Total	**3**	**3**	**11**	**17**

The table below gives a summary of the data on the completeness of the human skeletons, the sex and age-at-death of the identified individuals, and the most significant morphological and paleopathological characteristics.

Table 2. Sex, age, completeness of the skeleton, and most significant pathologies and morphological changes observed

No.	Object	Completeness	Sex	Age	Comments, most important pathologies
1	1/2005.1	––	?	Adult	–
2	1/2005.2	++	?	~ 6–7 years	Taphonomic changes on parietal lobes (possibly porotic hyperostosis?)
3	2/2005.1	++	M	30–35 years	Caries: LM_3 (6.0 mm), Schmörl's nodes on T12, L4, L5 (4–10.0 mm); well-defined costal ligament impressions on both sternal ends of clavicles; osteophytes present on left ribs

[9] Stanković 2003.
[10] Buikstra, Ubelaker 1994.
[11] Smith 1991; Schaeffer *et alii* 2009.
[12] Lovejoy 1985.
[13] Ortner 2003; Waldron 2009; Steckel *et alii* 2011.

4	3/2005.1	––	?	Adult	–
5	3/2005.2	++	?M	16–18 years	Spina bifida; green staining on ilium and distal scapular end
6	4/2005.1	++	F	35–45 years	Abscess: right M_1, M^1, left M^1; caries: left M^1 (4.0 mm); inflammatory process on maxilla especially on left M^2 – right M^2; slight *cribra orbitalia*; slight osteophytical changes on cervical and lumbar vertebral bodies; slight flattening of vertebral bodies; osteophytes on the edges of lumbar vertebral bodies; flattening of vertebral bodies, signs of osteoporosis; spina bifida
7	4/2005.2	–	?	~ 38–40 weeks	–
8	4/2005.3	––	?	Adult	–
9	5/2005.1	++	F	Adult	Degenerative changes near auricular surfaces of the ilium (right bone slightly coalesced with sacrum)
10	6/2005.1	++	F	25–30 years	Abscess: left M^3; asymmetry of right superior articular facet of axis; magnum foramen also shows signs of asymmetry
11	6/2005.2	––	?	Adult	Evidence of spondylosis on lumbar vertebrae
12	6/2005.3	+	?	~ 32 weeks	–
13	7/2005.1	–	?	Adult	Right femur bowed laterally
14	7/2005.2	–	?	9–14 years	–
15	1/2004.1*	––	?M	Adult	Inflammation of auditory ossicles (both right and left)
16	1/2004.2*	––	?	Adult	Schmörl's nodes of lumbar vertebrae (15 mm); asymmetry in superior articular processes (possibly scoliosis?)
17	1/2004.3*	––	?	Adult	–

* Skull (1/2004.1) discovered in the trench wall, all other bones from the bulk finds.

Taking measurements and sex determination on this material were difficult due to poor preservation of the bones and the disarticulated nature of the remains. However, degenerative processes such as osteophyte formation, spondylosis and Schmörl's nodes (between 4–15.0 mm) were present on all vertebrae of adult individuals. Caries and abscesses were also observed. Animal remains, from namely pig and cattle, were also present in each box with human remains.

The individual 4/2005.1, a female aged 35–45 years, was the most interesting case and demonstrated severe pathological changes. Three abscesses were present, on the left M^1, on the right M_1 and on M^1, which also demonstrated caries [Fig. 1]. Additionally, an inflammatory process near most of the dentition of the maxilla (left M^2 – right M^2) could suggest initial stages of scurvy [Fig. 2].

Fig. 1. Abscess on the right maxilla of 4/2005.1 (photo M. Srienc)

Fig. 2. Inflammatory process on the maxilla of 4/2005.1 (photo M. Srienc)

Degenerative processes were present in the form of osteoporosis and osteophytes of the edges of the lumbar body and flattening of the vertebral bodies. The female also had *cribra orbitalia*, which likely indicates anemia. In addition, this female presented evidence of spina bifida [Fig. 3].

Evidence of spina bifida was the most interesting pathological change also on skeleton 3/2005.2, a probable male 16–18 years old [Fig. 3].

Fig. 3. Spina bifida observed in 4/2005.1 on the left and 3/2005.2 on the right (photo M. Srienc)

Degenerative processes were observed in all adult individuals. Also, 1/2004.1 had an inflammation of the auditory ossicles (ear infection) on both sides [Fig. 4]. Supplementary research focusing on enamel microwear pattern analysis could provide the data necessary for a reconstruction of dietary habits.

The graves from Novae reflect a stereotype of Roman burial practices recorded throughout the lower Danube region in Bulgaria.[14] Inhumations are generally made in supine position, aligned east–west, accompanied by offerings of domestic animals deposited nearby.[15] The limited number of grave goods in the graves and the nature of the burials do little to establish the social class of the individuals in the cemetery. Enamel microwear pattern analysis and reconstructing the diet could address this issue, helping to determine lifestyle and status of the individuals buried in the cemetery at Novae.

