Arheol. rad. raspr. 14(2004), str. 247-292

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THE ŠTRBINCI SKELETAL SERIES IN CONTEXT OF OTHER LATE ANTIQUE SKELETAL SERIES FROM CONTINENTAL CROATIA

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UDK 904:611.7:903.5"652"(497.5Štrbinci)
Izvorni znanstveni rad
Prihvaćeno: 26. XI. 2003.

The purpose of the paper is to synthesize the current anthropological data available for the Štrbinci site, present it by grave unit, and analyze and compare the demographic profiles and disease frequencies between Štrbinci and a composite Late Antique skeletal series from continental Croatia consisting of human osteological remains from three archaeological sites; Roman *Mursa* (modern Osijek), Roman *Cibalae* (modern Vinkovci) and Zmajevac. All four sites are dated to the 4th century AD and all are located in the eastern part of continental Croatia. To determine if life stresses were different in Štrbinci the age and sex distribution in Štrbinci was compared to the composite Late Antique skeletal series from continental Croatia. All skeletons were also analyzed for the presence of dental pathology, dental enamel hypoplasia, cribra orbitalia, trauma, and Schmorl's lesions.

Data collected from the skeletal series show that, with the exception of alveolar bone disease frequencies and enamel hypoplasia frequencies, no significant difference in quality of life is evident. Both series are characterized by an underrepresentation of subadults from the youngest age category and by similar average adult male and female ages at death. In Štrbinci the average ages at death for adult males and females were 40.3 and 36.9 years respectively, in the composite Late Antique skeletal series from continental Croatia 37.4 years for males and 39.9 for females. The frequencies of caries lesions, cribra orbitalia, trauma and Schmorl's lesions are similar in both series.

Key words: Pannonia, Štrbinci, Late Antique necropolis, paleodemographical and paleopathological analyses, traumas (*Ključne riječi*: Panonija, Štrbinci, kasnoantička nekropola, paleodemografske i paleopatološke analize, traume)

Introduction

In recent years two papers dealing with the skeletal biology of the Štrbinci skeletal series have been published (Šlaus 1998a; Šlaus 2001). This archaeologically well documented and well preserved skeletal series is one of the few Late Antique period series from continental Croatia that has been systematically analyzed. At present, data is available from only three other skeletal series – Zmajevac, Mursa and Vinkovci (Šlaus 2002), all dated to the 4th century AD. There are two reasons for this lack of information. First, bioarchaeological research in Croatia concentrated primarily on problems related to the origin and migrations of the early Medieval Croat populations (Šlaus 1996; Šlaus 1998b; Šlaus 2000; Šlaus & Filipec 1998) and the analyses of medieval skeletal series (Boljunčić 1997a; Boljunčić 1997b; Šarić-Buzančić 1999; Šlaus 1997; Šlaus 2002; Šlaus et al. 2002). The other reason is the current absence of investigated Late Antique cemeteries in continental Croatia. Ongoing investigations of several cemeteries in eastern Slavonia and Baranja will hopefully rectify this in the future.

Data from skeletal series dated to the Late Antique period of the Roman Empire is, however, available from other areas in Europe. Craniometric relationships between Antique populations (0-500 AD) from Europe have been studied by Schwidetzky and Rosing (1975). Calvin Well's report on 421 individuals recovered from the Romano-British cemetery at Bath Gate (Wells 1982) is one of the best known paleodemography and paleopathology texts dealing with Late Antique skeletal series. More recent reports include Ery's analyses of paleodemographic and paleopathological data from the Late Antique period in Pannonia (1989), Wiltschke-Schrotta's and Teschler-Nicola's (1991) report on the Late Antique series recovered from the Linz cemetery in Austria, and Garralda and Cabello's analyses of the Hispano-Roman cemetery from Corduba in Spain (Garralda & Cabellos 2002).

The purpose of this paper is twofold. Firstly, to synthesize the data currently available for the Štrbinci skeletal series and to present it by grave unit. The second purpose is to compare the demographic profiles and disease patterns recorded in the Štrbinci skeletal series with the other Late Antique skeletal series recovered from continental Croatia. To this end paleodemographic and paleopathological data from the Cibalae, Mursa and Zmajevac skeletal will be pooled and compared with the Štrbinci series.

The following disease categories will be summarized for all four sites: dental pathology – including caries and alveolar bone disease, subadult stress indicators – including dental enamel hypoplasia and cribra orbitalia, trauma – including skeletal evidence of fractures and dislocations, and physical stress in the spinal column as assessed by the frequency of Schmorl's depressions in vertebral bodies. These categories were chosen for two reasons. Firstly, the pathological conditions comprising these categories are com-

mon and leave relatively unambiguous traces in the skeleton. Second, when taken together, these categories create a composite profile of general health and quality of life.

Materials and methods

All of the four sites analyzed in this report are located in the eastern half of continental Croatia. The Štrbinci site is located approximately 3 km southeast of the town of Đakovo. At present, there is a considerable amount of evidence (archaeological, numismatic and epigraphic) linking the site with the Roman town *Certissia* (Migotti 1998). The skeletal remains were recovered in four campaigns carried out in 1993, 1999, 2001 and 2002 (Gregl 1994; Perinić 1999; Migotti & Perinić 2001). A total of 48 individuals were recovered. The majority of the remains were recovered from single primary inhumations. Only two graves contained two individuals, in one case a young woman with a poorly preserved subadult (grave 45), and in the other an adult male with a well preserved subadult (grave 36). The series is characterized by excellent bone preservation. Material artifacts including pottery, jewelry, and coins date the skeletal remains to the 4th century AD.

Zmajevac-Mocsolac is situated in the northeastern corner, close to Croatia's borders with Hungary and Yugoslavia, approximately 35 km northeast of Osijek and 4 km west of the Danube. Rescue excavations in 1998 revealed the presence of a Late Antique cemetery. This cemetery was systematically excavated from 1999 to 2001. During these campaigns 73 individuals were recovered. The majority of the remains were recovered from single primary inhumations. Eight graves contained two or more individuals. No consistent combination of individuals is apparent in these graves. The graves consist of two subadults (grave 7), a subadult and an adult female (graves 25, 28 and 44), an adult male and an adult female (grave 27), two adult females (grave 1), two adult males (grave 61) and a male and female with a subadult (grave 64). Bone preservation and completeness of the recovered remains were excellent. Artifacts recovered from the site date the use of the cemetery to the 4th century AD (Šimić 1998; Filipović personal communication).

The Mursa skeletal series was recovered from the "Eastern Necropolis" in 1988. A total of 28 skeletons were recovered. Associated material remains date the use of the cemetery to the 4th century AD (Göricke-Lukić 2000). Skeletal material was recovered from 13 individual graves, one grave which contained the remains of two individuals, one which contained three individuals, and one which contained the remains of ten individuals (Göricke-Lukić 1999). Bone preservation was very good, as was the completeness of the recovered skeletons.

The skeletal material which comprises the Vinkovci series was recovered during two campaigns carried out in 1976 and 1977. A total of 34 individuals were recovered. Most individuals (18) were recovered from single inhumations. Recovered material artifacts date the use of the cemetery to the 4th century AD (Dizdar personal communication).

All skeletons from the analyzed sites were aged and sexed, and the pathological data collected.

Accurate determinations of sex, age and precise bone element baseline counts are essential for sample comparisons between different skeletal series. The criteria selected for determination of sex include pelvic (Phenice 1969) and cranial morphology (Krogman & Iºcan 1986). These criteria generally provide accurate results. From a sample of skeletons of known sex, Meindl et al. (1985) report a 3% error rate when both the pelvis and skull were evaluated. When these elements were missing, sex was determined by recently developed discriminant functions for sexing adult femora (Šlaus 1997). Although initially developed for medieval Croatian populations, these functions have also empirically proven to be applicable to Late Antique series. Based on the variables used the functions have an accuracy rate of between 87% to 95%. No attempt was made to estimate the sex of subadult individuals.

Adult age at death was estimated using as many methods as possible, including ectocranial suture fusion (Meindl & Lovejoy 1985), pubic symphysis morphology (Brooks & Suchey 1990; Gilbert & McKern 1973; McKern & Stewart 1957; Todd 1920, Todd 1921), auricular surface morphology (Lovejoy et al. 1985), and sternal rib end changes (Iºcan et al. 1984; Iºcan et al. 1985). In subadults, age at death was estimated using epiphyseal fusion, diaphyseal lengths, and dental eruption criteria (McKern & Stewart 1957; Bass 1987; Fazekas & Kósa 1978; Moorrees et al. 1963).

Detailed bone inventories were obtained for each skeleton. The coding format used in this procedure is described in detail in previous reports dealing with the Štrbinci skeletal series (Šlaus 2001).

As already noted, the specific disease categories summarized for the four sites included in this analysis include dental pathology, subadult stress indicators (dental enamel hypoplasia and cribra orbitalia), trauma, and Schmorl's depressions.

Dental pathology data were tabulated for alveolar bone disease and caries. Dental caries is a complex infectious disease of the external surface of the tooth. Various bacteria, primarily *Streptococcus* spp., produce decalcifying acids, which, if left unchecked, cause dissolution of the enamel and dentin (Bhaskar 1981). Physiological and possibly external environmental factors may be related to caries incidence (Hildebolt et al. 1988). Alveolar bone disease is for the purpose of this report defined as the presence of periodontal or periapical abscesses and antemortem tooth loss.

Dental enamel hypoplasia or chronological aplasia is generally defined as any macroscopic defect in the enamel surface (Pindborg 1970; Sarnat & Schour 1941; Sarnat & Schour 1942). Hypoplastic defects can range from minor depressions in the enamel surface, with no dentin exposure, to a complete disruption of the enamel. These defects appear as bandlike depressions (linear enamel hypoplasia) or as pits. They result from a

disturbance of the enamel development in the growing deciduous or permanent tooth bud (phase of amelogenesis). The causes of the hypoplastic defects are commonly attributed to a variety of factors including physiological stresses such as malnutrition, infectious disease, psychological or physical trauma, or other metabolic disruptions (Goodman et al. 1980; Goodman & Rose 1991, Kreshover 1960). Hypoplasias remain visible until the affected enamel is worn away through dental attrition, providing a nearly permanent record of developmental arrest during infancy and early childhood. While the development of enamel hypoplastic defects cannot be attributed to a specific disease or episode in the life of a deceased individual, studies of living children document the association between higher frequencies of hypoplastic defects and poor nutrition and low socioeconomic status (Goodman et al. 1991, Goodman et al. 1992).

Data on enamel hypoplasias were collected on the permanent maxillary central incisors and canines, and on the permanent mandibular canines. Hypoplasia frequencies were tabulated by individual.

