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A MEDIEVAL BURIAL FROM THE SITE OF SUPSKA: AN ANTHROPOLOGICAL AND CONTEXTUAL ANALYSIS OF THE SKELETAL REMAINS FROM GRAVE 1

Abstract: In 1956, the Institute of Archaeology and the National Museum in Belgrade carried out excavations at the site of Supska, near Ćuprija, in Central Serbia. Based on the material culture findings, the site is mostly known as a Late Neolithic one; however, archaeological findings from other periods were discovered too. In the 1956 excavations, the cultural layers, and archaeological features with the Vinča culture archaeological materials were examined, as well as one grave, marked as Grave 1. The results of this excavation have been previously published in one monograph; however, an anthropological analysis of the individual found in Grave 1 has not been conducted before. In this paper, we present the results of contextual, bioanthropological, stable isotopes and C^{14} analyses of human skeletal remains found in Grave 1. The results showed that a young adult, who had experienced nonspecific metabolic stress during childhood, as evidenced by traces of linear enamel hypoplasia and porotic hyperostosis, was buried in this grave. AMS date revealed that this individual lived between 1280–1390 cal.

AD, while the results of the stable isotope analyses suggested that it had mixed diet based on C^4 plants (such as millet) and/or C^3 plants, with larger amounts of animal protein, possible deriving from freshwater fish.

Key words: burial, human skeletal remains, stable isotopes, AMS dating, Medieval period, Supska

INTRODUCTION

During the research of Neolithic sites such as Vinča – Belo Brdo, Gomolava, Ajmana or Crkvine near Kraljevo, which were built on terraces of large rivers and their tributaries, horizons of older and more recent cultures can often be found (Мартиновић-Вујовић 1984: 87–99; Stalio 1986: 27–35; Dautova Ruševljan and Brukner 1992: 7; Богосављевић Петровић 2000: 18–21, Table III, IV). A similar situation was detected on the site of Supska near Ćuprija, where several burials were dug into Neolithic layers. Supska represents one of the most important Late Neolithic sites in Central Serbia. During August 1956, the Institute of Archaeology and the National Museum in Belgrade carried out excavations at the site, when several burials were detected (Гарашанин и Гарашанин 1979: 9). Based on the grave goods, Grave 1 was named "Roman grave". Other burials could not be dated since they did not have any chronologically specific features, as noted in the Excavation diary[1]. A similar situation is detected at the site of Divostin, near Kragujevac, where it was assumed that excavated burials belonged to the Neolithic (Zoffman 1988: 447, Pl. Ia). However, radiocarbon dating showed that Grave 1 from Divostin belonged to the Medieval period[2]. Perhaps the most vividly observed examples of the deceased buried at the same necropolis in different times are those burials under mounds during the Bronze and Iron Ages. After several thousand years, burials from the Medieval period were subsequently dug around the perimeter of the visually changed elevations and still recognisable configuration. This practice was noted in the territory of the whole Central Balkans (Kapuran, Blagojević and Bizjak 2015; Летица 1981).

During the work on project RACOLNS[3], which aimed to obtain new radiocarbon dates for a large number of Late Neolithic sites from the Central Balkans, this aforementioned phenomenon of burials originating from different periods at the same location was singled out at the site of Supska. To find out more about this phenomenon detected at the site of Supska, we conducted a detailed contextual, anthropological and isotopic analysis of Grave 1. In terms of the contextual analysis, we analysed the notes from the Excavation diary in detail and performed a revision analysis of the ceramic material. Although this burial was discovered a long time

1 Complete documentation on excavations from 1956 is kept in the Documentation Department of the National Museum of Serbia.

2 As part of the Columbia University project "On the Move: Prehistoric Mobility and the Spread of Agriculture in Eurasia" (Dušan Borić, PI) and based on the collaboration agreement with the National Museum of Serbia (Vera Bogosavljević Petrović), during the visit in 2017, skeletal samples from sector F from the site of Divostin were taken for radiometric dating, which was mentioned but not analysed in the monograph from 1988 (paper in preparation).

3 Regional absolute chronologies of the Late Neolithic in Serbia (RACOLNS).

ago, an anthropological analysis had not been performed and little was known about the grave. Thus, we conducted an anthropological analysis of the human skeletal remains found inside the grave. Furthermore, to acquire a more precise chronological determination, we performed radiocarbon dating coupled with stable isotope analyses of carbon and nitrogen so as to obtain data about the diet of the individual buried in Grave 1 at the site of Supska.

THE SITE OF SUPSKA

Supska is a small village, located on the right bank of the Velika Morava, 4 km north of Ćuprija (fig. 1). Geographically, it is situated in the central part of upper Pomoravlje. The Neolithic settlement was detected at the site of Stubline, created at the ends, on the gentle slopes of the Kučaj Mountains and the junction with the lowland formations of the second river terrace of the river Velika Morava. The stretch of Supska is dominated by low hills, Stublina being one of them (fig. 2).

Fig. 1 The location of the site of Supska and the low hill of Stublina (photo: M. Marić)
Сл. 1 Положај локалитета Супска и брда Стублина (фото: М. Марић)

Fig. 2 Supska, Stublina: general view of the terrain before the archaeological excavations, from east (Documenation of National Museum of Serbia; adapted: Đ. Radonjić)
Сл. 2 Супска, Стублина: изглед терена пре археолошких ископавања, поглед са истока (документација Народног музеја Србије; прилагодио: Ђ. Радоњић)

The multi-layered site of Supska is known as one of the few Neolithic settlements with a complete sequence of the Vinča cultural group thanks to the publication of Milutin and Draga Garašanin from 1979 (fig. 3). In addition to the eponymous site of Vinča – Belo Brdo, Supska is the second large settlement whose pottery assemblage represents a reference sample for the Late Neolithic sites south of the Danube and Sava rivers. The bilingual monograph (in Serbian and German) was published at the time when the National Museum celebrated its 135th anniversary, and it contained the map of the site, profiles, ground plans, and some objects (kilns), as well as 37 tables of drawings of archaeological material from the northern sector (Гарашанин и Гарашанин 1979). The findings from the southern sector remained unpublished, except for a few brief pieces of information about the insufficient transparency of the Vinča layers and the existence of disturbances in the Starčevo cultural layer (Гарашанин и Гарашанин 1979: 10). Archaeological excavations were based on the research plan of the Archaeological Institute of the Serbian Academy of Sciences in collaboration with the National Museum in Belgrade.

