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STAROHRVATSKA POPULACIJA IZ TRIBLJA - ZDRAVLJE I BOLESTI

EARLY CROATIAN POPULATION FROM TRIBALJ - HEALTH AND DISEASES

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U radu su prikazani rezultati analize ljudskih skeletnih ostataka sa starohrvatskog groblja u Triblju. U uzorku, koji čini 25 osoba iz 18 grobova, uočeni su lomovi kostiju, skorbut, tuberkuloza, osteopenija i osteoporoza, degenerativni osteoartritis te Schmorlovi defekti. Također je uočena neočekivana spolna i dobna raspodjela uzorka. Podaci upućuju na nešto lošije životne uvjete starohrvatskih stanovnika Triblja te otvaraju pitanja o pogrebnim običajima Vinodola u ranom srednjem vijeku.

This paper presents the results of an analysis of human skeletal remains from the Early Croatian cemetery at Tribalj. The analysed sample consisted of 25 individuals from 18 graves. Skeletal remains showed evidence of fractures, scurvy, tuberculosis, osteopenia and osteoporosis, osteoarthritis and Schmorl's nodes. We also observed an unexpected sex and age distribution. The analysis indicates poor living standards of the Early Croatian inhabitants of Tribalj and raises questions about burial customs at Vinodol in the Early Middle Ages.

KLJUČNE RIJEČI: *Tribalj, starohrvatsko groblje, ljudski skeletni ostaci, antropološka analiza*

KEY WORDS: *Tribalj, Early Croatian cemetery, human skeletal remains, anthropological analysis*

Groblje kod crkve sv. Marije u Triblju

Početkom 20. stoljeća na terenu oko crkve Pohođenja Marijina (crkva sv. Marije) u Triblju slučajno su pronađeni grobovi s nalazima starohrvatskoga nakita, točnije dviju brončanih naušnica s jednom jagodom (Cetinić, 1998). Prilikom gradnje ceste sjeverno od crkve 1946. godine nađeno je još nekoliko grobova. Unatoč ranijim saznanjima o postojanju groblja na tom lokalitetu, sustavna istraživanja su provedena tek 1999. i 2002. godine. Ovim novijim istraživanjima otkriveno je 18 grobova. Svi grobovi se, po svojim značajkama i grobnim nalazima, okvirno datiraju od 9. do 11. stoljeća te pripadaju većem uništenom starohrvatskom groblju. Navedeno groblje nalazilo se na području crkve sv. Marije te je uništeno dugotrajnim vađenjem šljunka, novijim graditeljskim zahvatima, sadnjom drvoreda i uređenjem parka.

Nalazište kod crkve sv. Marije u Triblju pripada zemljopisnoj cjelini Vinodola. Vinodol je smješten u istočnom dijelu priobalnog kvarnerskog pojasa, a obuhvaća prostor od Križišća na sjeverozapadu do Novog Vinodolskog na jugoistoku te područje Vinodolskog primorja uz obalu Vinodolskog kanala (Matejčić, 1988). Važnost Vinodola potječe iz prirodnih osobina, obilja plodnih polja i voda u kombinaciji sa smještajem na sjecištu prometnih pravaca prostora Mediterana te planinskog i panonskog zaleđa.

Arheološka istraživanja potvrđuju da su u 9. stoljeću Hrvati na tom području već starosjedioci. Nalazi iz starohrvatskih grobalja u Velom Dolu kod Križišća, na Gorici kod sela Stranče, kod crkve sv. Marije u Triblju i s uništenog groblja u Bribiru svjedoče o ranom naseljavanju Hrvata na prostor Vinodola (Cetinić, 1998).

Prilikom arheološkog iskopavanja kod crkve sv. Marije 1999. godine nađeno je 8 grobova (sonda 1: grob 1; sonda 5: grobovi 1-7), dok je u nastavku istraživanja 2002. godine nađeno njih još 10 (sonda 5a: grobovi 8-14, 15/16, 17-18). Istraženi grobovi postavljeni su u redove orijentacije istok-zapad, s manjim ili većim otklonom od navedenog pravca (Cetinić, 1999, 2002). Nekoliko grobova (grobovi 10, 11, 12) nije u potpunosti istraženo budući da se većim dijelom nalaze ispod arhitekture crkve.

Većinu grobova čine pojedinačni ukopi, no prisutno je i nekoliko primjera sahranjivanja više osoba (grobovi 1, 7, 11, 13 i 15/16). Grobovi su većinom jednostavne rake, a manji dio ih je djelomično ograđen neobrađenim kamenjem. Svi su ukopi kosturni, s pokojnicima položenim na leđa. Najčešći grobni nalaz je nakit

The cemetery near the Church of St. Mary at Tribalj

In the beginning of the 20th century graves were accidentally unearthed near the church of the Visitation of Mary (Church of St. Mary) at Tribalj. Graves contained Early Croatian jewelry, namely two bronze single-beaded earrings (Cetinić, 1998). Several other graves were discovered in 1946 during road construction works to the north of the church. Even though the existence of the cemetery on this site was previously known, systematic excavations were conducted in 1999 and 2002. These excavations discovered 18 graves that are part of a larger demolished Early Croatian cemetery, destroyed by gravel extraction, as well as recent architectural projects, planting of trees and park landscaping. Based on grave findings, these 18 graves are dated from the 9th to the 11th century.