Cribra orbitalia is recognized by the presence of sievelike lesions or pitting on the orbital roof. The etiology of this lesion is not fully established, and several diseases have been implicated (El-Najjar 1976; Mensforth et al. 1978). Of these, iron deficiency anemia is the most often attributed cause (Stuart-Macadam 1985).

Skeletal evidence for trauma was determined by the presence of fractures, dislocations involving joints out of articulation or alignment as a result of force, and enthesophytes. The latter include bone spurs, heterotopic bone formations, and traumatic myositis ossificans. They form in response to torn ligaments or muscles, and other types of injury and biomechanical stress that result in calcification of inflamed tissue.

Schmorl's depressions are lesions which result from herniation and displacement of intervertebral disc tissue into the adjacent vertebral body. The presence of Schmorl's depressions can be idiopathic, or related to a variety of reasons including among others certain diseases and congenital factors that produce a weakening of the subchondral bone and a disruption of the cartilaginous end-plate, and strong compression caused by traumatic injury. However, the most common cause of Schmorl's depressions according to Schmorl & Junghanns (1971) are degenerative changes associated with ordinary stress on the vertebral column.

Some of the described diseases, for instance dental disease and degenerative osteoarthritis, are age-dependent (i. e., increase with advanced age). Therefore, when tabulating the data, age was controlled by dividing the sample into two broad categories: young adults, defined as individuals aged between 16-35 years, and old adults, defined as individuals older than 36 years.

Results

The results of osteological analyses by grave unit are as follows:

1
Štrbinci 1993
Grave vault b

Taphonomy and material recovered: the bones are poorly preserved, light in color with considerable postmortem damage to the cortex. The following elements are present: the mandible, both clavicles, both humerii, the right innominate, the left femur and left tibia.

Sex: female based on the: 1) morphology of the innominate, 2) morphology of the mandible, 3) length and robusticity of long bones.

Age at death: between 20 and 25 years based on the: 1) morphology of the pubic symphysis, 2) morphology of the auricular surface of the ilium. The trabecular bone is fine and dense.

Pathological changes: severe hypoplasia on different teeth categories including incisors, canines and premolars. A total of 17 hypoplastic defects is noted.

Associated animal or material remains: none are present in the recovered assemblage.

2
Štrbinci 1993
Grave 1

Taphonomy and material recovered: the bones are well preserved, dark with slight postmortem damage to the cortex. The following elements are present: the frontal bone, both parietals, the occipital bone, both temporals, both zygomatics, both maxillae, the mandible, the sternum, both scapulae, both clavicles, both innominates, the sacrum, both patellae, both talii and both calcaneii, both humerii, both radii, both ulnae, both femurs, both tibiae, both fibulae, 12 left and 10 right ribs, 7 cervical, 11 thoracic and 5 lumbar vertebrae.

Sex: male based on the: 1) morphology of the innominate, 2) skull, 3) mandible, 4) length and robusticity of long bones.

Age at death: between 20 to 25 years based on the: 1) morphology of the pubic symphysis, 2) morphology of the sternal ribs, 3) morphology of the auricular surface of the ilium. The trabecular bone is dense. The medial epiphysis of the clavicle is completely unfused.

Pathological changes: mild healed cribra orbitalia.

Associated animal or material remains: none are present in the recovered assemblage.

3
Štrbinci 1993
Grave 2

Taphonomy and material recovered: the bones are well preserved, yellowish with slight postmortem damage to the cortex. The following elements are present: the frontal bone, both parietals, the occipital bone, both temporals, both zygomatics, both maxillae, the mandible, the sternum, both scapulae, both clavicles, both innominates, the sacrum, both patellae, both talii and both calcaneii, both humerii, both radii, both ulnae, both femurs, both tibiae, both fibulae, 11 left and 11 right ribs, 7 cervical, 12 thoracic and 5 lumbar vertebrae.

Sex: male based on the: 1) morphology of the innominate, 2) skull, 3) mandible, 4) length and robusticity of long bones.

Age at death: between 25 to 30 years based on the: 1) morphology of the pubic symphysis, 2) morphology of the sternal ribs, 3) morphology of the auricular surface of the ilium.

Pathological changes: a small globulomaxillary cyst with a diameter of 1 mm is present on the left maxilla. The mandible also exhibits marked ramus height asymmetry – the right ramus is 12 mm higher than the left. Bilateral benign cortical defects are noted on the insertion sites of the pectoralis major muscle on the proximal humerii. Moderate osteoarthritis is present on both scapulae, both distal femurs, and on the right distal tibia.

Associated animal or material remains: none are present in the recovered assemblage.

4
Štrbinci 1993
Grave 3

Taphonomy and material recovered: the bones are moderately well preserved, dark with severe postmortem damage to the cortex. The following elements are present: the frontal bone, both parietals, the occipital bone, both temporals, both zygomatics, both maxillae, both palatines, the mandible, the sternum, the left scapula, both clavicles, both innominates, both humerii, both radii and both ulnae, both femurs, both tibiae, 1 left and 4 right ribs, 3 thoracic vertebrae, 13 thoracic and 5 lumbar vertebrae.

Sex: this is a subadult.

Age at death: between 13 and 14 years based on the: 1) chronology of the formation and eruption of teeth, 2) length of the present long bones, 3) stage of union between epiphyses and diaphyses.

Pathological changes: active, moderate cribra orbitalia. Numerous linear hypoplastic defects are present on the crowns of the incisor, canines and premolars (n = 16). Deep

well-defined bilateral rhomboid fossae are present on the medial clavicles. This individual also has a supernumerary thoracic vertebra.

Associated animal or material remains: none are present in the recovered assemblage.

5
Štrbinci 1993
Grave 4

No osteological material was recovered from this grave.

6
Štrbinci 1993
Grave 5

No osteological material was recovered from this grave.

7
Štrbinci 1993
Grave 6

Taphonomy and material recovered: the bones are poorly preserved, dark with severe postmortem damage to the cortex. The following elements are present: both innominates, the left talus and both tibiae.

Sex: this is a subadult.

Age at death: between 5 and 6 years based on the: 1) length of the present long bones, 2) stage of union between epiphyses and diaphyses.

Pathological changes: generalized, active severe periostitis is present on both tibiae.

8
Štrbinci 1993
Grave 7

Taphonomy and material recovered: the bones are well preserved, yellowish with slight postmortem damage to the cortex. The following elements are present: the frontal bone, both parietals, the occipital bone, both temporals, both zygomatics, both maxillae, the mandible, the sternum, both scapulae, both clavicles, both innominates, the sacrum, both patellae, both talii and both calcaneii, both humerii, both radii, both ulnae, both femurs, both tibiae, both fibulae, 12 left and 12 right ribs, 7 cervical, 12 thoracic and 5 lumbar vertebrae.

Sex: male based on the: 1) morphology of the innominate, 2) skull, 3) mandible, 4) length and robusticity of long bones.

Age at death: between 20 to 25 years based on the: 1) morphology of the pubic symphysis, 2) morphology of the sternal ribs, 3) morphology of the auricular surface of the ilium.

Pathological changes: numerous linear hypoplastic defects on the crowns of the incisors, canines and premolars (n = 14). The right talus and calcaneus are congenitally fused. There is a recently formed callus on the distal part of the 2. right rib. The callus has a fine woven appearance and is located approximately 13 mm from the distal end of the rib.

Associated animal or material remains: none are present in the recovered assemblage.

9
Štrbinci 1993
Grave 8

Taphonomy and material recovered: the bones are well preserved, dark with moderate postmortem damage to the cortex. The following elements are present: the frontal bone, both parietals, the occipital bone, both temporals, both zygomatics, both maxillae, the mandible, the sternum, both scapulae, both clavicles, both innominates, the sacrum, the left patella, both talii and both calcaneii, both humerii, both radii, both ulnae, both femurs, both tibiae, both fibulae, 12 left and 12 right ribs, 7 cervical, 12 thoracic and 5 lumbar vertebrae.

Sex: male based on the: 1) morphology of the innominate, 2) skull, 3) mandible, 4) length and robusticity of long bones.

Age at death: between 20 to 25 years based on the: 1) morphology of the pubic symphysis, 2) morphology of the sternal ribs, 3) morphology of the auricular surface of the ilium.

Pathological changes: hypoplastic defects are noted on the crowns of the canines.

Associated animal or material remains: none are present in the recovered assemblage.

10
Štrbinci 1993
Grave 9

Taphonomy and material recovered: the bones are poorly preserved with severe postmortem damage to the cortex. The following elements are present: the right parietal, the occipital bone, the right temporal, sternum, left scapula, right clavicle, both humerii, right femur, 1. right and 2. left ribs.

Sex: this is a subadult.

Age at death: between 12.5 and 13.5 years based on the: 1) chronology of the formation and eruption of teeth, 2) length of the present long bones, 3) stage of union between epiphyses and diaphyses.

Pathological changes: two linear hypoplastic defects are present on the crowns of the maxillary lateral incisor and canine.

Associated animal or material remains: none are present in the recovered assemblage.

11
Štrbinci 1999
Grave 10

Taphonomy and material recovered: the bones are well preserved, dark with slight postmortem damage to the cortex. The following elements are present: the frontal bone, both parietals, the occipital bone, the right maxilla and right palatine, the mandible, both scapulae, both clavicles, both innominates, the sacrum, both humerii, both radii, both ulnae, both femurs, both tibiae, both fibulae, 6 left and 5 right ribs, 4 cervical, 6 thoracic and 3 lumbar vertebrae.

Sex: this is a subadult.

Age at death: between 2.5 and 3.5 years based on the: 1) chronology of the formation and eruption of teeth, 2) length of the present long bones, 3) stage of union between epiphyses and diaphyses, 4) thickness of the cranial vault.

Pathological changes: bilateral mild active cribra orbitalia is present on the superior orbits. Mild healed periostitis is present on the endocranial surfaces of both parietal bones. Mild healed periostitis is also noted on both medial tibiae.

Associated animal or material remains: none are present in the recovered assemblage.

12
Štrbinci 1999
Grave 11

No osteological material was recovered from this grave.

13
Štrbinci 1999
Grave 12

Taphonomy and material recovered: the bones are poorly preserved, dark with moderate postmortem damage to the cortex. The following elements are present: the mandible, left scapula, both clavicles, right innominate, the sacrum, the right talus, the right calcaneus, both humerii, both radii, both femurs, right tibia, one left rib, 3 thoracic vertebrae.

Sex: female based on the: 1) morphology of the innominate, 2) morphology of the mandible, 3) length and robusticity of long bones.

Age at death: between 30 to 35 years based on the: 1) morphology of the pubic symphysis, 2) morphology of the sternal rib, 3) morphology of the auricular surface of the ilium. The trabecular bone is fine and dense.

Pathological changes: mild healed periostitis is present on the medial right femur.

Associated animal or material remains: none are present in the recovered assemblage.