Supska was known even before the Second World War, when archaeological material was collected and stored in the City Museum of History and Ethnography in Niš, which covered the territory of the Moravian Banovina back then. During the bombing in 1944, most of the fund was destroyed, while the remaining part of the material drew attention, as the authors emphasised, enough to be shown and commented on in the survey of archaeological sites in the territory of Serbia, and in the work of Vladimir Milojčić from 1949 (Гарашанин и Гарашанин 1951; Milojčić 1949). Long-term visits by scholars after the war indicated the importance of Supska as a Vinča cultural site.

According to the data from the documentation, blocks measuring 3 × 3 m were thus distributed: in the northern sector, Blocks I – III, and in the southern sector, Blocks I and II, with 1 m wide left control profiles (figs. 3, 4). A large, 10.5 m long control profile on the northern side of the deep gully was thoroughly cleaned to trace the stratigraphy of the northern and southern parts of the site (fig. 3). Due to the situation in the northern sector, where a part of a human skull was already discovered in Block 1 on August 3rd 1956, a longitudinal narrow Trench 1 (fig. 5) was opened to connect chronologically different elements of the stratigraphy of the site. Today, after more than seven decades, new absolute dating results place Grave 1 in a completely new chronological framework, which makes the story of chronological layers and funeral rites more complex than the original hypotheses.

MATERIAL AND METHODS

Material

During the excavations, three burials were found in archaeological trenches: Grave 1 in Trench block 1/North, and Graves 2 and 3 in Trench 1 (figs. 6, 7). Grave 1 was found at a relative depth of 1.10 m, measured from the upper ground level, in corner C of the trench (fig. 6). The lower extremities of the individual buried inside the grave went into the eastern control profile (fig. 8). After removing a part of the

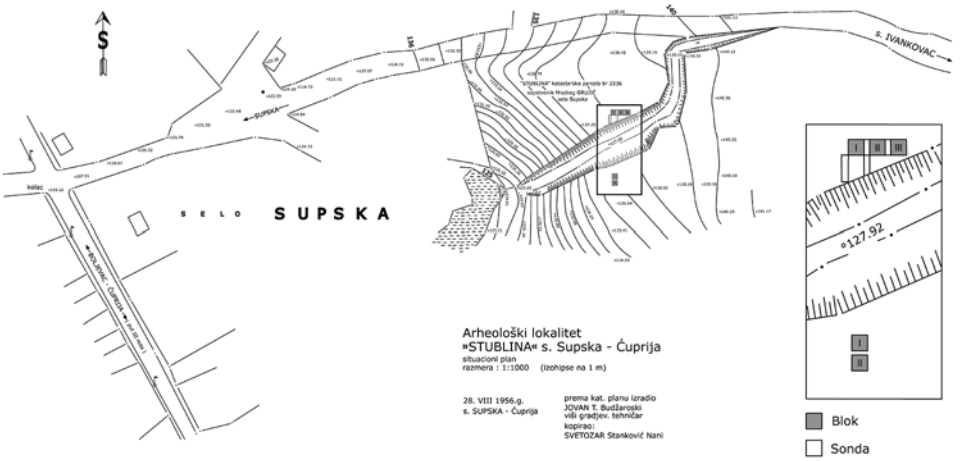

Fig. 3 Supska, Stublina: map with the position of the trenches, excavations from 1956 (after: Гарашанин и Гарашанин 1979: Pl. I; adapted: Đ. Radonjić)

Сл. 3 Супска, Стублина: ситуациони план, ископавања из 1956. (према: Гарашанин и Гарашанин 1979; прилагодио: Ђ. Радоњић)

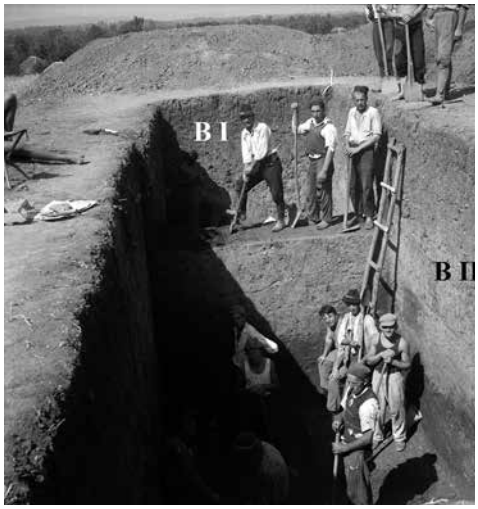

Fig. 4 Garašanin's Block II and I (box-grid excavation trenches), from east (Documenation of National Museum of Serbia; adapted: Đ. Radonjić)

Сл. 4 Блок II и I (блок систем ископавања М. Гарашанина), са истока (документација Народног музеја Србије; прилагодио: Ђ. Радоњић)

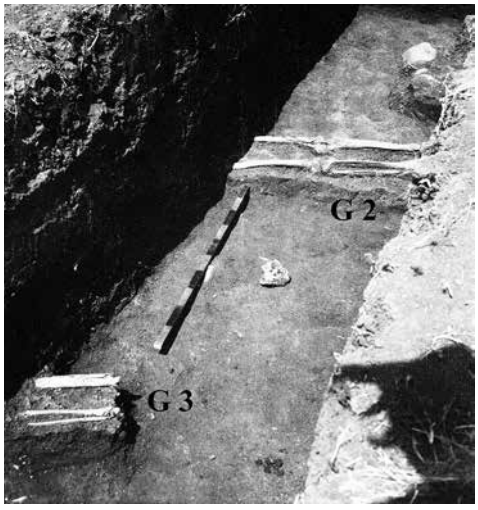

Fig. 5 Trench I, layer with skeletal remains – Grave 2 and Grave 3 (Documenation of National Museum of Serbia; adapted: Đ. Radonjić)

Сл. 5 Сонда 1, слој са скелетним остацима – гроб 2 и гроб 3 (документација Народног музеја Србије; прилагодио: Ђ. Радоњић)