The site at the church of St. Mary belongs to the geographical region of Vinodol. Vinodol is located in the eastern part of the Kvarner coastal belt, and covers the area from Križišće in the northwest to Novi Vinodolski in the southeast, as well as the Vinodol seaboard that extends along the coast of the Vinodol Channel (Matejčić, 1988). The importance of Vinodol lies in its natural features, an abundance of fertile fields plentiful in water, combined with its location at the crossroads of trade routes connecting the Mediterranean with its mountainous and Pannonian hinterland.

Archaeological research confirms that by the 9th century the Croats are native to this region. Finds from Early Croatian cemeteries in Veli Dol near Križišće, Gorica near Stranče, Tribalj, and from the devastated cemetery at Bribir, prove that the Vinodol region was settled by Croats at a very early stage (Cetinić, 1998).

During the archaeological excavations near the Church of St. Mary in 1999, eight graves were discovered (probe 1: grave 1; probe 5: graves 1-7), whereas in 2002 another ten graves were discovered (probe 5a: graves 8-14, 15/16, 17-18). All the graves were oriented in the east-west direction, with major or minor deviations (Cetinić, 1999, 2002). Several graves (graves 10, 11, 12) had not been fully excavated because they are mostly situated underneath the church.

Most burials are single inhumations, but there are also some multiple burials (graves 1, 7, 11, 13 and 15/16). These are mostly earthen grave pits, whereas only a minority of them are lined with irregular stone. All burials are skeletal, with the deceased on their backs. The most common finds are jewelry (earrings and circlets), however, a buckle, an appliqué element, a fragment of metal, and a knife were also discovered.

(naušnice i karičice), a nađeni su još i kopča, aplika, ulomak lima nepoznate namjene te nož.

Proučavanjem skeletnih ostataka arheoloških populacija saznajemo o uvjetima i načinu njihova života, kao i zdravlju i bolestima. Većina tih podataka može se dobiti jedino pregledom i analizom skeletnog materijala. Objedinjavanjem sakupljenih podataka s onima arheološkim i povijesnim stječe se potpunija slika o životu istraživanih populacija.

Metode analize

Sakupljeni ljudski skeletni ostaci detaljno su pregledani i analizirani ne bi li se prikupili podaci o zdravlju i bolestima starohrvatske populacije Triblja. Analiza je obuhvatila popisivanje svih kostiju i zglobnih površina, određivanje spola i starosti osobe u trenutku smrti te bilježenje patoloških promjena na kostima i zglobnim pločinama.

Točno određeni spol i dob u trenutku smrti temelj su demografske slike određene populacije, ali i osnova za sve daljnje analize i usporedbe.

Pri određivanju spola uzorka iz Triblja korištene su morfološke karakteristike lubanje i zdjeličnog obruča. Iako postoji nekoliko metoda određivanja spola djece, na uzorku iz Triblja on nije određen kod osoba mlađih od 20 godina. Zdjelični obruč smatra se najvažnijom i najsigurnijom kosti za određivanje spola, zbog svog oblika koji je kod žena prilagođen trudnoći i rađanju. Najpouzdanije spolno ovisne karakteristike su ventralni greben, subpubični konkavitet i širina medijalnog ruba donje grane na preponskoj kosti (Phenice, 1969). Osim navedenih karakteristika korištene su i dvije karakteristike na zdjeličnoj kosti: širina gornjeg velikog sjednog ureza i prisutnost predaurikularnog sulkusa (Bass, 1971; WEA, 1980). Kao dodatna metoda korištene su sljedeće morfološke karakteristike lubanje: razvijenost nuhalnog područja zatiljne kosti, veličina mastoidnih procesa sljepoočne kosti, zaobljenost supraorbitalnih rubova, izraženost supraorbitalnih lukova i izraženost brade (Bass, 1971; Schwartz, 1995; WEA, 1980). Ukoliko zbog nedostataka koštanih elemenata spol nije mogao biti precizno određen, osoba je smještena u širu kategoriju odrasle osobe.

Pri određivanju dobi odraslih osoba korištene su morfološke promjene na spojnoj ploštini preponske kosti, morfološke promjene na zglobnoj ploštini bočne kosti i stupanj sraštavanja lubanjskih šavova. Morfološke promjene na spojnoj ploštini preponske kosti smatraju se najpouzdanijim kriterijem za određivanje dobi u trenutku smrti, budući da ploština s godinama mijenja svoj izgled. Na uzorku se koristila metoda po Toddu

Studying the skeletal remains of archaeological populations we can understand their living conditions and lifestyle, but we can also gain an insight into their health and disease. Most of this knowledge can be obtained solely by examining and analysing the recovered skeletal material. By combining this data with archaeological and historical information, we obtain a more complete picture of life of the analysed populations.

Methods of analysis

The recovered human skeletal remains have been examined and analyzed in order to obtain information regarding health and disease of the Early Croatian population at Tribalj. The analysis of the remains consisted of recording of present bones and joint surfaces, age and sex determination, and recording of pathological changes.

A precise determination of sex and age is the basis for a demographic picture of a population, and for all further analyses and comparisons.