14
Štrbinci 1999
Grave 13

Taphonomy and material recovered: the bones are moderately well preserved, dark with slight postmortem damage to the cortex. The following elements are present: the frontal bone, both parietals, the occipital bone, both temporals, the mandible, both scapulae, the right clavicle, both innominates, both humerii, both radii, both ulnae, both femurs, both tibiae, left fibula, 8 left and 6 right ribs, 12 thoracic and 3 lumbar vertebrae.

Sex: this is a subadult.

Age at death: between 0.5 and 1.5 years based on the: 1) chronology of the formation and eruption of teeth, 2) length of the present long bones, 3) stage of union between epiphyses and diaphyses, 4) thickness of the cranial vault.

Pathological changes: moderate active periostitis is present on both medial tibiae. Moderate active periostitis is also noted on the medial superior surface of the third left rib.

Associated animal or material remains: a fragment of black pottery is present in the recovered assemblage.

15
Štrbinci 1999
Grave 14

Taphonomy and material recovered: the bones are well preserved, dark with slight postmortem damage to the cortex. The following elements are present: the frontal bone, both parietals, the occipital bone, both temporals, both zygomatics, both maxillae, both palatines, the mandible, both scapulae, both innominates, the sacrum, both patellae, the left talus, both humerii, both radii, both ulnae, both femurs, both tibiae, the left fibula, 5 cervical, 8 thoracic and 5 lumbar vertebrae.

Sex: female based on the: 1) morphology of the innominate, 2) skull, 3) mandible, 4) length and robusticity of long bones.

Age at death: between 40 to 45 years based on the: 1) morphology of the pubic symphysis, 2) morphology of the auricular surface of the ilium. The trabecular bone is sparse.

Pathological changes: Schmorl's defects are present on T3, T4, T5, T6, T7 and L1. Two carious lesions are present on the maxilla and three carious lesions are present on the mandible.

Associated animal or material remains: none are present in the recovered assemblage.

16
Štrbinci 1999
Grave 15

Taphonomy and material recovered: the bones are moderately well preserved, dark with severe postmortem damage to the cortex. The following elements are present: both parietals, the occipital bone, both temporals, right zygomatic, both maxillae, both palatines, both scapulae, both clavicles, both innominates, both talii and both calcaneii, left humerus, both femurs, both tibiae, both fibulae, 4 left and 4 right ribs, 7 thoracic vertebrae.

Sex: this is a subadult.

Age at death: between 9.5 and 10.5 years based on the: 1) chronology of the formation and eruption of teeth, 2) length of the present long bones, 3) stage of union between epiphyses and diaphyses.

Pathological changes: linear hypoplastic defects are present on the crowns of the maxillary central incisor, maxillary canines and mandibular canine.

Associated animal or material remains: none are present in the recovered assemblage.

17
Štrbinci 1999
Grave 16

Taphonomy and material recovered: the bones are well preserved, dark with slight postmortem damage to the cortex. The following elements are present: the frontal bone, both parietals, the occipital bone, both temporals, the right zygomatic, left maxilla, the mandible, the sternum, the left scapula, both clavicles, both innominates, the sacrum, the right patella, both talii and both calcaneii, the left humerus, both radii, both ulnae, both femurs, both tibiae, both fibulae, 6 left and 5 right ribs, 7 cervical, 12 thoracic and 5 lumbar vertebrae.

Sex: male based on the: 1) morphology of the innominate, 2) skull, 3) mandible, 4) length and robusticity of long bones.

Age at death: over 60 years based on the: 1) morphology of the pubic symphysis, 2) morphology of the sternal ribs, 3) morphology of the auricular surface of the ilium. The trabecular bone is sparse with noticeable cavities.

Pathological changes: mild osteoarthritic changes are present on C4, T5, T6, T8, T9 and L5. Severe osteoarthritic changes are present on C5, C6 and C7. Schmorl's defects are

present on T5, T8 and T9. Four carious lesions are present on the mandible. A well-healed depression fracture is present on the left parietal bone. The fracture is located approximately 40 mm anterior of lambda. The fracture is very shallow, oval shaped 12 mm in diameter.

Associated animal or material remains: none are present in the recovered assemblage.

18
Štrbinci 1999
Grave 17

Taphonomy and material recovered: the bones are poorly preserved, dark with slight postmortem damage to the cortex. The following elements are present: the mandible, the sternum, the right innominate, the left radius and ulna, the right femur, 5 right ribs, 4 lumbar vertebra.

Sex: this is a subadult.

Age at death: between 1.5 and 2.5 years based on the: 1) chronology of the formation and eruption of teeth, 2) length of the present long bones, 3) stage of union between epiphyses and diaphyses, 4) thickness of the cranial vault.

Pathological changes: none are present in the recovered assemblage.

Associated animal or material remains: none are present in the recovered assemblage.

19
Štrbinci 1999
Grave 18

Taphonomy and material recovered: the bones are moderately well preserved, dark with moderate postmortem damage to the cortex. The following elements are present: the frontal bone, both parietals, the occipital bone, both temporals, the right zygomatic, both maxillae, both palatines, the mandible, the right clavicle, both talii and both calcaneii, both femurs, both tibiae, both fibulae.

Sex: male based on the: 1) morphology of the skull, 2) mandible, 3) length and robusticity of long bones.

Age at death: between 45 to 50 years based on the: 1) degree of abrasion of occlusal surfaces of the teeth, 2) degree of obliteration of cranial sutures. The trabecular bone is sparse.

Pathological changes: bilateral mild healed cribra orbitalia is present on the superior orbits. A healed depression fracture is present on the left parietal bone. The fracture has smooth margins and a slightly porous floor and did not penetrate the inner table of the

skull. The fracture is oval shaped approximately 50 mm in diameter. Three carious lesions are present on the maxilla and four carious lesions are present on the mandible.

Associated animal or material remains: none are present in the recovered assemblage.

20
Štrbinci 1999
Grave 19

Taphonomy and material recovered: the bones are poorly preserved, dark with slight postmortem damage to the cortex. The following elements are present: both parietals, the occipital bone, the left maxilla, the left innominate, the left humerus, the right radius and ulna, the right femur, both tibiae, 3 thoracic vertebrae.

Sex: female based on the: 1) morphology of the innominate, 2) skull, 3) length and robusticity of long bones.

Age at death: between 30 to 35 years based on the: 1) morphology of the pubic symphysis, 2) morphology of the auricular surface of the ilium. The trabecular bone is fine and dense.

Pathological changes: linear hypoplastic defects are present on the crowns of maxillary and mandibular canines. Mild healed periostitis is present on the medial left tibia.

Associated animal or material remains: none are present in the recovered assemblage.

21
Štrbinci 1999
Grave 20

Taphonomy and material recovered: the bones are well preserved, dark with slight postmortem damage to the cortex. The following elements are present: the frontal bone, both parietals, the occipital bone, both temporals, both zygomatics, both maxillae, both palatines, the mandible, the sternum, the right scapula, both clavicles, both innominates, the sacrum, both patellae, both talii and both calcaneii, both humerii, both radii, both ulnae, both femurs, both tibiae, both fibulae, one left and one right rib, 7 cervical, 12 thoracic and 5 lumbar vertebrae.

Sex: female based on the: 1) morphology of the innominate, 2) skull, 3) length and robusticity of long bones

Age at death: between 40 to 45 years based on the: 1) morphology of the pubic symphysis, 2) morphology of the sternal ribs, 3) morphology of the auricular surface of the ilium.

Pathological changes: mild degenerative osteoarthritic changes are present on right scapula and on both distal femurs. Mild degenerative osteoarthritic changes are present on T9, T10, T11 and T12. One carious lesion is present on the right maxilla.

Associated animal or material remains: none are present in the recovered assemblage.

22
Štrbinci 1999
Grave 21

Taphonomy and material recovered: the bones are moderately well preserved, dark with slight postmortem damage to the cortex. The following elements are present: the frontal bone, both parietals, the occipital bone, the left temporal, both maxillae, both palatines, the mandible, the sternum, left innominate, left talus, left calcaneus, both femurs, both tibiae, 4 thoracic vertebrae.

Sex: female based on the: 1) morphology of the innominate, 2) mandible, 3) skull, 4) length and robusticity of long bones.

Age at death: between 30 to 35 years based on the: 1) morphology of the pubic symphysis, 2) morphology of the auricular surface of the ilium. The trabecular bone is fine and dense.

Pathological changes: mild healed periostitis is present on both medial tibiae.

Associated animal or material remains: a small fragment of black pottery is present in the recovered assemblage.

23
Štrbinci 1999
Grave 22

Taphonomy and material recovered: the bones are poorly preserved, dark with severe postmortem damage to the cortex. The following elements are present: the left maxilla and palatine, the right innominate, both femurs, the left tibia.

Sex: this is a subadult.

Age at death: between 5.5 and 6.5 years based on the: 1) chronology of the formation and eruption of teeth, 2) length of the present long bones, 3) stage of union between epiphyses and diaphyses.

Pathological changes: one linear hypoplastic defect is present on the crown of the maxillary canine.

Associated animal or material remains: none are present in the recovered assemblage.

24
Štrbinci 1999
Grave 23

Taphonomy and material recovered: the bones are poorly preserved, dark with mild postmortem damage to the cortex. The following elements are present: both parietals, the occipital bone, the right temporal, the right zygomatic, both maxillae, both palatines, the mandible.

Sex: this is a subadult.

Age at death: between 3.5 and 4.5 years based on the chronology of the formation and eruption of teeth.

Pathological changes: mild active periostitis is present on the medial side of the left mandibular ramus.

Associated animal or material remains: none are present in the recovered assemblage.

25
Štrbinci 1999
Grave 24

No osteological material was recovered from this grave.

26
Štrbinci 1999
Grave 25

Taphonomy and material recovered: the bones are well preserved, dark with little postmortem damage to the cortex. The following elements are present: the frontal bone, both parietals, the occipital bone, both temporals, both zygomatics, both maxillae, both palatines, the mandible, the sternum, both scapulae, both clavicles, both innominates, the sacrum, both patellae, the right talus, the right calcaneus, both humerii, both radii, both ulnae, both femurs, both tibiae, both fibulae, 2 left and 2 right ribs, 5 cervical, 12 thoracic and 5 lumbar vertebrae.

Sex: female based on the: 1) morphology of the innominate, 2) mandible, 3) skull, 4) length and robusticity of long bones.

Age at death: between 35 to 40 years based on the: 1) morphology of the pubic symphysis, 2) morphology of the sternal ribs, 3) morphology of the auricular surface of the ilium. The trabecular bone is thin.

Pathological changes: mild healed ectocranial porosity is present on both parietals and on the occipital bone. Schmorl's defects are present on L1, L2, L3 and L4.

Associated animal or material remains: none are present in the recovered assemblage.