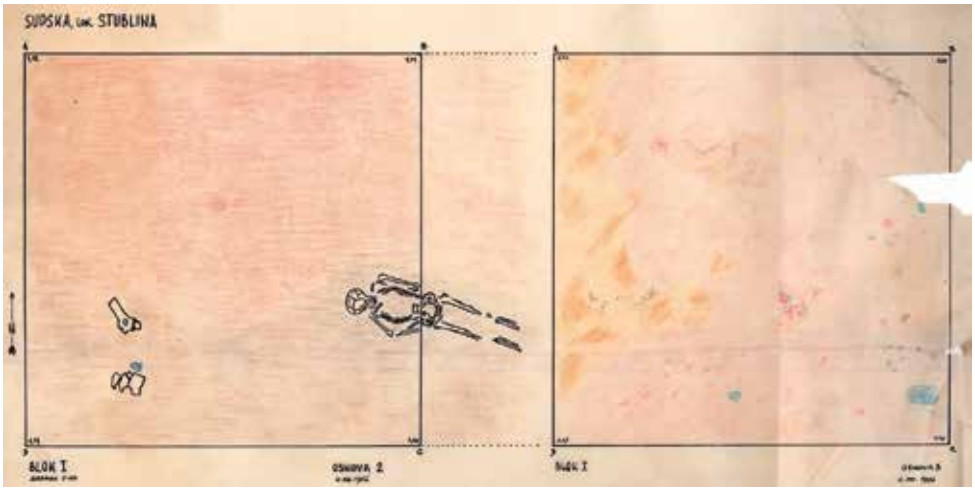

Fig. 6 Block I, Layer 2 and 3 (Documenation of National Museum of Serbia; adapted: Đ. Radonjić)

Сл. 6 Блок I, основа 2 и 3 (документација Народног музеја Србије; прилагодио: Ђ. Радоњић)

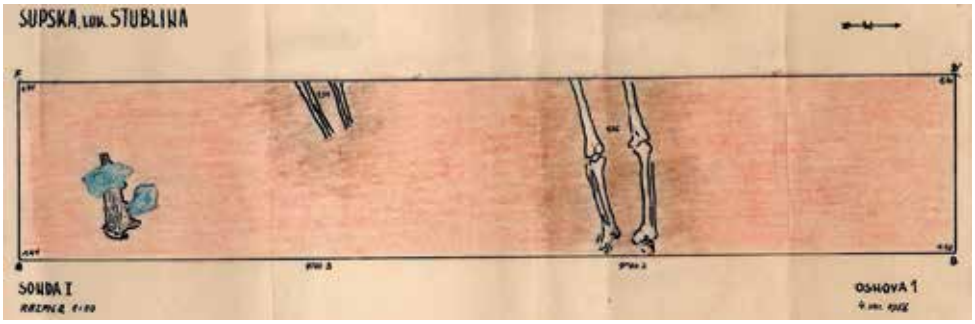

Fig. 7 Trench 1, Layer 1: remains of Graves 2 and 3 with a deer antler (Documenation of National Museum of Serbia; adapted: Đ. Radonjić)

Сл. 7 Сонда 1, основа 1: остаци гробова 2 и 3 и јелењег рога (документација Народног музеја Србије; прилагодио: Ђ. Радоњић)

Fig. 8 Control section between Block I and Block II – the other part of Grave 1 (Documenation of National Museum of Serbia; adapted: Đ. Radonjić)

Сл. 8 Контролни профил између блокова I и II – други део гроба 1 (документација Народног музеја Србије; прилагодио: Ђ. Радоњић)

control profile, the skeleton was fully investigated and documented (figs. 6, 8). The individual buried in Grave 1 was found in an extended supine position, oriented west–east, with the skull laid on the back of the head. The right arm was bent at the elbow. On the left upper arm bone, a bronze crossbow shaped fibula was found (fig. 9), marked with a special inventory number 286. At the same depth where this burial was found, in the base of the trench, crushed and disarticulated lumps of daub were found, while the Neolithic material was found in corner D of the trench: a deer antler hammer (find number 206), and several vessel fragments. The other two burials, Graves 2 and 3, excavated in Trench 1, were found at a relative depth of 1.35–1.42 m. As they had no grave goods, it was not possible to establish their chronology. However, during the excavation of the layers above the burials, one Roman coin was found.

The human skeletal remains discovered in Grave 1 and their context were analysed in this study.

Fig. 9 "Roman grave" 1, Block I, from east. Detail: bronze crossbow broche/fibula
(Documenation of National Museum of Serbia; adapted: Đ. Radonjić)

Сл. 9 „Римски гроб" 1, блок I, са истока. Детаљ: бронзана фибула крстастог типа
(документација Народног музеја Србије; прилагодио: Ђ. Радоњић)

Methods

Anthropological analysis

The sex was estimated by using standard methods for sex estimation by combining observations of several morphological characteristics on the skull and pelvic bones (Ferembach, Schwidetzky and Stloukal 1980). The age at death was estimated from the stage of cranial suture closures (Meindl and Lovejoy 1985) and the extent of dental attrition (Brothwell 1981). Within the dental analysis, the

presence of calculus was observed, while the tooth numbering system proposed by Fédération Dentaire Internationale (1971) was used. Dental calculus presents mineralised dental plaque that adheres to the teeth surfaces (Lukacs 1989). The formation of plaque is a continuous process (Marsh and Bradshaw 1995). It exists as a biofilm containing food remains, bacteria which forms naturally on the teeth, and when it is not removed it may mineralise into calculus (Hillson 1996; Lieverse 1999). Since many factors, including diet type, oral hygiene, salivary flow, and genetics can influence the rate of calculus deposition, the process of calculus formation is still not fully understood. Through the analysis of dental calculus, its presence and quantity, one can obtain valuable information about dietary habits, oral health and hygiene and lifestyles of ancient populations. In this study, calculus was recorded on all teeth, as recommended by Buikstra and Ubelaker (1994) and the extent of calculus was described by using the protocol established by Brothwell (1981). Regarding the aetiology of dental calculus, two types were recorded: supragingival and subgingival. The appearance of supragingival calculus is mostly connected to the diet, while subgingival calculus can derive from tooth pathology.