Morphological characteristics of the skull and pelvic girdle were used to determine the sex. Although there are several methods of determining the sex of infants, in the Tribalj sample sex was not determined for individuals under 20 years of age. The pelvic girdle is considered the most important and most reliable for sex determination due to its shape adapted to pregnancy and childbirth. The most reliable characteristics are the ventral arc, the subpubic concavity and the form of the ischiopubic ramus ridge (Phenice, 1969). We also used two characteristics on the pelvic bone: shape of the greater sciatic notch and presence of the preauricular sulcus (Bass, 1971; WEA, 1980). As an additional method, the following morphological features of skull were used: robusticity of the nuchal crest, size of mastoid processes, sharpness of the supraorbital margin, prominence of glabella and projection of the mental eminence (Bass, 1971; Schwartz, 1995; WEA, 1980). If it was not possible to accurately determine sex due to a lack of skeletal elements, the individual was included in the broader adult category.

In determining the age of adults we used morphological changes on the pubic symphysis and auricular surface of the pelvic bone and the degree of cranial suture closure. Morphological changes on the pubic symphysis are considered the most reliable for determining age at death, since the symphysis changes its appearance with ageing. We used the Todd method (Todd, 1921a, 1921b) which divides the changes in ten phases, from eighteen to over fifty years. Morphological changes on the auricular surface likewise show regular chronological changes related to a certain age. We used the Lovejoy and associates method (Lovejoy et al, 1985) which divides

(Todd, 1921a, 1921b), koja promjene na ploštini dijeli na deset faza, od osamnaeste do više od pedesete godine života. Morfološke promjene na zglobnoj ploštini bočne kosti također pokazuju pravilne kronološke promjene vezane uz određenu dob. Korištena je metoda Lovejoya i suradnika (Lovejoy i sur., 1985), koja navedene promjene dijeli u osam faza, u razdoblju od dvadesete do više od šezdesete godine života. Budući da lubanjski šavovi pravilno sraštavaju s povećanjem dobi, korišteni su kao dodatna metoda njena određivanja. Metoda Meindla i Lovejoya (Meindl i Lovejoy, 1985) korištena u analizi popisuje stupanj sraštavanja šavova za deset točaka na svodu lubanje i pet lateralno-anteriornih točaka.

Nakon uspoređivanja rezultata korištenih metoda odrasla osoba je svrstana u jednu od dobnih kategorija: mlađa odrasla osoba (20-34 godina), srednja odrasla osoba (35-49 godina) i starija odrasla osoba (50+ godina). Ukoliko zbog nedostataka koštanih elemenata dob nije mogla biti precizno određena, osoba je smještena u širu kategoriju odrasle osobe.

Pri određivanju dobi djece korišteni su kronologija spajanja epifiza s dijafizama i stupanj razvoja mliječnih i trajnih zubi. U razdoblju puberteta epifize i dijafize dugih kostiju, koje su do tada bile odvojene, počinju se postupno spajati po poznatom redoslijedu. Pri određivanju dobi korišteni su postojeći standardi (Scheuer i Black, 2004). Najpouzdanija metoda za određivanje dobi djece temelji se na razvoju zubi, budući da je utjecaj okoline na njih vrlo mali (Buikstra i Ubelaker, 1994). Pri analizi su korištene metode koje se temelje na određivanju stupnja razvoja krune i korijena mliječnih i trajnih zubi (Ubelaker, 1989).

Nakon uspoređivanja rezultata, djeca su svrstana u jednu od dobnih kategorija: rođenje - 5 godina, 5 - 10 godina, 10 - 15 godina, 15 - 20 godina.
Skeletni ostaci svih osoba pregledani su ne bi li se uočile patološke promjene. Nažalost, malobrojne bolesti ostavljaju prepoznatljive tragove na kostima. Prisutnim promjenama je katkad vrlo teško utvrditi uzrok, budući da mnogi čimbenici stresa uzrokuju istovjetne reakcije na kostima (Ortner, 2003; Roberts i Manchester, 2005). Za identifikaciju i dijagnozu patoloških promjena korišteni su kriteriji Ortnera (Ortner, 2003) te Manna i Murphyja (Mann i Murphy, 1990).

Analiza skeletnih ostataka

U tablici I (T. I) prikazana je raspodjela analiziranog uzorka po spolu i dobi. U uzorku je prisutno 25 osoba, od toga 20 odraslih (80%) i 5 djece (20%). Od odraslih osoba 13 (65%) je muškaraca, 6 (30%) su žene, a jednoj osobi (5%) spol nije mogao biti određen.

changes into eight phases, from twenty to more than sixty years. Because cranial sutures close regularly with increasing age, they were used as an additional method of age determination. The Meindl and Lovejoy method (Meindl and Lovejoy, 1985) used in the analysis, records the degree of cranial suture closure for ten ectocranial and five lateral-anterior sites.

After comparing the results of used methods, an adult was included into one of the age categories: young adults (20-34 years), middle-aged adults (35-49 years) and older adults (50+ years). If it was not possible to accurately determine age due to a lack of skeletal elements, the individual was included into a wider category of adults.

In determining the age of infants, we used the chronology of the union of epiphyses and diaphyses and the stage of deciduous and permanent teeth formation. During puberty, epiphyses and diaphyses of long bones, previously separated, start fusing together at a known age. Existing standards (Scheuer and Black, 2004) were employed for age determination. The most reliable method for determining the age of infants is based on the development of teeth, since the environmental impact on them is negligible (Buikstra and Ubelaker, 1994). For our analysis we used methods based on determining the degree of development of the crown and root of deciduous and permanent teeth (Ubelaker, 1989).

After comparing the results, the infants were classified into one of these age categories: birth - 5 years, 5-10 years, 10-15 years, and 15-20 years.