27
Štrbinci 1999
Grave 26

Taphonomy and material recovered: the bones are poorly preserved, dark with severe postmortem damage to the cortex. The following elements are present: the right parietal, the right temporal, the mandible, both femurs, both tibiae and the left fibula.

Sex: this is a subadult.

Age at death: between 7 and 8 years based on the: 1) chronology of the formation and eruption of teeth, 2) length of the present long bones, 3) stage of union between epiphyses and diaphyses.

Pathological changes: none are present in the recovered assemblage.

Associated animal or material remains: none are present in the recovered assemblage.

28
Štrbinci 1999
Grave 27

Taphonomy and material recovered: the bones are well preserved, dark with slight postmortem damage to the cortex. The following elements are present: the frontal bone, both parietals, the occipital bone, the right temporal, both maxillae, both palatines, the mandible, the sternum, the right clavicle, both innominates, the sacrum, the right patella, both humerii, both radii, both ulnae, both femurs, both tibiae, 8 thoracic and 5 lumbar vertebrae.

Sex: female based on the: 1) morphology of the innominate, 2) mandible, 3) skull, 4) length and robusticity of long bones.

Age at death: between 30 to 35 years based on the: 1) morphology of the pubic symphysis, 2) morphology of the auricular surface of the ilium. The trabecular bone is fine and dense.

Pathological changes: linear hypoplastic defects are present on the crowns of the maxillary and mandibular canines.

Associated animal or material remains: none are present in the recovered assemblage.

29
Štrbinci 1999
Grave 28

Taphonomy and material recovered: the bones are well preserved, dark with slight postmortem damage to the cortex. The following elements are present: the frontal bone, both temporals, right zygomatic, both maxillae, the sternum, both clavicles, both innominates, the sacrum, both patellae, the left talus, both calcaneii, both humerii, both radii, both ulnae, both femurs, both tibiae, both fibulae, 2 left and 4 right ribs, 2 cervical vertebrae.

Sex: male based on the: 1) morphology of the innominate, 2) skull, 3) mandible, 4) length and robusticity of long bones.

Age at death: between 40 to 45 years based on the: 1) morphology of the pubic symphysis, 2) morphology of the sternal ribs, 3) morphology of the auricular surface of the ilium.

Pathological changes: one linear hypoplastic defect is present on the crown of the maxillary canine. Mild healed cribra orbitalia is present on the superior left orbit. One carious lesion is present on the right maxilla.

Associated animal or material remains: none are present in the recovered assemblage.

30
Štrbinci 1999
Grave 29

Taphonomy and material recovered: the bones are well preserved, dark with slight postmortem damage to the cortex. The following elements are present: the frontal bone, both parietals, the occipital bone, both temporals, both zygomatics, both maxillae, both palatines, the mandible, the sternum, both scapulae, both clavicles, both innominates, the sacrum, both patellae, both talii, the right calcaneus, both humerii, both radii, both ulnae, both femurs, both tibiae, both fibulae, 7 left and 8 right ribs, 6 cervical, 12 thoracic and 5 lumbar vertebrae.

Sex: male based on the: 1) morphology of the innominate, 2) skull, 3) mandible, 4) length and robusticity of long bones.

Age at death: between 40 to 45 years based on the: 1) morphology of the pubic symphysis, 2) morphology of the sternal ribs, 3) morphology of the auricular surface of the ilium.

Pathological changes: one linear hypoplastic defect is present on the crown of the maxillary canine. Two carious lesions are present on the maxilla and one is present on the mandible. One alveolar abscess is present on the mandible.

Associated animal or material remains: none are present in the recovered assemblage.

31
Štrbinci 1999
Grave 30

Taphonomy and material recovered: the bones are moderately well preserved, dark with slight postmortem damage to the cortex. The following elements are present: the frontal bone, both parietals, the occipital, the mandible, both innominates, both talii and both calcaneii, both humerii, both ulnae, both femurs, both tibiae, left fibula, one left rib.

Sex: male based on the: 1) morphology of the innominate, 2) skull, 3) mandible, 4) length and robusticity of long bones.

Age at death: between 50 to 55 years based on the: 1) morphology of the pubic symphysis, 2) morphology of the sternal rib, 3) morphology of the auricular surface of the ilium. The trabecular bone is sparse.

Pathological changes: mild degenerative osteoarthritic changes are present on the distal right humerus. One carious lesion is present on the maxilla and three are present on the mandible.

Associated animal or material remains: left femur of goat or sheep is present in the recovered assemblage.

32
Štrbinci 1999
Grave 31

No osteological material was recovered from this grave.

33
Štrbinci 2001
Grave 32

Taphonomy and material recovered: the bones are well preserved, dark with slight post-mortem damage to the cortex. The following elements are present: the frontal bone, both parietals, the occipital bone, both temporals, both zygomatics, both maxillae, both palatines, the mandible, the sternum, both scapulae, both clavicles, both innominates, the sacrum, both patellae, both talii and both calcaneii, both humerii, both radii, both ulnae, both femurs, both tibiae, both fibulae, 8 left and 10 right ribs, 6 cervical, 12 thoracic and 5 lumbar vertebrae.

Sex: female based on the: 1) morphology of the innominate, 2) skull, 3) mandible, 4) length and robusticity of long bones.

Age at death: between 40 to 45 years based on the: 1) morphology of the pubic symphysis, 2) morphology of the sternal rib, 3) morphology of the auricular surface of the ilium.

Pathological changes: Schmorl's defects are present on T5, T7, T8, T9, T10, T11, T12, L2, L3 and L4. One carious lesion is present on the maxilla and one carious lesion is present on the mandible. Moderate healed periostitis is present on both medial tibiae. Mild healed ectocranial porosity is present on both parietals. Moderately large rhomboid fossae are noted on both medial clavicles. Linear hypoplastic defects are present on the crowns of the maxillary central incisors, as well as on the maxillary and mandibular canines.

Associated animal or material remains: none are present in the recovered assemblage.

34
Štrbinci 2001
Grave 33

Taphonomy and material recovered: the bones are poorly preserved, dark with moderate postmortem damage to the cortex. The following elements are present: the frontal bone, both parietals, the occipital, the left temporal, several mandibular and maxillary teeth, the right ulna, both femurs, both tibiae.

Sex: this is a subadult.

Age at death: between 7.5 and 8.5 years based on the: 1) chronology of the formation and eruption of teeth, 2) length of the present long bones, 3) stage of union between epiphyses and diaphyses.

Pathological changes: mild healed cribra orbitalia is present on the superior left orbit. One linear hypoplastic defect is present on the crown of the maxillary central incisor.

Associated animal or material remains: none are present in the recovered assemblage.

35
Štrbinci 2001
Grave 34

Taphonomy and material recovered: the bones are poorly preserved, dark with moderate postmortem damage to the cortex. The following elements are present: the frontal bone, both parietals, the occipital, both maxillae, both palatines, the mandible, the right clavicle, both innominates, the sacrum, both femurs, both tibiae, 5 lumbar vertebrae.

Sex: this is a subadult.

Age at death: between 8.5 and 9.5 years based on the: 1) chronology of the formation and eruption of teeth, 2) length of the present long bones, 3) stage of union between epiphyses and diaphyses.

Pathological changes: bilateral mild healed cribra orbitalia is present on the superior orbits. One carious lesion is present on the left maxilla.

Associated animal or material remains: none are present in the recovered assemblage.

36
Štrbinci 2001
Grave 35

Taphonomy and material recovered: the bones are well preserved, dark with slight postmortem damage to the cortex. The following elements are present: the frontal bone, both parietals, right temporal, both maxillae, both palatines, the mandible, the sternum, both clavicles, both innominates, the sacrum, the left talus, the left calcaneus, the right hu-

merus, the right radius, the right ulna, both femurs, both tibiae, one left rib, 12 thoracic and 3 lumbar vertebrae.

Sex: female based on the: 1) morphology of the innominate, 2) skull, 3) mandible, 4) length and robusticity of long bones.

Age at death: between 35 to 40 years based on the: 1) morphology of the pubic symphysis, 2) morphology of the sternal rib, 3) morphology of the auricular surface of the ilium.

Pathological changes: Schmorl's defects are present on T5 and T9. Linear hypoplastic defects are present on the crowns of the maxillary central incisors, and on the maxillary and mandibular canines.

Associated animal or material remains: none are present in the recovered assemblage.

37
Štrbinci 2001
Grave 36
Person A

Taphonomy and material recovered: the bones are well preserved, dark with slight postmortem damage to the cortex. The following elements are present: the frontal bone, both parietals, the occipital bone, both temporals, both zygomatics, both maxillae, both palatines, the mandible, the sternum, both scapulae, both clavicles, both innominates, the sacrum, both patellae, both talii and both calcaneii, both humerii, both radii, both ulnae, both femurs, both tibiae, both fibulae, 12 left and 11 right ribs, 7 cervical, 11 thoracic and 5 lumbar vertebrae.

Sex: male based on the: 1) morphology of the innominate, 2) skull, 3) mandible, 4) length and robusticity of long bones.

Age at death: between 50 to 55 years based on the: 1) morphology of the pubic symphysis, 2) morphology of the sternal rib, 3) morphology of the auricular surface of the ilium. The trabecular bone is sparse with noticeable cavities.

Pathological changes: Schmorl's defects are present on T4, T5, T6, T7, T8, T9, T10, T11, T12, L1, L2 and L3. One carious lesion is present on the maxilla and one carious lesion is present on the mandible. One alveolar abscess is present on the right maxilla. Moderate healed periostitis is present on both medial tibiae. Moderate healed ectocranial porosity is present on both parietals and on the occipital bone. Linear hypoplastic defects are present on the crowns of the mandibular canines. Mild degenerative osteoarthritic changes are present on both scapulae. Mild degenerative osteoarthritic changes are present on T9, T10, L1 and L5. Moderate degenerative osteoarthritic changes are present on L2 and L3. Mild healed periostitis is present on both medial tibiae. Mild active periostitis is present on the medial left fibula. A well-healed fracture is present on the distal left radi-

us. The bone exhibits slight anterior angulation and mild osteoarthritic changes on the distal joint surface – probably as a result of the fracture.

Associated animal or material remains: none are present in the recovered assemblage.

38
Štrbinci 2001
Grave 36
Person B

Taphonomy and material recovered: the bones are well preserved, dark with slight post-mortem damage to the cortex. The following elements are present: the frontal bone, both parietals, the occipital bone, both temporals, both zygomatics, both maxillae, both palatines, the mandible, both scapulae, both clavicles, both innominates, the sacrum, both calcaneii, both humerii, both radii, both ulnae, both femurs, both tibiae, both fibulae, 10 left and 7 right ribs, 7 cervical, 11 thoracic and 5 lumbar vertebrae.

Sex: this is a subadult.

Age at death: between 7 and 8 years based on the: 1) chronology of the formation and eruption of teeth, 2) length of the present long bones, 3) stage of union between epiphyses and diaphyses.