[14] Fiedler 2008, p. 157.
[15] Fiedler 2008, pp. 156–157; Parvanov 2016.

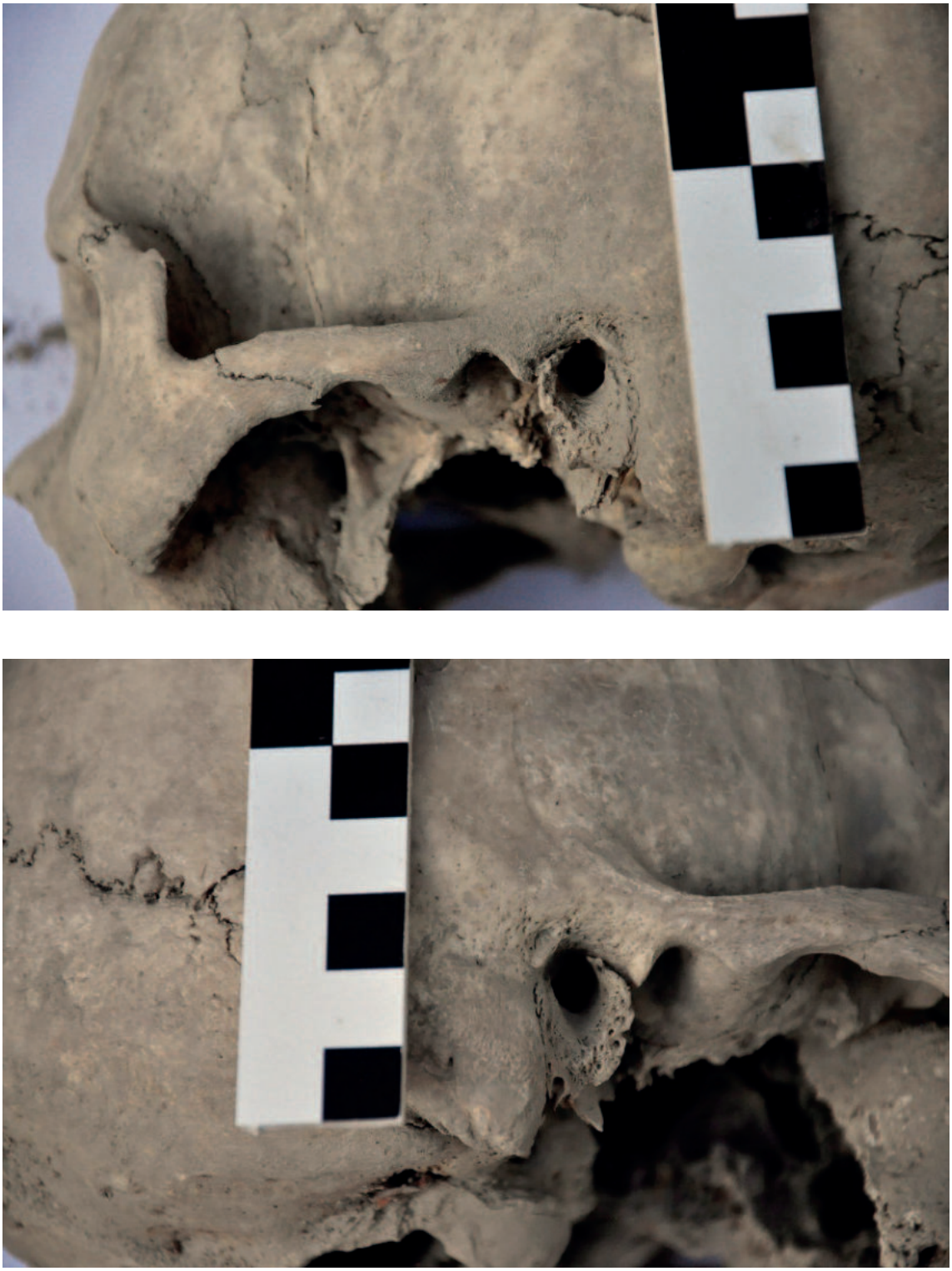

Fig. 4. Inflammation of the auditory ossicles of individual 1/2004.1: left side pictured above, right side below (photo M. Srienc)

Bibliography

Buikstra, Ubelaker 1994 — J. E. Buikstra, D. H. Ubelaker, *Standards for Data Collection from Human Skeletal Remains: Proceedings of a Seminar at the Field Museum of Natural History* (= *Arkansas Archaeological Survey Research Series* 44), Fayetteville.

Derda, Dyczek, Kolendo (ed.) 2008 — *A Companion to the Study of Novae*, ed. T. Derda, P. Dyczek, J. Kolendo (= *Novae. Legionary Fortress and Late Antique Town* 1), Warsaw.

Dyczek 2006 — P. Dyczek, "Western Sector (section IV), 2002–2006. Preliminary report on the excavations of the Center for Research on the Antiquity of Southeastern Europe", *Archeologia*. *Rocznik Instytutu Archeologii i Etnologii Polskiej Akademii Nauk* 57, pp. 138–141.