The skeletal remains of all individuals were examined in order to detect any pathological changes. Unfortunately, few diseases leave distinct traces on bones. At times it is extremely difficult to determine the cause of these changes because many stress factors cause identical changes on bones (Ortner, 2003; Roberts and Manchester, 2005). For the identification and diagnosis of pathological changes we used Ortner criteria (Ortner, 2003), as well as Mann and Murphy criteria (Mann and Murphy, 1990).

The analysis of skeletal remains

Table I (T. I) shows the sex and age distribution of the analyzed sample. The sample consists of 25 individuals, 20 adults (80%), and 5 infants (20%). There are 13 males (65%), 6 females (30%), and an adult whose sex could not be determined (5%).

Most of the adults from this sample, 11 (55%), were aged between 35 and 49 years. There are four individuals (20%) aged between 20 and 34 years, and four individuals (20%) older than 50. For one individual (5%) it was not

Najveći broj odraslih osoba u uzorku, njih 11 (55%), starosti je 35-49 godina. Po četiri osobe (20%) starosti su 20-34 godine i više od 50 godina. Jednoj osobi (5%) dob nije mogla biti precizno određena pa je opisana samo kao odrasla. Od petero djece njih troje je u skupini 5-10 godina, dok je po jedno dijete starosti 0-5 godina i 10-15 godina.

Na analiziranom uzorku iz Triblja uočena su sljedeća patološka stanja: lomovi kostiju, skorbut, tuberkuloza, osteopenija i osteoporoza, degenerativni osteoartritis i Schmorlovi defekti.

Lom kostiju

Prijelomi ili frakture kostiju najčešće su uočene traume na skeletnom materijalu. Relativno se lako dijagnosticiraju, i to uz pomoć prisutnosti bilateralne asimetrije kostiju, pomaka kosti, koštanih kalusa i linija frakture. Prijelom kosti uzrokuje vanjska sila, koja svojim izravnim ili neizravnim djelovanjem dovodi do potpunog ili djelomičnog loma (Aufderheide i Rodríguez-Martín, 2003; Ortner, 2003). Proučavanje lomova pruža neposredni dokaz o slučajnim i namjernim aktivnostima u svakodnevnom životu (Roberts i Manchester, 2005).

U analiziranom uzorku lomovi kostiju prisutni su kod trojice muškaraca: fraktura lubanje u grobovima 1 i 17, fraktura palčane kosti u grobu 14 te fraktura lakta u grobu 17. Svi uočeni lomovi zarasli su za vrijeme života osobe. Obje frakture lubanje depresijskog su tipa, što znači da je na kosti vidljivo udubljenje. Od 11 očuvanih lubanja depresijske frakture prisutne su na njih dvije (18%). Uzrok njihovog nastanka ne može se sa sigurnošću utvrditi, budući da je do loma moglo doći slučajnom nezgodom ili namjernim nasiljem. Frakture dugih kostiju uočene su samo na kostima ruku, i to njih tri na 51 očuvanoj kosti (6%). Najčešći uzrok takvih fraktura dugih kostiju je slučajni događaj, kao što je pad ili neka druga nezgoda.

Depresijska fraktura koja je probila svod desne tjemene kosti kod muškarca starosti 20-34 godine iz groba 1 ovalnog je oblika i dimenzija 14x26 mm.

Kod muškarca starijeg od 50 godina iz groba 17 uočene su tri frakture. Plitka, ovalna depresijska fraktura na desnoj tjemenoj kosti dimenzija je 26x19 mm te nije probila svod lubanje. Osim toga, linije frakture vidljive su na proksimalnim zglobnim plohama lijeve palčane i lakatne kosti. Sve opisane frakture kod ove osobe najvjerojatnije su nastale kao posljedica istog slučajnog događaja, odnosno pada ili nezgode.

Fraktura desne palčane kosti prisutna je kod muškarca starosti 35-49 godina iz groba 14. Na sredini

possible to accurately determine age, so we listed this person only as an adult. Of the five infants, three of them were 5 to10 years old, while one is in the 0 to 5 years group, and another in the 10-15 years group.

In the analyzed sample from Tribalj, the following pathological conditions were observed: fractures, scurvy, tuberculosis, osteopenia and osteoporosis, osteoarthritis and Schmorl's nodes.

Fracture

Fractures are the most widely observed skeletal traumas. They are relatively easy to diagnose by the presence of bilateral bone asymmetry, bone displacement, bone callus and fracture lines. Fractures are caused by an external force that by direct or indirect action results in a complete or partial fracture (Aufderheide and Rodríguez-Martín, 2003; Ortner, 2003). The study of fractures provides direct evidence of activities, either intentional or accidental ones, which were performed in everyday life (Roberts and Manchester, 2005).

In the analyzed sample, fractures are present on three males: a skull fracture in graves 1 and 17, a radius fracture in grave 14, and an elbow fracture in grave 17. All observed fractures healed during life. Both skull fractures are depressions, meaning that a concavity is visible on the cranial vault. Of the 11 preserved skulls, two (18%) have depression fractures. We are not able to determine with certainty cause of the fractures, because they could be either the result of a random accident or of intentional violence. Fractures of long bones were observed only on the arm bones, three of a total of 51 preserved bones (6%). The most common cause of long bone fractures is a random event, such as a fall or some other accident.