Pathological changes: linear hypoplastic defects are present on the crowns of the maxillary central incisors and maxillary canines. Bilateral mild healed cribra orbitalia is present on the superior orbits. Mild healed periostitis is present on both medial tibiae.

Associated animal or material remains: none are present in the recovered assemblage.

39
Štrbinci 2001
Grave 37

Taphonomy and material recovered: the bones are well preserved, dark with slight post-mortem damage to the cortex. The following elements are present: the frontal bone, both parietals, the occipital bone, both temporals, both zygomatics, both maxillae, both palatines, the mandible, the sternum, both scapulae, both clavicles, both innominates, the sacrum, the right patella, both talii and both calcaneii, both humerii, both radii, the right ulna, both femurs, both tibiae, both fibulae, 2 left and 3 right ribs, 10 thoracic and 5 lumbar vertebrae.

Sex: male based on the: 1) morphology of the innominate, 2) skull, 3) mandible, 4) length and robusticity of long bones.

Age at death: between 40 to 45 years based on the: 1) morphology of the pubic symphysis, 2) morphology of the sternal ribs, 3) morphology of the auricular surface of the ilium.

Pathological changes: linear hypoplastic defects are present on the crowns of the maxillary central incisors and maxillary and mandibular canines. Schmorl's defects are noted on T9, T11, T12, L1 and L2. Large rhomboid fossae are present on both medial clavicles. Mild degenerative osteoarthritic changes are present on T1, T6, T7 and L4.

Associated animal or material remains: none are present in the recovered assemblage.

40
Štrbinci 2001
Grave 38

Taphonomy and material recovered: the bones are poorly preserved, dark with severe postmortem damage to the cortex. The following elements are present: the frontal bone, both parietals, the right zygomatic, the left femur, the left tibia.

Sex: female based on the: 1) morphology of the skull, 2) length and robusticity of long bones.

Age at death: between 40 to 45 years based on the: 1) degree of abrasion of occlusal surfaces of the teeth, 2) degree of obliteration of cranial sutures. The trabecular bone is sparse.

Pathological changes: bilateral mild cribra orbitalia is present on the superior orbits. Three carious lesions are notedt on the maxilla

Associated animal or material remains: none are present in the recovered assemblage.

41
Štrbinci 2001
Grave 39

Taphonomy and material recovered: the bones are well preserved, dark with little postmortem damage to the cortex. The following elements are present: the frontal bone, both parietals, the occipital bone, both temporals, both maxillae, both palatines, the mandible, the right scapula, both clavicles, both innominates, the sacrum, the right patella, both humerii, both radii, both ulnae, both femurs, both tibiae, both fibulae, 3 left and 4 right ribs, 4 cervical, 3 thoracic and 3 lumbar vertebrae.

Sex: female based on the: 1) morphology of the innominate, 2) skull, 3) mandible, 4) length and robusticity of long bones.

Age at death: between 25 to 30 years based on the: 1) morphology of the pubic symphysis, 2) morphology of the sternal ribs, 3) morphology of the auricular surface of the ilium. The trabecular bone is fine and dense.

Pathological changes: linear hypoplastic defects are present on the crowns of the maxillary central incisor, maxillary and mandibular canines.

Associated animal or material remains: none are present in the recovered assemblage.

42
Štrbinci 2001
Grave 40

Taphonomy and material recovered: the bones are well preserved, dark with slight post-mortem damage to the cortex. The following elements are present: the frontal bone, both parietals, the occipital bone, both temporals, both zygomatics, both maxillae, both palatines, the mandible, the left scapula, both clavicles, both innominates, the sacrum, the left patella, the left calcaneus, both humerii, both radii, both ulnae, both femurs, both tibiae, the right fibula, 3 right ribs, 4 cervical and 2 lumbar vertebrae.

Sex: male based on the: 1) morphology of the innominate, 2) skull, 3) mandible, 4) length and robusticity of long bones.

Age at death: between 20 to 25 years based on the: 1) morphology of the pubic symphysis, 2) morphology of the sternal ribs, 3) morphology of the auricular surface of the ilium.

Pathological changes: linear hypoplastic defects are present on the crowns of the maxillary and mandibular canines. A large rhomboid fossa is present on the left medial clavicle. Moderate healed ectocranial porosity is present on both parietals and on the occipital bone. A healed fracture is present on the left medial tibia. The fracture resulted in a large callus (70 mm long) accompanied with moderate expansion of the bone as a result of healed osteomyelitis.

Associated animal or material remains: none are present in the recovered assemblage.

43
Štrbinci 2001
Grave 41

Taphonomy and material recovered: the bones are well preserved, dark with slight post-mortem damage to the cortex. The following elements are present: the frontal bone, both parietals, the occipital, both temporals, both zygomatics, both maxillae, both palatines, the mandible, the right scapula, the right clavicle, the right innominate, the right humerus, the left radius, the right ulna, both femurs, the right tibia, the right fibula, 8 left and 8 right ribs, 7 cervical and 2 thoracic vertebrae.

Sex: this is a subadult.

Age at death: between 6.5 and 7.5 years based on the: 1) chronology of the formation and eruption of teeth, 2) length of the present long bones, 3) stage of union between epiphyses and diaphyses.

Pathological changes: mild active cribra orbitalia is present on the superior orbits. Moderate active periostitis is present on the left proximal and medial tibia and the left proximal and medial fibula.

Associated animal or material remains: none are present in the recovered assemblage.

44
Štrbinci 2001
Grave 42

Taphonomy and material recovered: the bones are moderately well preserved, dark with slight postmortem damage to the cortex. The following elements are present: the mandible, the right scapula, both innominates, the sacrum, both patellae, both talii and both calcaneii, both humerii, both radii, both ulnae, both femurs, both tibiae, both fibulae, 5 thoracic and 4 lumbar vertebrae.

Sex: female based on the: 1) morphology of the innominate, 2) mandible, 3) length and robusticity of long bones.

Age at death: between 35 to 40 years based on the: 1) morphology of the pubic symphysis, 2) morphology of the auricular surface of the ilium.

Pathological changes: linear hypoplastic defects are present on the crowns of the maxillary central incisor and mandibular canine. Mild osteoarthritic changes are present on both distal femurs and on both proximal tibiae.

Associated animal or material remains: none are present in the recovered assemblage.

45
Štrbinci 2001
Grave 43

Taphonomy and material recovered: the bones are poorly preserved, dark with slight postmortem damage to the cortex. The following elements are present: the right scapula, both innominates, the sacrum, the left calcaneus, the right humerus, the right radius, the right ulna, the right femur, the right tibia, the right fibula, 4 left and 9 right ribs, 4 lumbar vertebrae.

Sex: male based on the: 1) morphology of the innominate, 2) length and robusticity of long bones.

Age at death: between 35 to 40 years based on the: 1) morphology of the pubic symphysis, 2) morphology of the sternal ribs, 3) morphology of the auricular surface of the ilium.

Pathological changes: mild healed periostitis is present on the left medial tibia.

Associated animal or material remains: none are present in the recovered assemblage.

46
Štrbinci 2001
Grave 44

Taphonomy and material recovered: the bones are excellently preserved, dark with slight postmortem damage to the cortex. The following elements are present: the frontal bone,

both parietals, the occipital bone, both temporals, both zygomatics, both maxillae, both palatines, the mandible, the sternum, both scapulae, both clavicles, the left patella, both talii and both calcaneii, both humerii, both radii, both ulnae, both femurs, both tibiae, both fibulae, 8 left and 8 right ribs, 7 cervical, 12 thoracic and 5 lumbar vertebrae.

Sex: male based on the: 1) morphology of skull, 2) mandible, 3) length and robusticity of long bones.

Age at death: between 45 to 50 years based on the: 1) degree of abrasion of occlusal surfaces of the teeth, 2) degree of obliteration of cranial sutures, 3) morphology of the sternal ribs.

Pathological changes: linear hypoplastic defects are present on the crowns of the maxillary canines. One carious lesion is present on the right mandible. Schmorl's defects are present on T10, T11 and T12. Mild degenerative osteoarthritic changes are present on C5, C6 and C7. Mild degenerative osteoarthritic changes are also present on both scapulae.

Associated animal or material remains: none are present in the recovered assemblage.

47
Štrbinci 2001
Grave 45
Person A

Taphonomy and material recovered: the bones are poorly preserved, dark with moderate postmortem damage to the cortex. The following elements are present: both innominates, the sacrum, the right humerus, both femurs.

Sex: female based on the: 1) morphology of the innominate, 2) length and robusticity of long bones.

Age at death: between 45 to 50 years based on the: 1) morphology of the pubic symphysis, 2) morphology of the auricular surface of the ilium. The trabecular bone is sparse.

Pathological changes: none are present in the recovered assemblage.

Associated animal or material remains: none are present in the recovered assemblage.

48
Štrbinci 2001
Grave 45
Person B

Taphonomy and material recovered: the bones are poorly preserved, dark with slight postmortem damage to the cortex. The following elements are present: the right innominate, the right humerus, both radii, both ulnae, the right tibia.

Sex: this is a subadult.

Age at death: between 8 and 12 years based on the: 1) length of the present long bones, 2) stage of union between epiphyses and diaphyses.

Pathological changes: none are present in recovered assemblage.

Associated animal or material remains: none are present in the recovered assemblage.

49
Štrbinci 2001
Grave 46

Taphonomy and material recovered: the bones are well preserved, dark with moderate postmortem damage to the cortex. The following elements are present: the frontal bone, both parietals, the occipital bone, both temporals, both zygomatics, both maxillae, both palatines, the mandible, both scapulae, both clavicles, both innominates, the sacrum, the left patella, both talii and both calcaneii, both humerii, both radii, both ulnae, both femurs, both tibiae, both fibulae, 8 left and 11 right ribs, 7 cervical, 12 thoracic and 2 lumbar vertebrae.

Sex: female based on the: 1) morphology of the innominate, 2) skull, 3) mandible, 4) length and robusticity of long bones.

Age at death: between 40 to 45 years based on the: 1) morphology of the pubic symphysis, 2) morphology of the sternal ribs, 3) morphology of the auricular surface of the ilium.

Pathological changes: linear hypoplastic defects are present on the crowns of the maxillary central incisor and maxillary and mandibular canines. Mild healed periostitis is present on both medial tibiae. Mild healed periostitis is also noted on both calcaneii. Two carious lesions are present on the right maxilla. One Schmorl's defect is noted on L1.

Associated animal or material remains: none are present in the recovered assemblage.

50
Štrbinci 2001
Grave 47

Taphonomy and material recovered: the bones are poorly preserved, dark with severe postmortem damage to the cortex. The following elements are present: the frontal bone, both parietals, both patellae, the right radius, both femurs, both tibiae, the right fibula.