Dyczek 2008a — P. Dyczek, "Archaeological excavations at Novae. A history of research with special consideration of Sector IV (legionary baths, *valetudinarium*, late architecture)", [in:] *A Companion to the Study of Novae*, ed. T. Derda, P. Dyczek, J. Kolendo (= *Novae. Legionary Fortress and Late Antique Town* 1), Warsaw, pp. 31–70.

Dyczek 2008b — P. Dyczek, "The latest settlement in Novae", [in:] *A Companion to the Study of Novae*, ed. T. Derda, P. Dyczek, J. Kolendo (= *Novae. Legionary Fortress and Late Antique Town* 1), Warsaw, pp. 235–245.

Dyczek 2008c — P. Dyczek, "The medieval cemetery of Novae from Sector IV", [in:] *Przez granice czasu. Księga jubileuszowa poświęcona Profesorowi Jerzemu Gąssowskiemu*, ed. A. Buko, W. Duczko, Pułtusk, pp. 473–479, 592–596.

Fiedler 2008 — U. Fiedler, "Bulgars in the Lower Danube region. A survey of the archaeological evidence and of the state of current research", [in:] *The Other Europe in the Middle Ages: Avars, Bulgars, Khazars, and Cumans*, ed. F. Curta, Leiden, pp. 150–236.

Lemke 2005 — M. Lemke, "Jewelry for the dead. A few thoughts on finds from the medieval cemetery at Novae, sector IV", *Novensia* 16, pp. 9–16.

Lemke 2006 — M. Lemke, "The earrings from the early medieval cemetery at Novae", *Novensia* 17, pp. 53–61.

Lovejoy 1985 — C. O. Lovejoy, "Dental wear in the Libben populations: Its functional pattern and role in the determination of adult skeletal age at death", *American Journal of Physical Anthropology* 68, pp. 47–56.

Ortner 2003 — D. J. Ortner, *Identification of Pathological Conditions in Human Skeletal Remains*, 2nd edition, San Diego.

Parvanov 2016 — P. Parvanov, *Medieval Deviant Burials from Bulgaria (7th–14th Centuries)*, MA thesis, Central European University, Budapest.

Sarnowski *et alii* 2012 — T. Sarnowski with contributions by A. B. Biernacki, M. Lemke, A. Tomas, P. Vladkova, *Novae. An Archaeological Guide*, Warsaw.

Schaeffer *et alii* 2009 — M. Schaeffer, S. Black, L. Scheuer, A. Christie, *Juvenile Osteology: A Laboratory and Field Manual*, Amsterdam – Boston – Heidelberg.

Smith 1991 — B. Smith, "Standards of human tooth formation and dental age assessment", [in:] *Advances in Dental Anthropology*, ed. M. Kelley, C. Larsen, New York, pp. 143–168.

Stanković 2003 — A. Stanković, "Provisional analysis of DNA contained in skeletal material discovered in Novae in Sector IV", *Novensia* 14, pp. 97–100.

Steckel *et alii* 2011 — R. H. Steckel, C. S. Larsen, P. W. Sciulli, P. L. Walker, *The Global History of Health Project. Data collection codebook* [http://global.sbs.ohio-state.edu/new_docs/Codebook-01-24-11-em.pdf].

Waldron 2009 — T. Waldron, *Palaeopathology*, Cambridge.

Streszczenie

Raport osteologiczny na temat szczątków ludzkich z terenu szpitala wojskowego w Novae

Podczas badań wykopaliskowych prowadzonych w 2016 roku w Novae poddano analizie i zadokumentowano szczątki ludzkie pozyskane w wyniku eksploracji dziewięćdziesięciu siedmiu pochówków odkrytych w latach 2002–2006 przez zespół Ośrodka Badań nad Antykiem Europy Południowo-Wschodniej Uniwersytetu Warszawskiego. Według ustaleń poczynionych na podstawie datowania względnego oraz metodą C14 teren szpitala wojskowego usytuowanego w Sektorze IV w Novae był wykorzystywany jako cmentarz miejski aż do wczesnego średniowiecza. Rozczłonkowany charakter oraz słaby stan zachowania szczątków utrudnia określenie płci oraz wieku, jednak ich analiza pozwoliła wyróżnić około siedemnastu osobników. Zaobserwowano również patologie, a wśród nich zwyrodnieniowe zmiany kręgosłupa, takie jak osteofity i guzki Schmörla. U dwóch osobników stwierdzono rozszczep kręgosłupa. Opisywane groby wykazują cechy typowe dla rzymskich pochówków szkieletowych odkrywanych nad dolnym Dunajem, na terytorium dzisiejszej Bułgarii, jednak mała liczba elementów ich wyposażenia jest niewystarczająca do określenia pozycji społecznej poszczególnych osobników. W celu rekonstrukcji diety zmarłych zaleca się przeprowadzenie badania stopnia starcia szkliwa na zachowanych zębach.

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