The depression fracture that penetrated the vault of the right parietal bone of a male aged 20 to 34 years from grave 1, is oval in shape and measures 14x26 mm.

Three fractures were observed on male over fifty years old from grave 17. The shallow, oval depression fracture on the right parietal bone measures 26x19 mm, and did not penetrate the cranial vault. Furthermore, fracture lines are visible on the proximal articular surface of the left radius and ulna. All described fractures found on this individual are most probably the result of a single random occurrence, i.e. a fall or some other accident.

A fracture of the right radius was observed on a male aged 35 to 49 years from grave 14. A large bone callus is present in the middle of the bone, while the lower half has moved medially because it healed up incorrectly (Fig. 1). Present callus was created as part of the healing process, which resulted in the renewed joining of the fractured parts.

kosti prisutan je koštani kalus većih dimenzija, dok je donja polovica kosti uslijed nepravilnog zaraštavanja pomaknuta prema medijalnoj strani (slika 1). Vidljivi kalus nastao je kao dio procesa zacjeljivanja kosti, pri čemu je došlo do ponovnog spajanja slomljenih dijelova.

Sl.1 Fraktura desne palčane kosti muškarca iz groba 14
Fig. 1 Fracture of the right radius of a male from grave 14

Skorbut

Skorbut je bolest koju uzrokuje kronični nedostatak vitamina C (Brown i Ortner, 2009). Budući da ljudi ne mogu sintetizirati ni pohranjivati vitamin C, moraju ga redovito unositi prehranom (Waldron, 2009). Nedostatak vitamina C u organizmu dovodi do slabljenja stijenki krvnih žila te krvarenja. Prvi simptomi obično se javljaju nakon jednog do tri mjeseca, a krvarenje tek nakon šest mjeseci (Mays, 2008). Ukoliko do krvarenja dođe u blizini kosti, javljuju se pojačana poroznost i novi sloj kosti (Roberts i Manchester, 2005). Promjene na lubanji najčešće su vidljive na vanjskoj površini lubanje, svodovima očnica, gornjoj čeljusti, velikom krilu klinaste kosti, nepčanoj kosti i donjoj čeljusti (Aufderheide i Rodríguez-Martín, 2003; Ortner, 2003).

Od 5 djece prisutnih u analiziranom uzorku, kod njih 4 (80%) uočene su promjene tipične za skorbut. Novi sloj kosti i pojačana poroznost uočeni su na dijelovima lubanje dva djeteta starosti 5-10 godina iz groba 11 (slika 2). Promjene u obliku pojačane poroznosti prisutne su

Scurvy

Scurvy is a disease caused by a chronic lack of vitamin C (Brown and Ortner, 2009). Since humans cannot synthesize or store vitamin C, it must be regularly supplied into the organism by food (Waldron, 2009). A lack of vitamin C leads to a weakening of blood vessel walls and causes bleeding. The first symptoms usually appear after a period of one to three months, whereas bleeding occurs only after a period of six months (Mays, 2008). If bleeding occurs near the bone, the results are an increased porosity and a new layer of bone (Roberts and Manchester, 2005). Changes on the skull are usually visible on the outer surface of the skull, orbital roofs, upper jaw, the greater wing of the sphenoid bone, the palatine bone and mandible (Aufderheide and Rodríguez-Martín, 2003; Ortner, 2003).

Of the 5 infants present in the analyzed sample, 4 of them (80%) exhibit changes typical for scurvy. A new layer of bone and increased porosity were observed in parts of the skull of two infants aged 5 to 10 years from grave 11 (Fig. 2). Increased porosity is present on parts of the skull of an infant from grave 13, under 5 years of age, and an infant from grave 2, aged 10 to 15 years.

Sl.2 Poroznost na lijevoj očnici djeteta iz groba 11
Fig. 2 Porosity on the left orbit of an infant from grave 11

Tuberculosis

Tuberculosis is an infectious disease caused by the *Mycobacterium tuberculosis* bacterium, and its occurrence is associated with poverty, poor living conditions and an inappropriate diet (Waldron, 2009). At particular risk are the elderly, malnourished and already ill individuals. The disease almost always starts in the lungs but can spread to other parts of the body, including bones. In this case the most affected parts of the skeleton are the ribs and vertebrae (Aufderheide and Rodríguez-Martín,

na dijelovima lubanje djeteta starosti do 5 godina iz groba 13 te djeteta starosti 10-15 godina iz groba 2.

Tuberkuloza

Tuberkuloza je zarazna bolest koju uzrokuje bakterija *Mycobacterium tuberculosis,* a njena pojava povezuje se sa siromaštvom, lošim životnim uvjetima i neprimjerenom ishranom (Waldron, 2009). Osobe koje čine rizičnu skupinu su one starije dobi, pothranjene ili već oboljele. Žarište bolesti je gotovo uvijek u plućima, no može se proširiti i na ostale dijelove tijela, uključujući i kosti. U tom slučaju najčešće zahvaćeni dijelovi kostura su rebra i kralješci (Aufderheide i Rodríguez-Martín, 2003; Roberts i Manchester, 2005). Na rebrima se karakteristične promjene javljaju kao novi sloj kosti na unutrašnjoj strani. Najčešće su zahvaćeni prsni i slabinski kralješci te dolazi do urušavanja njihovih tijela.