Nonspecific stress markers (porotic hyperostosis and dental enamel hypoplasia) were also noted and examined following the methods proposed by Buikstra and Ubelaker (1994). Porotic hyperostosis is a condition that appears most often on frontal and parietal bones and less frequently on occipital bones. It is characterised by lesions or spongy appearance on the outer part of the bones, because of the hypertrophy of the inner bone part (Angel 1966; Stuart-Macadam 1992; Buikstra and Ubelaker 1994; Mays 1998). Although there is still a debate over the possible causes of porotic hyperostosis (Stuart-Macadam 1992), it is mostly interpreted as a consequence of iron deficiency anaemia (El-Najjar et al. 1976; Mays 1998), while other possible aetiologies of this condition could also be digestive tract diseases, bacterial infections, parasites (Kent 1986), other types of anaemia, unsanitary living conditions, gastrointestinal infections (Walker et al. 2009), inflammatory processes on the skull vault, haemorrhagic processes, tumours and tumorous processes, dietary disorders, genetic causes (Schultz 2001; Ortner 2003). In this paper, porotic hyperostosis was scored by the method proposed by Buikstra and Uberlaker (1994). Dental enamel hypoplasia presents a defect on tooth enamel, caused by the disturbance in enamel matrix secretion (Hillson 1996). It is formed exclusively during childhood, at the time of crown formation, and it can develop because of systemic metabolic disruption, local trauma, or hereditary conditions. Specific aetiology of hypoplasia is still unknown, but it is generally interpreted as a result of some non-specific physiological disruption (Goodman and Armelagos 1985). The most common is linear enamel hypoplasia (Ortner 2003). The timing of hypoplastic events was calculated following the method proposed by Reid and Dean (2006). Metrical analysis was only possible on femurs and was done by using standard anthropological measurements as defined by Martin.

Radiocarbon dating

To obtain chronological time span, the fragment of parietal bone from the individual buried in Grave 1 was radiocarbon dated. The dating was performed at HEKAL AMS Laboratory, in Debrecen, Hungary – DeA-31062 (661 ± 23) on the MICADAS (MIni CArbon DAting System) AMS machine, which was developed and produced by the Laboratory for physics of ionic beams, ETH University of Zurich. The sample was prepared and treated following the protocol given in Molnar and associates (2013). The date was calibrated in the OxCal 4.4.4 (Bronk Ramsey, Lee 2013), using IntCal 20 calibration curve (Reimer et al. 2020).

Stable isotopes

The stable isotope ratios of carbon ($\delta^{13}C$) and nitrogen ($\delta^{15}N$) are widely used to study past human dietary patterns. Among plants, they vary according to environmental and physiological factors and as they increase within each level of the food chain, it is possible to identify herbivores and carnivores (DeNiro and Epstein 1981; Minagawa and Wada 1984; Bocherens and Drucker, 2003). In the food web, within each trophic level, the $\delta^{13}C$ value is enriched by 0–1‰ (DeNiro and Epstein 1981), while in $\delta^{15}N$, the fractionation process is stronger, which leads to an enrichment of approximately 3–5‰ in each trophic level (DeNiro and Epstein 1981; Minagawa and Wada 1984; Hedges and Reynard 2007). The relative importance of animal vs. plant protein in diets, which is indicative of the trophic level (DeNiro and Epstein 1981; Minagawa and Wada 1984; Bocherens and Drucker 2003), can also be defined mainly through the measurement of nitrogen isotopes. Ratios of $\delta^{13}C$ and $\delta^{15}N$ in resources from freshwater and marine environments are different than terrestrial ones. Marine and freshwater fish exhibit higher $\delta^{15}N$ values than terrestrial animals, and marine species display higher $\delta^{13}C$ values than freshwater fish and terrestrial animals, which typically show similar or lower $\delta^{13}C$ values compared to terrestrial animals (France 1994; Fuller et al. 2012), allowing for a distinction between marine vs. terrestrial food sources (DeNiro and Epstein 1978; Chisholm, Nelson and Schwarcz 1982; Schoeninger and DeNiro 1983).

In this study, we focus on bone collagen isotopic ratios, which provide information about the protein part of the diet in the last 10–15 years of an individual's life (Ambrose and Norr 1993; Hedges et al. 2007), since collagen is a protein partially formed from protein originating from the food consumed. As a part of the AMS radiocarbon dating process mentioned above, we obtained carbon and nitrogen isotope measurements on a human bone from Grave 1 that was AMS dated. Since animal bones from the same period were not found, we decided to perform stable isotope analysis on 6 animal remains from the Neolithic layers of Supska to obtain local animal baseline.

Only samples with C and N content ≥ 30% and 10%, respectively (Van Klinken 1999), C/N ratios between 2.9 and 3.6 (DeNiro 1985) were used for interpretation and discussion. The results obtained were compared with few available human stable isotope data from other sites (Bonsall et al. 2015; Jovanović et al. 2021).

Contextual analysis

In terms of the contextual analysis, we analysed the notes from the Excavation diary in detail and performed a revision analysis of the ceramic material.

RESULTS

Contextual analysis

Based on the recorded situation within the excavations, the finding of a fibula interpreted as a grave good in Grave 1, found in Block 1/North, as well as the finding of a Roman coin above Graves 2 and 3 in Trench 1, all the burials were dated into the Roman period. The identification of the coin has not been conducted yet. Skeletal remains which belong to Graves 2 and 3 from Trench 1 have not been found in the study material of the National Museum. We cannot say much about these two burials and individuals buried in them, except that they were at a harmonious distance, with the same orientation judging by the position of their lower extremities (figs. 5, 7). Their position, together with the setting of Grave 1, are associated with the arrangement of burial pits, and they were probably a part of a large Medieval necropolis.

The presence of Roman period objects, especially those which are functional parts of clothing, such as the fibula, is a frequent finding in burials dated into the Roman period. The crossbow fibula was dated into the Late Antiquity, based on the general dating of bronze crossbow fibulas, the proximity of Roman period sites, i.e., *Horreum Margi*, and the existence of local workshops for their production in the 4th century AD (Петковић и Тапавички-Илић 2020: 151–152; Јанковић, Михајловић и Бандовић 2021: 238, fig. 5).