Sex: female based on the: 1) skull, 2) length and robusticity of long bones.

Age at death: between 40 to 45 years based on the degree of obliteration of cranial sutures.

Pathological changes: none are present in the recovered assemblage.

Associated animal or material remains: none are present in the recovered assemblage.

51
Štrbinci 2001
Grave 48

Taphonomy and material recovered: the bones are poorly preserved, dark with moderate postmortem damage to the cortex. The following elements are present: the frontal bone, the left temporal, both zygomatics, both maxillae, both palatines, the mandible, the right radius, both femurs, the left tibia.

Sex: female based on the: 1) morphology of the skull, 2) mandible, 3) length and robusticity of long bones.

Age at death: between 45 to 50 years based on the: 1) degree of abrasion of occlusal surfaces of the teeth, 2) degree of obliteration of cranial sutures. The trabecular bone is sparse.

Pathological changes: bilateral mild healed cribra orbitalia is present on the superior orbits.

Associated animal or material remains: none are present in the recovered assemblage.

52
Štrbinci 2001
Grave 49

Taphonomy and material recovered: the bones are well preserved, dark with slight postmortem damage to the cortex. The following elements are present: the frontal bone, both parietals, the occipital bone, both temporals, both zygomatics, both maxillae, the mandible, the sternum, both scapulae, both clavicles, both innominates, the sacrum, both patellae, both humerii, both radii, both ulnae, both femurs, both tibiae, 8 left and 6 right ribs, 9 thoracic and 5 lumbar vertebrae.

Sex: female based on the: 1) morphology of the innominate, 2) skull, 3) mandible, 4) length and robusticity of long bones.

Age at death: between 40 to 45 years based on the: 1) morphology of the pubic symphysis, 2) morphology of the sternal ribs, 3) morphology of the auricular surface of the ilium.

Pathological changes: linear hypoplastic defects are present on the crowns of the mandibular canines. Four carious lesions are present on the maxilla and one carious lesion is present on the mandible. Schmorl's defects are present on T9, T11 and L1. A well-healed fracture is present on the left medial tibia. The bone exhibits a small remodeled callus with no noticeable inflammatory process.

Associated animal or material remains: none are present in the recovered assemblage.

53
Štrbinci 2001
Grave 50

Taphonomy and material recovered: the bones are well preserved, dark with slight post-mortem damage to the cortex. The following elements are present: the frontal bone, both parietals, the occipital bone, both temporals, both zygomatics, both maxillae, both palatines, the mandible, both scapulae, both clavicles, both innominates, the sacrum, the left patella, both talii, the right calcaneus, both humerii, the left radius, the right ulna, both femurs, both tibiae, both fibulae, one right rib.

Sex: female based on the: 1) morphology of the innominate, 2) skull, 3) mandible, 4) length and robusticity of long bones.

Age at death: between 25 to 30 years based on the: 1) morphology of the pubic symphysis, 2) morphology of the sternal rib, 3) morphology of the auricular surface of the ilium. The trabecular bone is fine and dense.

Pathological changes: six carious lesions are present on the maxilla and three carious lesions are present on the mandible.

Associated animal or material remains: none are present in the recovered assemblage.

54
Štrbinci 2001
Grave 51

No skeletal material was recovered from this grave.

55
Štrbinci 2001
Grave 52

Taphonomy and material recovered: the bones are well preserved, dark with slight post-mortem damage to the cortex. The following elements are present: the frontal bone, both parietals, both temporals, both zygomatics, both maxillae, both palatines, the mandible, the right scapula, both clavicles, the right innominate, both patellae, both talii and both calcaneii, the right humerus, the right radius, the right ulna, both femurs, both tibiae, both fibulae, 2 left ribs, 11 thoracic and 2 lumbar vertebrae.

Sex: female based on the: 1) morphology of the innominate, 2) skull, 3) mandible, 4) length and robusticity of long bones.

Age at death: between 25 to 30 years based on the: 1) morphology of the pubic symphysis, 2) morphology of the sternal rib, 3) morphology of the auricular surface of the ilium.

Pathological changes: bilateral mild healed cribra orbitalia is present on the superior orbits.

Associated animal or material remains: none are present in the recovered assemblage.

* * *

The age and sex distributions in the Štrbinci and the composite Late Antique skeletal series from continental Croatia are presented in Tables 1 and 2. Subadults are evenly represented in both series. In the Štrbinci series they comprise 29.2% (14/48) of the total sample, in the composite Late Antique skeletal series from continental Croatia 25.2% (25/99) of the total sample. Both series are, however, characterized by a clear underrepresentation of subadults from the youngest (birth – 1 year) age category. In the Štrbinci series only 1 individual or 2.1% of the total sample is from this age category, in the composite Late Antique skeletal series from continental Croatia only slightly more, 4 individuals or 4.0% of the total sample. Subadult mortality in the Štrbinci series is highest from 5-10 years (50.0% of the subadult sub-sample). In the composite Late Antique skeletal series from continental Croatia subadult mortality is highest between 2-5 years (32.0% of the subadult sub-sample).

Table 1: Age and sex distribution in the Štrbinci series

Age category	Subadults	Female	Male
0-1	1		
2-5	3		
5-10	7		
10-15	3		
15-20			
20-25			3
25-30		4	2
30-35		4	0
35-40		3	1
40-45		6	5
45-50		1	2
50-55		0	2
55-60		0	0
60+		0	1
Total	14	18	16
Mean age at death		x = 36.9 years	x = 40.3 years

Mean age at death is calculated using median values of each age category (for example, 23 for the age category 21-25), and 65 for the age category 60+.

Table 2: Age and sex distribution in the Antique composite series from eastern Croatia (Zmajevac, Mursa – eastern necropolis, Vinkovci).

Age category	Subadults	Female	Male
0-1	4		
2-5	8		
5-10	6		
10-15	7		
15-20		2	4
20-25		5	3
25-30		6	4
30-35		3	4
35-40		2	7
40-45		6	6
45-50		4	2
50-55		6	3
55-60		1	2
60+		3	1
Total	25	38	36
Mean age at death		x = 39.9 years	x = 37.4 years

Mean age at death is calculated using median values of each age category (for example, 23 for the age category 21-25), and 65 for the age category 60+.

Males and females are evenly represented in both series – 16 (33.3% of the total sample) and 18 (37.5%) individuals respectively in the Štrbinci series, and 36 (36.4%) and 38 (38.4%) individuals respectively in the composite Late Antique series from continental Croatia. In both series adult females are slightly better represented than males. The male/female ratio in Štrbinci is 0.89, in the composite Late Antique skeletal series from continental Croatia 0.95. Adults have similar average life-spans in both series. The average age at death for females is slightly higher in the composite Late Antique skeletal series from continental Croatia – 39.9 years (sd = 13.5) than in the Štrbinci series – 36.9 years (sd = 6.4). Males, on the other hand, lived slightly longer in Štrbinci – 40.3 years (sd = 12.0) than in the combined Zmajevac, Mursa and Vinkovci skeletal series – 37.4 years (sd = 12.1). Both series are characterized by high mortality between the ages of 35-50 years – 52.9% of all adults in the Štrbinci, and 36.5% of all adults in the composite Late Antique skeletal series from continental Croatia died during this interval.

The frequencies of alveolar bone disease in the Štrbinci and composite Late Antique skeletal series from continental Croatia are summarized in Tables 3 and 4. In the Štrbinci

Table 3: Frequency of alveolar bone disease in the Štrbinci series

Age category	Subadult		Female		Male	
	A[1]/O[2]	%[3]	A/O	%	A/O	%
Young adult[4]			6/173	3.5	1/152	0.6
Old adult			12/195	6.1	12/212	10.4
Total	1/133	0.7	18/369	4.9	13/364	3.6

[1] A = number of tooth sockets with periodontal or periapical abscess, or antemortem tooth loss.
[2] O = number of tooth sockets observed.
[3] % = % of tooth sockets with periodontal or periapical abscess, or antemortem tooth loss.
[4] Young adult = individuals aged between 16 to 35 years; Old adult = individuals older than 36 years.

Table 4: Frequency of alveolar bone disease in the Antique composite series from eastern Croatia (Zmajevac, Mursa-eastern necropolis, Vinkovci)

Age category	Subadult		Female		Male	
	A[1]/O[2]	%[3]	A/O	%	A/O	%
Young adult[4]			4/264	1.5	3/355	0.8
Old adult			89/433	20.5	55/492	11.2
Total	0/249	0.0	93/697	13.3	58/847	6.8

[1] A = number of tooth sockets with periodontal or periapical abscess, or antemortem tooth loss.
[2] O = number of tooth sockets observed.
[3] % = % of tooth sockets with periodontal or periapical abscess, or antemortem tooth loss.
[4] Young adult = individuals aged between 16 to 35 years; Old adult = individuals older than 36 years.

series alveolar bone disease is noted in only 1 of the 133 subadult tooth sockets available for analysis. In adults the total frequency is 4.2% (31/733) with a similar distribution between males and females. No subadults exhibit alveolar bone disease in the composite Late Antique skeletal series from continental Croatia. Adults, however, exhibit significantly higher frequencies than in Štrbinci and an uneven sex distribution. The total female frequency –13.3%, is significantly higher than the total male frequency – 6.8%, ($\chi^2 = 17.55$, $P<.01$). The main difference is noted in adults older than 36 years where female frequencies – 20.5%, are almost twice as high as male – 11.2% ($\chi^2 = 14.69$, $P <.01$). Total alveolar disease female frequencies are also significantly higher in the composite Late Antique skeletal series from continental Croatia than in the Štrbinci series ($\chi^2 = 17.63$, $P<.01$), as are total male frequencies ($\chi^2 = 4.37$, $P<.04$).

No such differences are noted, however, in caries lesion frequencies (Tables 5 and 6). Only 1 carious lesion was noted in the subadult Štrbinci sub-sample. The total adult frequency is 8.8% (61/692) with no significant difference between male and female frequen-

Table 5: Frequency of carious lesions in the Štrbinci series

Age category	Subadult		Female		Male	
	A[1]/O[2]	%[3]	A/O	%	A/O	%
Young adult[4]			10/157	6.4	7/146	4.8
Old adult			15/182	8.2	29/207	14.0
Total	1/106	0.9	25/339	7.4	36/353	10.2

[1] A = number of teeth with carious lesions.
[2] O = number of teeth observed.
[3] % = % of teeth with carious lesions.
[4] Young adult = individuals aged between 16 to 35 years; Old adult = individuals older than 36 years.

Table 6: Frequency of carious lesions in the Antique composite series from eastern Croatia (Zmajevac, Mursa-eastern necropolis, Vinkovci).