Kod muškarca starijeg od 50 godina iz groba 5 prisutan je novi sloj kosti na unutrašnjoj strani 16 ulomaka rebara (slika 3). Uz to, tijelo jednog slabinskog kralješka je urušeno, što se očituje udubljenjem na gornjoj strani tijela. Navedene promjene tipične su za tuberkulozu.

2003; Roberts and Manchester, 2005). The characteristic changes that appear on the ribs are in the form of a new bone layer on the interior side. The thoracic and lumbar vertebrae are mainly affected, leading to the collapse of their bodies.

The 50+ year old male from grave 5 has a new bone layer on the interior side of the 16 rib fragments (Fig. 3). Additionally the body of a lumbar vertebra had collapsed, leading to indentation on the upper side of the body. These changes are typical for tuberculosis.

Osteopenia and osteoporosis

Osteopenia and osteoporosis are terms indicating a reduced bone mineral density (Ortner, 2003), osteopenia being the less severe form of the disease. At present it is considered that the main causes for this disease are age, a diet low in calcium or high in proteins, a lack of physical activity, hormones, a genetic predisposition, numerous pregnancies and prolonged periods of breastfeeding (Roberts and Manchester, 2005).

Osteopenia and osteoporosis are characterized by a decreased bone density that manifests itself through

Sl.3 Novi sloj kosti na tri ulomka rebara muškarca iz groba 5
Fig. 3 A new bone layer on three rib fragments of a male from grave 5

Osteopenija i osteoporoza

Osteopenija i osteoporoza su termini koji označavaju smanjenu gustoću kostiju (Ortner, 2003), pri čemu je osteopenija blaži oblik bolesti. Za sada se smatra da su glavni čimbenici njihova nastanka starija dob, prehrana siromašna kalcijem ili bogata proteinima, nedostatak fizičke aktivnosti, hormoni, genetske predispozicije te

changes in the mass and quantity of trabecular and cortical bone (Gonzales-Reimers et al, 2007). However, to confirm osteoporosis a fracture caused by the loss of bone mass is necessary. The radius, femoral neck, and bodies of thoracic and lumbar vertebrae are parts of the skeleton most likely affected by fractures caused by osteoporosis.

brojne trudnoće i duga razdoblja dojenja (Roberts i Manchester, 2005).

Osteopeniju i osteoporozu obilježava smanjena gustoća kostiju, koja se očituje promjenama u masi i količini trabekularne i kortikalne kosti (Gonzales-Reimers i sur., 2007), no za postavljanje dijagnoze osteoporoze potrebna je i prisutnost frakture uzrokovane gubitkom koštane mase. Palčana kost, vrat bedrene kosti te tijela prsnih i slabinskih kralježaka dijelovi su skeleta kod kojih najčešće dolazi do fraktura uzrokovanih osteoporozom.

Kod dvije žene starosti 35-49 godina iz grobova 11 i 13 uočeno je smanjenje koštane mase svih dugih kostiju. Budući da je masa manja od one očekivane za tu dob, postavljena je dijagnoza osteopenije.

Kod muškarca starosti 35-49 godina iz groba 3 uočena je manja masa svih kostiju, uz stanjenu kortikalnu kost i izrazito smanjenu gustoću trabekularne kosti. Uz to, na tijelima tri prsna i tri slabinska kralješka prisutne su kompresijske frakture, koje su dovele do urušavanja i smanjene visine tijela kralježaka (slika 4). Navedene promjene sukladne su promjenama koje izaziva osteoporoza.

Promjene na zglobovima dugih kostiju i kralješcima

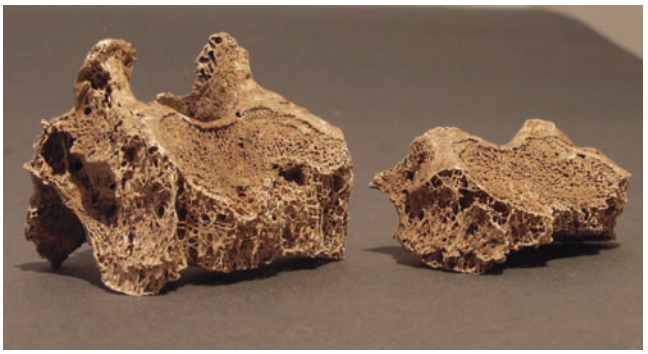
U analiziranom uzorku uočena je prisutnost degenerativnog osteoartritisa i Schmorlovih defekata. Ove patološke promjene djelomično dijele zajedničke uzroke i čimbenike pojave, mehanički stres i povećanu fizičku aktivnost.

Degenerativne promjene na zglobovima dugih kostiju i kralješcima najčešće su prisutna bolest zglobova u modernim i arheološkim populacijama. Glavno obilježje degenerativne bolesti ili osteoartritisa su upala i destrukcija kosti i pripadajuće hrskavice. Smatra se da su glavni čimbenici nastanka povećana dob i genetska predispozicija te mehanički stres i pojačana fizička aktivnost (Roberts i Manchester, 2005). Osteoartritične promjene po intenzitetu se dijele u nekoliko stupnjeva. Blaži oblici su osteofitske izrasline uz rub zglobne površine i poroznost na površini kosti dok je najteži oblik eburnirana, odnosno polirana površina (Aufderheide i Rodríguez-Martín, 2003; Ortner, 2003).