What is certain is that the deceased individuals were buried in the Neolithic settlement layer, as evidenced by traces of Vinča culture ceramic fragments, unprocessed deer antlers and bone tools. The burials were found at the level of disintegrated daub lumps.

Radiocarbon analysis

The obtained values of radiocarbon probability distribution showed that the individual found in Grave 1 was buried 1248 (47.2%) 1321 calAD or 1358 (48.2%) 1390 calAD within the 95.4% possibility, probable 1290 (29.5%) 1306 calAD or 1364 (38.8%) 1384 calAD within the 68.3% possibility (fig. 10).

Anthropological analysis

The skeleton is poorly preserved (fig. 11). Cranial bones are better preserved than postcranial: fragmented squama of the frontal bone, fragment of left eye orbit of the frontal bone, fragmented left parietal bone, right parietal bone, occipital squama, fragment of the sphenoid bone, fragmented 1/3 of left and ¼ of right temporal bones, fragmented left zygomatic bone, frontal process of the maxilla and a fragment of alveolar process of the maxilla, fragmented body of the mandible. When it comes to postcranial bones, only great sciatic notches of both iliac bones

are present as well as the diaphysis of the left femur and fragmented diaphysis of the right femur with a part of the neck. The periosteum is damaged on all bones. The enamel on the teeth is poorly preserved. During the anthropological analysis, two small fragments of animal bones have been found among the human remains, as well as fragments of pottery and lithics.

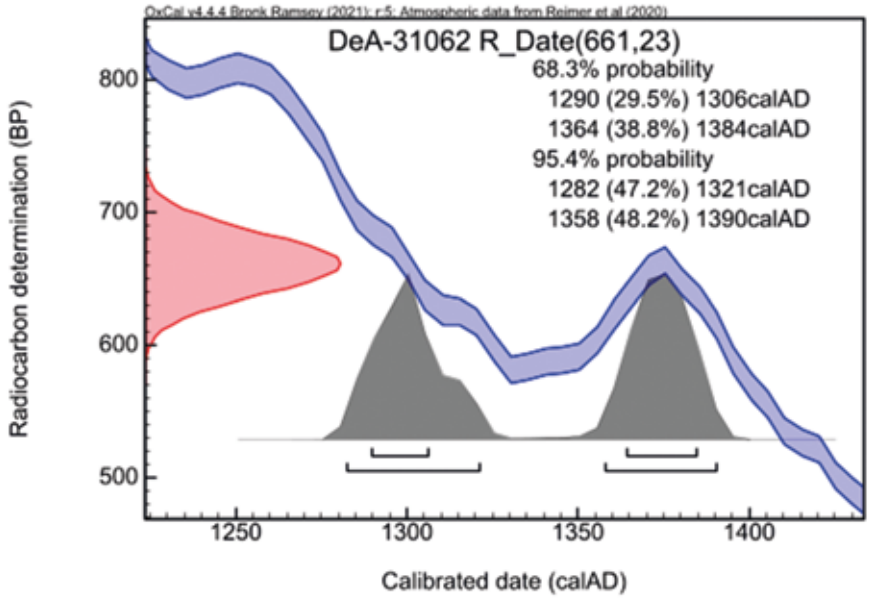

Fig. 10 Radiocarbon probability distribution plot for the site of Supska
Сл. 10 Дистрибуција вероватноће радиокарбонског датума са локалитета Супска

In terms of the sex and age, only few morphological features could be observed on skull and pelvic bones. On the skull, medium pronounced frontal and parietal eminence, barely pronounced nuchal lines of the occipital bone, small mastoid process, and gracile mandible suggest female sex while external occipital protuberance is more neutral. When it comes to pelvic bones, only fragmented great sciatic notches could be observed. They showed intermediate morphology, between U shaped and wide, which are the characteristics of the female sex, and V shaped and narrow, which are characteristics specific for the male sex. Thus, the sex of this individual could not be determined. On the skull, all three sutures (coronal, sagittal, lambdoid) could be observed and the degree of their closure (0–1) indicates around 20 years of age, while a low degree of tooth abrasion also indicates that this individual was a young adult, aged between 18–25.

When it comes to the dental analysis, only teeth 27 was found inside the alveolar socket, while all other teeth were found outside their sockets: 13, 14, 22, 23, 24, 25, 26, 28, 31, 32, 33, 34, 35, 36, 37, 38, 43, 44, 45, 46, and 47. Abrasion of the 1st degree (in enamel) was noted on teeth 14, 22, 24, 25, 27, 28, 31, 32, 34, 35, 37, 38, 44, 45, and 47, while teeth 13, 23, 26, 33, 36, 43, 46 have the 2nd degree (exposed dentin). Supragingival dental calculus of degree 1 is present on teeth 13, 14, 22, 24, 25, 26, 34, 43 (buccal side), 38 (all sides), 36, 46 (distal side), 44 and 45 (lingual side),

Fig. 11 Skeletal remains of the individual found in Grave 1 at Supska (excluding teeth) (photo: J. Jovanović)

Сл. 11 Скелетни остаци пронађени у гробу 1 (без зуба) (фото: Ј. Јовановић)

while the 2nd degree has been noted on tooth 23 on its buccal side (fig. 12). Linear enamel hypoplasia was noted on the following teeth: 13 (linear, one hypoplastic defect: formed between 3.4–3.8 years old), 24 (linear, one hypoplastic defect formed between 3.5–3.8 years old), 25 (linear, one hypoplastic defect formed between 4.7–5.1 years old), 33 (linear, one hypoplastic defect: formed between 3.0–3.4 years), 43 (linear, one hypoplastic defect: formed between 3.1–3.6 years old), 44 (linear, 2 hypoplastic defects formed between 3.4–3.7 and 3.7–4.1 years old).

Fig. 12 Dental calculus on the upper canine (photo: J. Jovanović)

Сл. 12 Трагови зубног каменца на горњем канину (фото: Ј. Јовановић)

The presence of another nonspecific stress marker, porotic hyperostosis (fig. 13), was detected on the left parietal bone close to the lambdoid suture (degree score 1, activity 2) as well as on the right parietal bone (degree score 1, activity 2).