Age category	Subadult		Female		Male	
	A[1]/O[2]	%[3]	A/O	%	A/O	%
Young adult[4]			4/299	1.3	16/314	5.1
Old adult			53/340	15.6	47/404	11.6
Total	5/246	2.0	57/639	8.9	63/718	8.8

[1] A = number of teeth with carious lesions.
[2] O = number of teeth observed.
[3] % = % of teeth with carious lesions.
[4] Young adult = individuals aged between 16 to 35 years; Old adult = individuals older than 36 years.

cies. A similar frequency and distribution is noted in the composite Late Antique skeletal series from continental Croatia. The subadult frequency is, once again, very low (2.0%), while male and female frequencies are almost identical (8.8 % and 8.9% respectively) and similar to the frequencies recorded in Štrbinci.

Enamel hypoplasia frequencies for the three tooth categories analyzed are presented in Tables 7 and 8. As can be seen from these numbers, the inhabitants of Late Antique Štrbinci experienced higher frequencies of subadult stress which resulted in the formation of enamel hypoplasia then the inhabitants of Mursa, Zmajevac and Vinkovci. The total frequency for all three tooth categories in Štrbinci is 67.1% (51/76) compared to 35.7% (56/157) recorded in the composite Late Antique skeletal series from continental Croatia. This difference is statistically significant ($\chi^2 = 19.13$, $P<.01$). Significant differences are also noted in the frequencies of maxillary central incisors ($\chi^2 = 4.72$, $P<.03$), and maxillary canines ($\chi^2 = 13.56$, $P<.01$). Cribra orbitalia frequencies for Štrbinci and the composite Late Antique skeletal series from continental Croatia are presented in Tables 9 and

10. In both series the expression of this condition ranges from slight pitting to moderate sieve-like lesions with considerable diplotic expansion.

Table 7: Hypoplasia frequencies by individual in the Štrbinci series.

Tooth	N[1]	NwLEH	%wLEH
Maxillary I1[2]	22	14	63.6
Maxillary C	25	20	80.0
Mandibular C	29	17	58.6

[1] N = number of teeth observed; NwLEH = number of teeth with one or more LEH; %wLEH = % of N with one or more LEH.
[2] I = incisor; C = canine.

Table 8: Hypoplasia frequencies by individual in the Antique composite series from eastern Croatia (Zmajevac, Mursa-eastern necropolis, Vinkovci).

Tooth	N[1]	NwLEH	%wLEH
Maxillary I1[2]	41	13	31.7
Maxillary C	55	18	32.7
Mandibular C	61	25	40.1

[1] N = number of teeth observed; NwLEH = number of teeth with one or more LEH; %wLEH = % of N with one or more LEH.
[2] I = incisor; C = canine.

Table 9: Frequency of occurrence of cribra orbitalia in Štrbinci series.

	Cribra orbitalia			Active lesions	
Age/sex	O[1]	A1[2]	%	A2[3]	% of A1
0 - 0.9	1	0	0.0	0	0.0
1 - 3.9	1	1	100.0	1	100.0
4 - 9.9	4	4	100.0	1	25.0
10 - 14.9	0	0	0.0	0	0.0
All subadults	6	5	83.3	2	40.0
Adult females	13	2	15.4	0	0.0
Adult males	14	3	21.4	0	0.0
All adults	27	5	18.5	0	0.0

[1] O = number of frontal bones observed.
[2] A1 = number of frontal bones in which at least one orbit shows evidence of cribra orbitalia.
[3] A2 = number of frontal bones in which cribra orbitalia is active at time of death.

Table 10: Frequency of occurrence of cribra orbitalia in the Antique composite series from eastern Croatia (Zmajevac, Mursa-eastern necropolis, Vinkovci).

	Cribra orbitalia			Active lesions	
Age/sex	O[1]	A1[2]	%	A2[3]	% of A1
0 - 0.9	1	0	0.0	0	0.0
1 - 3.9	3	0	0.0	0	0.0
4 - 9.9	8	4	50.0	3	75.0
10 - 14.9	4	1	25.0	0	0.0
All subadults	16	5	31.2	3	60.0
Adult females	23	1	4.3	0	0.0
Adult males	27	8	29.6	0	0.0
All adults	50	9	18.0	0	0.0

[1] O = number of frontal bones observed.
[2] A1 = number of frontal bones in which at least one orbit shows evidence of cribra orbitalia.
[3] A2 = number of frontal bones in which cribra orbitalia is active at time of death.

In Štrbinci, cribra orbitalia is observed in 10 of the 33 crania (30.3%) with intact orbits. The overall subadult frequency is 83.3% with slightly less than half of lesions (2/5) active at time of death. In adults, the lesion has a frequency of 18.5% with all of the lesions exhibiting some degree of healing. No sex differences in healing lesion frequencies are noted. The higher frequency recorded in subadults is, however, statistically significant ($\chi^2 = 6.93$, $P<.01$).

Similar frequencies are recorded in the composite Late Antique skeletal series from continental Croatia. The overall frequency of cribra orbitalia in the series is 21.2% (14/66). Subadults exhibit cribra orbitalia in 5/16 (31.2%) crania with intact orbits. In both Štrbinci and the composite Late Antique skeletal series from continental Croatia, highest cribra orbitalia frequencies in subadults are recorded in the 4-9.9 years age category. Cribra orbitalia in adults is noted in 9/50 crania (18.0%) with an uneven sex distribution. Male frequencies (29.6%) are significantly higher than female (4.3%; $\chi^2 = 3.80$, $P<.05$).

Skeletal evidence of trauma is common in both series. In the Štrbinci series 5 of the 14 adult males (35.7%) sufficiently preserved to determine the presence of traumas exhibit healed fractures. Two individuals (Graves 16 and 18) have cranial fractures, both on the left parietal. Both fractures are well-healed depression fractures with smooth margins and slightly porous floors. None penetrated the inner table of the skull, and none show evidence of subsequent infection. Three males exhibit postcranial fractures – one (Grave 7) on the distal 2nd right rib, one (Grave 36A) on the distal left radius, and one (Grave 40) on the left medial tibia. Only this last fracture exhibits signs of infection in the

form of a slight swelling of the distal diaphysis indicative of healed osteomyelitis. In the female sub-sample only one healed fracture is noted (1/18 or 5.5%), a well-healed fracture of the left medial tibia which exhibits no evidence of infection. No fractures are noted in subadults. The difference between the frequencies of fractures recorded in males (35.7%), and females (5.5%) while striking is not statistically significant ($\chi^2 = 2.93, P<.09$).

In the composite Late Antique skeletal series from continental Croatia fractures are noted in 12 of the 36 preserved males (33.3%). Six individuals exhibit cranial fractures – 3 on the left parietal, 2 on the right and 1 on the frontal bone. As in the Štrbinci series, all of the fractures are well-healed depression fractures with smooth margins and slightly porous floors. None penetrated the inner table of the skull, and none show evidence of infection. Postcranial fractures are recorded in 6 individuals – one on the proximal third of the diaphysis of the right femur, one on the left pubic bone, one on the middle third of the diaphysis of the left tibia, one on the midshaft of the right ulna, one on the distal right radius, and one individual has a well healed fracture of the proximal joint surface of the right tibia, as well as fractures on the right 5^{th} – 7^{th} ribs. This is the only individual in both series that exhibits multiple fractures. Four females (4/38 or 10.5%) also exhibit skeletal evidence of trauma. One individual has a well-healed depression fracture on the left parietal bone, one a well-healed fracture on the distal right radius, while two exhibit well-healed fractures on the midshaft of the right ulna. No fractures are noted in subadults. Male (12/36 or 33.3%), and female (4/38 or 10.5%) trauma frequencies are significantly different ($\chi^2 = 4.40, P<.04$).

The frequencies of Schmorl's depressions in the Štrbinci and composite Late Antique skeletal series from continental Croatia are presented in Tables 11 and 12. The overall

Table 11: Frequency of occurrence of Schmorl's depressions in the Štrbinci series.

	Thoracic		Lumbar		Total	
	A[1]/O[2]	%	A/O	%	A/O	%
Female						
Young adult[3]	0/32	0.0	0/10	0.0	0/42	0.0
Old adult	7/70	10.0	7/28	25.0	14/98	14.3
Total	7/102	6.9	7/38	18.4	14/140	10.0
Male						
Young adult	0/47	0.0	2/22	9.1	2/69	2.3
Old adult	26/69	37.7	8/32	25.0	34/101	33.7
Total	26/116	22.4	10/54	18.5	36/170	21.2

[1] A = number of vertebrae with Schmorl's depressions.
[2] O = number of vertebrae observed.
[3] Young adult = individuals aged between 16 to 35 years; Old adult = individuals older than 36 years.

Table 12: Frequency of occurrence of Schmorl's depressions in the Antique composite series from eastern Croatia (Zmajevac, Mursa-eastern necropolis, Vinkovci).

	Thoracic		Lumbar		Total	
	A[1]/O[2]	%	A/O	%	A/O	%
Female						
Young adult[3]	9/83	10.8	2/29	6.9	11/112	9.8
Old adult	16/141	11.3	8/54	14.8	24/195	12.3
Total	25/224	11.2	10/83	12.0	35/307	11.4
Male						
Young adult	18/113	15.9	12/53	22.63	30/166	18.1
Old adult	25/144	17.4	15/64	23.4	40/208	19.2
Total	43/257	16.7	27/117	23.1	70/374	18.7

[1] A = number of vertebrae with Schmorl's depressions.
[2] O = number of vertebrae observed.
[3] Young adult = individuals aged between 16 to 35 years; Old adult = individuals older than 36 years.a

frequency of Schmorl's depressions in the Štrbinci series is 16.1% (50/310). Adult males in the series exhibit significantly higher frequencies than females (21.2% compared to 10.0% or; $\chi^2 = 6.29$; $P<.02$). The primary difference is noted in the old adult age category where males exhibit an almost three times higher frequency than females (33.7% compared to 14.3%; $c^2 = 9.17$; $P<.01$) and in the thoracic part of the spine where male frequencies are almost four times as high as female (22.4% compared to 6.9%; $\chi^2 = 9.04$; $P<.01$).

The overall frequency of Schmorl's depressions in the composite late Antique skeletal series from continental Croatia (105/681; 15.4%) is very similar to the frequency recorded in Štrbinci. As in Štrbinci, Schmorl's defects are more common in males than in females (18.7% compared to 11.4%; $\chi^2 = 6.37$; $P<.02$).

Discussion

Analysis of the skeletal series from Štrbinci, and comparison with the composite Late Antique skeletal series from continental Croatia help to expand our understanding of the biological history of the Late Antique inhabitants of continental Croatia. The accumulation of osteological data from skeletal collections is an important step in evaluating conclusions from historical, archaeological and economic sources, as well as for expanding empirical evidence not available through these sources. Unfortunately, Croatian skeletal series from the Antique period have, so far, received little attention. The data analyzed in this report represent the most skeletal evidence currently available from this time period. Conclusions and interpretations derived from this sample are open to revision when larger and better documented series become available.