Schmorlov defekt je vrsta hernije intervertebralnog diska. Nastaje kada pulpozni dio diska probije hrskavicu i proširi se gore ili dolje u tijelo kralješka. Rezultat prolapsa je plitki okrugli ili bubrežasti defekt, obično ne veći od centimetra u promjeru. Etiologija Schmorlovih defekata još nije do kraja razjašnjena, no više autora (McWhirr i sur., 1982; Schmorl i Junghans, 1971) napominje da traume i teške fizičke aktivnosti, posebno

On the two women from graves 11 and 13, aged between 35 and 49 years, we observed a decrease in the bone mass of long bones. Since the mass is lower than expected for this age group, osteopenia could be confirmed.

A 35 to 49 year old male from grave 3 showed a reduced mass of all bones, along with thinned cortical bone and significantly reduced trabecular bone density. In addition, on the bodies of three thoracic and three lumbar vertebrae we observed compression fractures leading to the collapse and reduced height of the vertebral bodies (Fig. 4). These changes are consistent with osteoporosis.



Sl. 4 Kompresijske frakture dva prsna kralješka muškarca iz groba 3
Fig. 4 Compression fractures of two thoracic vertebrae of a male from grave 3

Changes on long bone joints and vertebrae

A presence of degenerative osteoarthritis and Schmorl's nodes was noted in the analyzed sample. These pathological changes share common causes and factors of occurrence, mechanical stress and increased physical activity.

Degenerative changes of long bone joints and vertebrae are the most common joint diseases present in modern and archaeological populations. The main characteristics of a degenerative disease or osteoarthritis are an inflammation and destruction of the bone and its cartilage. It is believed that the main causes of this disease are old age and a genetic predisposition, as well as mechanical stress and increased physical activity (Roberts and Manchester, 2005). Osteoarthritic changes are divided into several degrees based on their intensity. Less severe forms are marginal osteophytes on the edge of the joint surface and porosity on the surface of the bone, while the most severe form is an eburnated or polished surface (Aufderheide and Rodríguez-Martín, 2003; Ortner, 2003).

Schmorl's node is a type of intervertebral disc hernia. It forms when the nucleus pulposus of the disc breaks through the cartilage and penetrates up or down into the vertebral body. The result of the prolapse is a shallow,

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u doba adolescencije, mogu potaknuti njihov nastanak.

U analiziranom uzorku degenerativne promjene na zglobovima dugih kostiju uočene su kod 5 osoba od njih 14 (36%) s uščuvanim dugim kostima ruku i nogu, dok promjene na kralježnici ima 11 osoba od njih 16 (69%) s najmanje očuvana četiri kralješka. U najvećem broju slučajeva riječ je o promjenama slabog intenziteta, odnosno osteofitskim izraslinama ili blagoj poroznosti. Kod tri muškarca (grobovi 5, 14 i 17) prisutne su promjene najjačeg oblika gdje je uz osteofite i poroznost prisutna i eburnirana površina (slika 5).

Sl. 5 Eburnirana površina na lijevoj petnoj kosti muškarca iz groba 17
Fig. 5 Eburnated surface on the left calcaneus of a male from grave 17

Schmorlovi defekti prisutni su na kralješcima 7 osoba od njih 16 (44%) s najmanje očuvana četiri kralješka. Većina osoba, uz Schmorlove defekte, ima i osteoartritične promjene na kralježnici, što potvrđuje zajedničke čimbenike njihova nastanka.

Zaključna razmatranja

Groblje kod crkve sv. Marije u Triblju, koje se koristilo od 9. do 11. stoljeća, jedno je od malobrojnih starohrvatskih grobalja Vinodola sa sačuvanim skeletnim ostacima. Od ostalih starohrvatskih grobalja Vinodola istraženi su jedino skeletni ostaci sa groblja u Stranču, koje se datira od 8. do 11. stoljeća (Cetinić, 1998). Iako oba groblja ne sadrže veliki broj ukopa, vremenski se djelomično preklapaju te čine cjelinu u prostornom i vremenskom smislu. Analiza skeletnih ostataka iz Triblja tako predstavlja bitan doprinos poznavanju ovog važnog područja i razdoblja. Pri interpretaciji dobivenih podataka kad god je bilo moguće korišteni su podaci analiza starohrvatskog groblja u Stranču (Šlaus i sur., 2011) te kompozitnog starohrvatskog uzorka s četiri groblja iz Dalmacije: Donje polje pokraj Šibenika, Glavice kod Sinja, Radašinovci i Velim (Šlaus, 2006).

round or kidney-shaped defect, usually no larger than a centimeter in diameter. The etiology of Schmorl's nodes has not yet been completely clarified, but several authors (McWhirr et al, 1982; Schmorl and Junghans, 1971) noted that traumas and severe physical activities, particularly during adolescence, are a predisposition for their development.

In the analyzed sample, degenerative changes on joints of long bones were observed in 5 of 14 individuals (36%) with preserved long bones of arms and legs, whereas changes on the spine were present on 11 of 16 individuals (69%) with at least four preserved vertebrae. In most cases we observed low-intensity changes, i.e. marginal osteophytes or mild porosity. Three males (graves 5, 14 and 17) had the most severe changes, where alongside osteophytes and porosity we also observed an eburnated surface (Fig. 5).

Schmorl's nodes are present on vertebrae of 7 of 16 (44%) individuals with at least four preserved vertebrae. In addition to Schmorl's nodes, the majority of these individuals had osteoarthritic changes on the spine, all of which confirms the common factors associated with their occurence.