Fig. 13 Porotic hyperostosis on the left parietal bone (photo: J. Jovanović)
Сл. 13 Порозна хиперостоза на левој паријеталној кости (фото: Ј. Јовановић)

In terms of the metric analysis, only femurs could have been measured and two indices were calculated. On the left and right femur, based on the subtrochanteric anterior – posterior diameter (2.5 cm (l) and 2.6 cm (r)) and subtrochanteric mediolateral diameter (3.0 cm; (l, r)), it was possible to calculate the platymeric index (83.33 (l); 86.66 (r)), which shows that the left femur (platymeric index) has a more flattened upper part of the diaphysis in the anterior – posterior direction than the right one (eurimeric index). On the lower part of the right femur, on medial and lateral sides, there are possible traces of infection such as osteomyelitis – thickening of bone with an oval-shaped cloaca, but due to the severe damage of periosteum, a more precise determination was not possible.

Isotopic analyses

When it comes to the stable isotope analysis, the isotopic ratios of terrestrial herbivores (red deer and domestic cattle)[4] range from – 22.4 to – 21.1‰ (Δ = 1.3‰; n = 2) for carbon, and from 6.1 to 8.6‰ (Δ= 2.5‰; n = 2) for nitrogen (Table 1, fig. 14), while isotopic ratios of terrestrial omnivores (wild boar) range from – 21.7 to – 20.9‰ (Δ = 0.8‰; n = 2) for carbon, and from 9.8 to 10.1‰ (Δ= 0.3‰; n = 2) for nitrogen (Table 1, fig. 14). The recorded isotopic ratios for the Medieval individual buried in grave 1 are: $\delta^{13}C$ -17.8 and $\delta^{15}N$ 12.8 (fig. 14).

4 Two other samples, domestic cattle metacarpal (SU 56/31/1) and red deer metatarsal (SU 56/1/2) were excluded from the interpretation and discussion since their collagen quality criteria for C and N content was out of the range (see Table 1).

Sample Nr.	Sample details	Skeletal element	$\delta^{13}C$ vs. PDB (‰) (±0.1‰)	C content (%) (±1%)	δ^{15} vs. air (‰) (±0.1‰)	N content (%) (±1%)	C/N ratio
I/2724/1	SU 56/G1/1 (Human, burial 1)	Parietal bone	-17.8	34.4	10.4	12.8	3.1
I/2724/2 **	SU 56/34/1 (*Sus scrofa*)	Femur	-21.7	29.3	10.1	10.0	3.4
I/2724/3 *	SU 56/31/1 (*Bos taurus*)	Metacarpal	-22.3	26.5	8.4	9.0	3.4
I/2724/4	SU 56/42/1 (*Sus scrofa*)	Humerus	-20.9	38.8	9.8	14.0	3.2
I/2724/5*	SU 56/1/2 (*Cervus elaphus*)	Metatarsal	-22.5	24.3	7.1	7.9	3.6
I/2724/6	SU 56/2/1 (*Cervus elaphus*)	Phalanx 2	-21.1	36.4	6.1	12.7	3.3
I/2724/9 **	SU 56/70/1 (*Bos taurus*)	Phalanx 3	-22.4	29.8	8.6	10.5	3.3

* Samples excluded from the study since collagen quality criteria (%C and %N) are outside van Klinken range.

** Samples with %C initially outside van Klinken (1999) range, but still included in the study since they are borderlines and as %C range falls within the expected range once weighing errors are accounted for.

Table 1 The basic information on human and animal samples, the context, material sampled, isotope values of $^{\delta}$13C, $^{\delta}$15N, elemental compositions, C/N ratios

Табела 1 Основни подаци о људским и животињским узорцима, контексту, узоркованом скелетном елементу, и добијеним изотопским вредностима $^{\delta}$13C, $^{\delta}$15N, садржају C, N и односу C/N

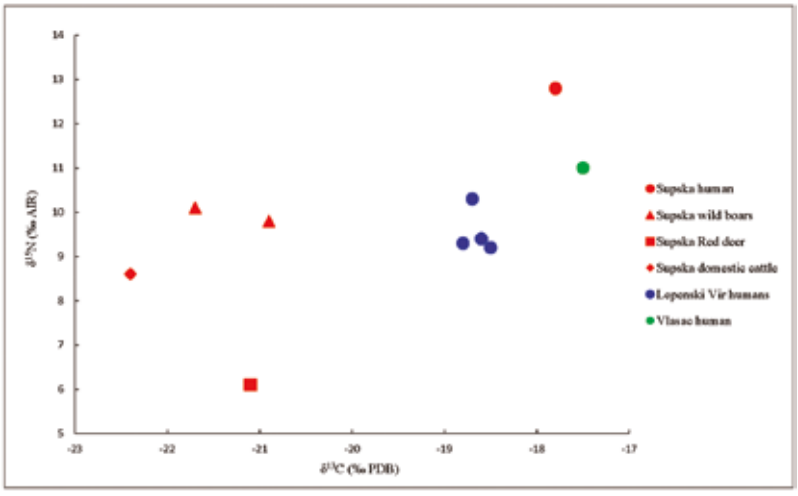

Fig. 14 δ13C and δ15N values for humans and animals from the site of Supska and the Danube Gorges (author: J. Jovanović)

Сл. 14 Вредности δ13C и δ15N људи и животиња са Супске и из Ђердапа (аутор: Ј. Јовановић)

DISCUSSION

Grave 1 yielded a Medieval date (1280–1390 cal AD), which is not in accordance with the relative chronological attribution given to this individual, which indicated the Roman period. This example emphasises how important it is to do radiocarbon dating on individuals originating from multi-layered sites. It is possible, based on the drawings and the position of the skeletons, that all three burials found at Supska were part of a Medieval necropolis arranged in parallel rows.

Based on reliable AMS dating results that place this individual into the Medieval period, the position of the fibula on the left upper arm can be interpreted as a grave good placed at the time of the burial, accidentally found while digging the burial place and left as a gift and reminder of some older times. The original role of the fibula, if there was once a Roman necropolis in this part of the site, would have been a functional part of burial clothing. Most likely, during the burial of the deceased, an older burial was encountered, where an object of this type may have been the only trace of the previous process. On the other hand, it was also possible that the deceased individual found this fibula in their lifetime, saved it and kept it as an object which had a symbolic value, and was buried with it eventually. The phenomenon of secondary usage of findings of the Roman material culture, especially coins, in Medieval necropoles is witnessed not only in the territory of the Central Balkans (Ćirić 2016) but was also common in other parts of the former Roman Empire during the Medieval times (Eckardt and Williams 2003; Travaini 2004: 159–181).