This study demonstrates that, with the exception of one skeletal indicator of subadult stress and one skeletal indicator of dental disease, no significant differences in quality of life are evident between individuals who inhabited Štrbinci, and individuals who inhabited the other Late Antique sites from continental Croatia for which data is available.

The demographic profiles of the two series are similar. In both series subadults comprise slightly less than a third of the total sample but are clearly underrepresented in the youngest (birth – 0.9 years) age category. This age category is represented by 1 individual in Štrbinci and 4 individuals in the composite Late Antique skeletal series from continental Croatia which amounts to 2.1% of the total Štrbinci sample, and 4.0% of the total composite Late Antique skeletal series from continental Croatia. These numbers are clearly not realistic. The underrepresentation of subadults in Antique skeletal series from Europe is, however, a ubiquitous problem. Similar, unrealistically low subadult mortality frequency have been recorded in the 1st – 3rd century AD cemetery in Abraham (Kolnik & Stloukal 1974), in the 2nd – 3rd century AD cemetery in Stettfeld (Wahl 1988), in the 1st – 3rd century AD cemetery in Hamfelde (Aner 1971), and in the 1st – 3rd century AD cemetery in Septfontaines (Kunter 1996).

The reasons for this are, at present, unclear. Contributing factors include possible differential burial customs for infants and stillborns, and differential burial depths for subadults and adults. Graves dug for adults were, as a rule, deeper than those of children and thus more likely to remain undisturbed. Whatever the reasons, the biased exclusion of subadult individuals in both series compromises analyses of subadult mortality trends and precludes meaningful consideration of longevity, survivorship, and life expectancy from birth.

Adult mortality is, however, less ambiguous and comparisons between the two series show numerous similarities. Adult average life spans are similar in both series with highest mortality between the ages of 35-50 years. The small sex differences in average life-spans noted in both series suggest similar stress levels for both sexes.

While carious lesion frequencies are very similar in both series, alveolar bone disease frequencies are significantly higher in the composite Late Antique skeletal series from continental Croatia for both males and females. Furthermore, while there are no sex differences in the Štrbinci series, females in the composite Late Antique skeletal series from continental Croatia exhibit significantly higher frequencies of alveolar bone disease than males. Higher frequencies of dental disease in females have been recorded in numerous archaeological populations (for example Larsen 1983; Lukacs 1992; Lukacs & Pal 1993). This difference is often explained by one of three factors: 1) earlier eruption of teeth in girls and consequently, longer exposure of girl's teeth to the cariogenic oral environment, 2) easier access to food supplies by women during food preparation, and 3) the effects of hormonal fluctuations and pregnancy. Based on the available data it is hard to say to

what degree, if any, these factors contributed to the observed higher frequencies of alveolar bone disease in females from composite Late Antique skeletal series from continental Croatia. There is no ethnographic or historical documentation of dietary practices and food preparation for these populations. Furthermore, there is no evidence of any type of cultural behavior that could impact dental health (e. g., dental modification, interproximal grooves, the use of different plants for therapeutic or palliative treatment) in the analyzed dental remains. Also, it needs to be pointed out that the primary difference in male/female alveolar disease frequencies is noted in individuals older than 36 years and that females in the composite Late Antique skeletal series from continental Croatia lived, on average 2.5 years longer than males. Further systematic analyses of dental disease in other Antique populations from continental Croatia are, therefore, necessary to evaluate if the observed differences between Štrbinci and the composite Late Antique skeletal series from continental Croatia and the differential male/female dental disease frequencies from Mursa, Vinkovci and Zmajevac are the result of random variation in a small sample, or the result of specific, as yet unidentified, factors.

Enamel hypoplasia frequencies in the two series also exhibit significant differences. Total tooth, as well as the frequencies of hypoplastic defects on maxillary central incisors and maxillary canines are significantly higher in Štrbinci.

The same observation does not, however, apply to cribra orbitalia frequencies. No significant differences are noted in total, subadult, and total adult frequencies. Both series are further similar in that in both series subadults exhibit higher frequencies of cribra orbitalia than adults. In the Štrbinci series this difference is statistically significant. This is consistent with the pattern recorded in other skeletal series (Cybulski 1977; El-Najjar et al. 1976; Hengen 1971; Mittler & Van Gerven 1994; Stuart-Macadam 1985; Walker 1985) and supports Stuart-Macadam's (1985) assertion that cribra orbitalia represents a childhood condition.

Trauma frequencies show numerous similarities in both series. No traumas are noted in any of the analyzed subadults. Male frequencies are similar (35.7% in Štrbinci and 33.3% in the composite Late Antique skeletal series from continental Croatia) and considerably higher than the frequencies recorded in females (5.5% and 10.5% respectively). There are no patterns of lesion shape or location in the series that would unambiguously suggest the presence of warfare. The significantly higher frequencies of traumas in males, the occurrence of 3 midshaft ulna fractures, and the high frequency of fractures on the outer table of the cranial vault are, however, consistent with the occurrence of interpersonal violence and some degree of physical risk.

The frequencies of Schmorl's lesions in vertebral bodies are almost identical in both series (16.1% in Štrbinci and 15.4% in the composite Late Antique skeletal series from continental Croatia). In both series males exhibit significantly higher frequencies than

females suggesting greater physical stress on the vertebral column in males and tentatively, differential male/female activity patterns.

In conclusion, the biological information collected from the analyzed late Antique skeletal series from continental Croatia suggest similar levels of stress between Štrbinci and the composite Late Antique skeletal series from continental Croatia. Most likely this is the result of similar ecological, social and economical circumstances.

Acknowledgments. This study was financially supported by the Ministry of Science and Technology of the Republic of Croatia (Grant "Development of a bioarchaeological data base for Croatia", Grant No. 0101021). We express our gratitude to the archaeologists who recovered and made available to us human skeletal remains from the sites they excavated: Dr. B Migotti, MSc. H. Gorike-Lukić, MSc. M. Dizdar, and prof. S. Filipović.

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Sažetak

Kosturni nalazi iz Štrbinaca u odnosu na druge kasnoantičke kosturne nalaze iz kontinentalne Hrvatske

Svrha rada bila je sintetizirati antropološke podatke s kasnoantičkog nalazišta u Štrbincima te usporediti demografske profile i učestalost različitih oboljenja između Štrbinaca i zajedničkog uzorka koji čine kosturi s tri kasnoantička arheološka nalazišta: Murse (Osijek), Cibale (Vinkovci) i Zmajevca. Sva četiri lokaliteta nalaze se u istočnom dijelu kontinentalne Hrvatske i sva se datiraju u 4 st. Kako bismo utvrdili jesu li u Štrbincima uvjeti života bili drugačiji,

distribuciju uzorka iz Štrbinaca po spolu i starosti usporedili smo s distribucijom u kompozitnom uzorku (Mursa, Cibale, Zmajevac).

Za svaki kostur prikupljeni su sljedeći podaci: 1. spol osobe, 2. starost u trenutku smrti, 3. prisutnost patoloških promjena na uščuvanom materijalu, 4. tafonomijske karakteristike uščuvanog materijala, 5. prisutnost asociranih materijalnih ili životinjskih ostataka. Kako bi se ti podaci mogli odrediti, za svaki je kostur prvo napravljena inventura svih kostiju, zglobnih ploština i zubiju.

S obzirom na to da je uščuvani materijal mjestimice bio fragmentiran, prilikom određivanja spola i starosti u trenutku smrti korišten je velik broj različitih kriterija. Spol je određen na temelju morfologije zdjelice i lubanje, robusnosti kostiju, razvijenosti mišićnih hvatišta i duljine dugih kostiju. Starost u trenutku smrti određena je pomoću većeg broja metoda, kao što su: stupanj obliteracije ektokranijalnih šavova, morfologije pubične simfize, morfologije aurikularne ploštine zdjelice i sternalnih krajeva rebara te prisutnost degenerativnih promjena na zglobnim ploštinama i kralješcima. Kod djece, starost u trenutku smrti određena je na temelju stupnja spajanja epifiza s dijafizama, duljine i širine dijafiza dugih kostiju te prema stupnju razvoja i nicanja mliječnih i stalnih zubiju.

Prikupljeni podaci pokazuju da, s iznimkom učestalosti alveolarnih oboljenja i hipoplazije zubne cakline, nema znakovitih razlika u kvaliteti života na promatranim lokalitetima. Oba uzorka pokazuju podzastupljenost djece iz najmlađe dobne skupine te slične prosječne doživljene starosti muškaraca i žena. Prosječna doživljena starost za muškarce u Štrbincima iznosi 40,3 godine, za žene 36,9, dok su u kompozitnom uzorku muškarci u prosjeku doživjeli 37,4 godine, a žene 39,9 godina.

Dok je učestalost karijesa u oba uzorka gotovo identična, učestalost alveolarnih oboljenja znakovito je viša u kompozitnom kasnoantičkom uzorku za muškarce i žene. Nadalje, iako nema razlike između spolova u uzorku iz Štrbinaca, žene u kompozitnom uzorku pokazuju znakovito veću učestalost alveolarnih oboljenja nego muškarci. Učestalost *cribrae orbitaliae* podjednaka je u oba uzorka (štrbinačkom i kompozitnom). Oba uzorka slična su i po tome što je učestalost *cribrae orbitaliae* nešto veća kod djece nego kod odraslih, a u Štrbincima ta je razlika statistički znakovita.

Učestalost trauma pokazuje brojne sličnosti u oba uzorka. Niti jedna trauma nije zabilježena kod analizirane djece. Učestalost trauma u oba uzorka podjednako je visoka kod muškaraca (35,7% u Štrbincima i 33,3% u kompozitnom uzorku) i znakovito je viša nego kod žena (5,5% u Štrbincima i 10,5% u kompozitnom uzorku). Povišena učestalost trauma kod muškaraca i visoka učestalost trauma na ulnama i na području lubanje konzistentna je s pojavom nasilja i povišenog stupnja fizičkog rizika. Učestalost Schmorlovih defekata u oba uzorka gotovo je identična (16,1% u Štrbincima i 15,4% u kompozitnom uzorku). U oba uzorka muškarci pokazuju znakovito veću učestalost Schmorlovih defekata nego žene, što bi moglo sugerirati povišeni fizički stres koji zahvaća područje kralježnice kod muškaraca i najvjerojatnije na podjelu poslova baziranu na spolu.

Biološki podaci dobiveni antropološkom analizom kasnoantičkih skeletnih uzoraka kontinentalne Hrvatske sugeriraju podjednake razine stresa između uzorka iz Štrbinaca i kompozitnog kasnoantičkog skeletnog uzorka iz kontinentalne Hrvatske, što je najvjerojatnije posljedica podjednakih ekoloških, socijalnih i ekonomskih uvjeta u kojima su analizirane populacije obitavale.