In 1955, in the vicinity of the site of Stubline, towards the Mućava area, near th *Viminacium–Naissus* section of the road, a hoard of Roman Antonians was accidentally discovered during agricultural works. On that occasion, 115 specimens were handed over to the Museum and published (Borić Brešković and Stamenković 2008: 155; cf: Borić Brešković and Vojvoda 2013: Map 1). The hoard was stored during the 3rd century AD and is important because of its location, as well as the route of the Roman road, the possibility of the existence of large agricultural estates and their owners. The findings of a Roman coin, and a fibula, only a few hundred meters away from the Neolithic settlement, do not seem to be a coincidence. Since Garašanin's team was aware of the discovery of a larger group of silver coins, the attribution of the skeletal remains to the Roman period seems to have been the only possible choice at that moment.

Contextual analysis also shows that this individual was buried in the Neolithic settlement layer, as evidenced by traces of Vinča culture ceramics and animal bones. This means that at the time of the burial, previous periods were encountered, but it is not possible to make, at this moment, more concrete conclusions on the strategy, special or ignorant attitude of Medieval communities towards the discovered forms and objects at the site of Supska.

The anthropological analysis showed that a young adult was buried in Grave 1. The small amount of supragingival calculus which is present on half of the teeth of this individual could be related to various factors, such as the diet, oral hygiene, or genetics. The presence of linear enamel hypoplasia noted on canines and premolars showed that this young adult experienced some nonspecific metabolic stress during their childhood. This condition develops usually due to a poor diet,

infectious diseases, as well as hereditary conditions or localised trauma (Goodman and Rose 1991; Solomonos and Keusch 1981). Hypoplasia lines were noted on several teeth, indicating that those stressful events happened between 3.0– 4.1 and between 4.7–5.1 years of age. In general, the time between the age of 2 and 5 is a sensitive period in the growth and development of a child. This is the time when most of the stressful events happen, and they are usually connected to the cessation of breastfeeding (Lewis 2007) and diet completely based on solid food. This period can be very stressful since children are not provided with important nutrients from mother's milk anymore. They are starting to eat solid food and drink animal milk and more water, which can often be contaminated and full of bacteria. All of this can lead to stomach problems, a decline in immunity, which, in combination with poor nutrition, poor level of vitamins and minerals, can leave traces on bones in the form of dental hypoplasia or some other nonspecific stress indicator (Rudney 1983). Furthermore, the presence of another nonspecific stress marker, porotic hyperostosis, lends weight to the argument that this young adult suffered from some nutritional disbalance. It can be related to the same stressful event which happened between 3–5 years of age, but it can also be linked to some other stressful event / nutritional disorder later in the individual's life. However, since some of the lesions of porotic hyperostosis were healed at the time of death, it seems that this young adult recovered from this nutritional deprivation. The detected conditions such as linear enamel hypoplasia and porotic hyperostosis were also common in other Medieval necropoles (11th–15th century) in the territory of present-day Serbia (Đurić-Srejić 2001; Đurić et al. 2008; Miladinović-Radmilović 2011; Миладиновић-Радмиловић 2012; Марковић и Јовановић 2019).

The recorded isotopic ratios of $\delta^{13}C$ (-17.8) and $\delta^{15}N$ (12.8) showed that the young adult buried in Grave 1 at Supska had a mixed diet based on C_4 plants (such as millet) and/or C_3 plants, with a strong addition from animal proteins. It is also possible that this C_4 signal (at least to some extent) comes from animals that this individual was consuming which were, in turn, fed with C_4 cereals such as millet. Higher $\delta^{15}N$ and lower $\delta^{13}C$ also show that this individual from Supska had a high protein diet, where a significant part of proteins could come from aquatic resources. The stable isotope ratios recorded for different species of fish during the Mesolithic–Neolithic period in the Danube Gorges (Iron Gates) show that some freshwater fish, such as Wels catfish and carp, can display the broadest range of $\delta^{13}C$ values, with some of them having very low values (Grupe, Peters and Mikić 2003; Borić et al. 2004; Nehlich et al. 2010; Jovanović et al. 2019). It is possible that these species were also present in the Velika Morava through its connection to the Danube, and that the young adult from Supska consumed them.

Medieval period stable isotope studies in Serbia have been at a very limited level. There are only few individuals from the Danube Gorges for which we have stable isotope ratios of carbon and nitrogen, as part of AMS dating. Four burials from Lepenski Vir were dated mostly into the mid-15th century (Bonsall et al. 2015), while one individual from Vlasac (Burial 26) was dated into the 9th–11th century

(Jovanović et al. 2021). Their stable isotope values[5] are similar to the one obtained for the young adult from the site of Supska, and indicate a mixed diet, based mostly on C_4 plants and/or C_3 plants with an addition of aquatic resources (fig. 14; Bonsall et al. 2015; Jovanović et al. 2021). However, the $\delta^{15}N$ ratios are higher in the Supska young adult than in the Danube Gorges Medieval individuals, indicating that the individual from Supska probably had access to larger amounts of animal proteins. They also show that the young adult from Supska had a diet which was similar the most to the one of the Medieval individuals from the site of Vlasac, though there was a larger amount of animal protein intake at Supska.

CONCLUSION

AMS dating revealed that the individual buried in Grave 1 at Supska belongs to the Medieval period (13th–14th century), contrary to some previous assumptions, which placed the burial into the Roman period. However, the presence of the Roman fibula on the arm of this individual remains intriguing and could have had some symbolic role. Further research into the presence of Roman objects inside Medieval burials is needed to have a clearer picture about this phenomenon. The anthropological analysis revealed that the skeleton in Grave 1 belonged to a young adult, who suffered from nonspecific metabolic stress during childhood, which was a common condition in Medieval times. Since stable isotope studies for the Medieval period in this region are limited, other resources (historical, archaeological, and archaeozoological records) have mostly provided data about the diet in this region. Although it comes only from one individual, the stable isotope analysis of the individual from the site of Supska can contribute to our knowledge about the diet in Medieval Serbia. Our study pointed out how important it is to AMS date individuals which come from multi-layered sites and contexts such as this at the site of Supska. It also emphasises how a multidisciplinary approach is important when studying burials from multi-layered sites and how much new information about the lifeways and deathways of past communities one can gain by conducting and combining several analyses.

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Translated by the authors

5 Lepenski Vir: Burial 4 $\delta^{13}C$ (-18.5), $\delta^{15}N$ (9.2); Burial 29 $\delta^{13}C$ (-18.6), $\delta^{15}N$ (9.4); Burial 30 $\delta^{13}C$ (-18.7), $\delta^{15}N$ (10.3); Burial 62 $\delta^{13}C$ (-18.8), $\delta^{15}N$ (9.3) (Bonsall et al. 2015); Vlasac Burial 26 $\delta^{13}C$ (-17.5), $\delta^{15}N$ (11) (Jovanović et al. 2021) (Fig. 14).

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СРЕДЊОВЕКОВНА САХРАНА СА ЛОКАЛИТЕТА СУПСКА: АНТРОПОЛОШКА И КОНТЕКСТУАЛНА АНАЛИЗА СКЕЛЕТА ИЗ ГРОБА 1

РЕЗИМЕ

Током 1956. године, Археолошки институт и Народни музеј у Београду обавили су ископавања на локалитету Супска, који се налази недалеко од Ћуприје, на десној обали Велике Мораве, у централној Србији. Највише остатака материјалне културе потиче из каснонеолитског слоја, али су откривени и налази из других периода. Супска је позната и као једно од неколико неолитских насеља са комплетном секвенцом винчанске групе. Осим епонимног локалитета Винча – Бело брдо, то је друго велико налазиште чији керамички материјал и данас представља референтни узорак за каснонеолитску културу јужно од Дунава и Саве. Неолитско насеље је настало на благим обронцима Кучајских планина, на њиховом споју са низијским формацијама старије речне терасе Велике Мораве. На потесу Супске доминирају ниски брегови, а један од њих је Стублина.

Приликом ископавања 1956. године откривени су културни слојеви и налази који се везују за винчанску културу, као и један гроб (гроб 1) из каснијег периода, који је био укопан у неолитски слој. На левој надлактичној кости покојника нађена је бронзана фибула крстастог типа, са завршецима у виду луковица, на основу које је гроб опредељен у римски период. Резултати ископавања објављени су у монографији *Супска „Стублина" – праисторијско насеље винчанске групе* (Гарашанин и Гарашанин 1979), док антрополошке анализе скелета из гроба 1 до сада нису публиковане. У овом раду су представљени контекстуални, биоантрополошки и изотопски резултати добијени проучавањем остатака људског скелета из гроба 1.

Радиокарбонски датум показао је да је ова индивидуа живела током XIII и XIV века (1290–1390. кал. н. е.), што није у складу с претходним закључцима. Првобитно је гроб, на основу прилога, датован у римски период. Присуство античких предмета, посебно функционалног дела одеће као што је фибула, је често у гробовима из тог времена. С обзиром на близину античких локалитета (нпр. *Horreum Margi*), било је логично што су руководиоци ископавања првобитно определили овај гроб у период касне антике, будући да се бронзане крстасте фибуле с луковицама и локалне радионице за њихову израду генерално датују у IV век н. е. На основу резултата радиокарбонског датовања добијеног у овој студији, може се поуздано закључити да је ова особа овде сахрањена током средњег века, док положај фибуле на левој надлактици

може да се протумачи као гробни прилог положен у моменту сахране, који је случајно нађен приликом копања гробне раке и остављен као дар и подсетник на нека старија времена. Једна од претпоставки је да на локалитету Супска постоји неоткривена римска некропола, а да је фибула пронађена у гробу 1 припадала неком од покојника сахрањених на њој и да је чинила функционални део његове погребне одеће. Можда се приликом укопавања покојника наишло на старију сахрану, а могуће је и да је особа сахрањена у гробу 1 пронашла фибулу и чувала је као објекат симболичне вредности, и да је на крају била покопана с њом. С обзиром на оближње налазе римских остава новца Супска I и II, и интензиван промет дуж римског пута *Viminacium–Naissus*, ови налази у слојевима неолитског насеља нису неочекивани.

Резултати антрополошке анализе показали су да је у гробу 1 сахрањена највероватније млада одрасла особа, која је током детињства доживела неку врсту неспецифичног метаболичког стреса. На то указују трагови линеарне хипоплазије и порозне хиперостозе. Трагови хипоплазије на зубима настали су између 3. и 5. године живота, и могу бити последица лоше исхране, инфекције, трауме и сличних догађаја. То је генерално осетљив период у расту и развоју деце, када се дешава већина стресних догађаја, можда услед одвикавања од дојења и преласка на чврсту храну. Присуство трагова порозне хиперостозе на костима лобање такође упућује на то да је ова млада особа највероватније имала одређен нутритивни дисбаланс, од кога се успешно опоравила, што може да се закључи на основу трагова залечених лезија. Та стања уочена су и на другим средњовековним некрополама на територији Србије.

Анализе стабилних изотопа $\delta^{13}C$ (-17.8) и $\delta^{15}N$ (12.8) су показале да је исхрана ове индивидуе била заснована на уносу C^4 (нпр. просо) и C^3 биљака (пшеница, јечам), са високим уделом животињских протеина. Висок $\delta^{15}N$ и низак $\delta^{13}C$ такође показују да је ова индивидуа имала високопротеинску исхрану, чији је значајан извор потицао од акватичких ресурса, односно од слатководних риба, као што су сом и шаран. Иако су подаци о стабилним изотопима из средњовековног периода са територије Србије ретки, неколико доступних података са Лепенског вира и Власца показује да су покојници имали сличну исхрану као и млада одрасла особа сахрањена у Супској.

Наша студија је показала од каквог значаја је датовање остатака покојника са вишеслојних налазишта и из контекста као што је овај на локалитету Супска. Резултати су указали на неопходност мултидисциплинарног приступа у проучавању гробова и индивидуа сахрањених у њима на локалитетима оваквог типа јер на тај начин могу да се добију важне информације о начину живота и погребним обичајима заједница у прошлости.