Concluding remarks

The cemetery near the church of St. Mary at Tribalj, which was in use from the 9th to the 11th century, is one of the few Early Croatian cemeteries at Vinodol with preserved skeletal remains. Of all Early Croatian cemeteries from Vinodol, skeletal remains were recovered also at Stranče which is dated from the 8th to the 11th century (Cetinić, 1998). Although both cemeteries yielded a small number of burials, their period of use partially coincides, forming thus one spatial and temporal unit. The analysis of skeletal remains from Tribalj thus represents an important contribution to the understanding of this important region and period. When interpreting the obtained data we compared, whenever possible, results of the analysis of the Early Croatian cemetery at Stranče (Šlaus et al, 2011), as well as the composite Early Croatian sample from four cemeteries in Dalmatia: Donje Polje near Šibenik, Glavica near Sinj, Radašinovci and Velim (Šlaus , 2006). The cemeteries selected for comparison belong to the period from the 8th to the 11th century.

The analysis of skeletal material from the cemetery at Tribalj included 25 individuals from 18 graves. This sample consists of individuals of both sexes and all age groups, 20 of them adults (80%) and 5 infants (20%) (T. II). This age distribution is rather unexpected because the infants, being the most vulnerable group, should be more significantly represented in the sample. An

Groblja odabrana za usporedbu pripadaju periodu od 8. do 11. stoljeća.

Analiza skeletnog materijala s groblja u Triblju obuhvatila je 25 osoba iz 18 grobova. U uzorku su prisutne osobe oba spola i svih dobnih skupina, od toga 20 odraslih (80%) i 5 djece (20%) (T. II). Ovakva dobna raspodjela neočekivana je budući da bi djeca, kao najugroženija skupina, trebala činiti puno veći dio uzorka. Gotovo identična raspodjela vidljiva je i na starohrvatskom groblju u Stranču, gdje djeca čine 24% uzorka (Šlaus i sur., 2011), dok je u kompozitnom uzorku njihov udio nešto viši i iznosi 30,8% (Šlaus, 2006). Niži udio djece na groblju u Stranču autori objašnjavaju djelovanjem okolišnih čimbenika koji su utjecali na lošiju očuvanost dječjih kostiju, kao i činjenicom da je analiziran samo dio iskopanog skeletnog materijala (Šlaus i sur., 2011). Na manji broj djece iz Triblja utjecali su, kao i u Stranču, okolišni čimbenici, no treba naglasiti i raniju devastaciju dijela groblja, kao i činjenicu da dio grobova nije moguće istražiti budući da se nalaze ispod novije arhitekture (Cetinić, 1998). Osim navedenih čimbenika, također je moguće da su djeca u većem broju bila pokapana na dijelu groblja koje nije obuhvaćeno ovim istraživanjem, što je dodatno umanjilo njihov broj u analiziranom uzorku.

Spolna podjela odraslih osoba iz Triblja odgovara onoj uočenoj u Stranču (T. II). Broj muškaraca u oba uzorka je gotovo dvaput veći od broja žena (Tribalj 13:6, Stranče 22:12), što odudara od normalne raspodjele, u kojoj bi oba spola trebala biti podjednako zastupljena. Dobivenu podjelu u Stranču autori objašnjavaju činjenicom da skeletni materijal potječe iz svega tri sezone iskopavanja i sa samo jednog dijela groblja (Šlaus i sur., 2011). No, usporedba uzoraka iz Triblja i Stranča s kompozitnim materijalom iz Dalmacije, u kojem je podjednak broj muškaraca i žena (117:112) (Šlaus, 2006), izdvaja ova dva vinodolska lokaliteta te se za sada čini da to nije slučajno. Iako je utjecaj okolišnih čimbenika i neistraženosti lokaliteta neosporan, ovako značajne razlike u broju muškaraca i žena trebalo bi provjeriti na vremenski i prostorno bliskim lokalitetima. Jedno od mogućih objašnjenja, koje tek treba povrditi, jest da su se muškarci većinom pokapali odvojeno od žena i djece.

Na tlocrtu istraživanog dijela groblja pokušala se uočiti pravilnost u razmještaju ukopa ovisno o spolu i dobi osoba. Budući da analizirani uzorak potječe sa samo jednog dijela groblja, te je brojčano mali, nisu uočene nikakve pravilnosti u razmještaju grobova.

U analiziranom uzorku kod više osoba zabilježeno je prisustvo sljedećih patoloških promjena: prijelomi

almost identical distribution can be observed on the Early Croatian cemetery at Stranče, where infants represent 24% of the sample (Šlaus et al, 2011), whereas in the composite sample their share is slightly higher and amounts to 30.8% (Šlaus, 2006). The lower number of infants at Stranče authors explain by environmental factors that resulted in the poorer preservation of infant bones, but also by the fact that only a portion of the excavated skeletal material was analyzed (Šlaus et al, 2011). A smaller number of infants from Tribalj was influenced by environmental factors, as in Stranče, but also it must be emphasized that part of the cemetery was devastated earlier and that some graves are still situated underneath the church (Cetinić, 1998). Additionally, it is also possible that a larger number of infants was buried in a section of the cemetery not included in this excavation, all of which reduced their presence in the analyzed sample.

The sex distribution of adults from Tribalj corresponds to that observed at Stranče (T. II). The number of males in both samples is almost twice the number of females (Tribalj 13:6, Stranče 22:12), which differs from a normal distribution in which both sexes are more or less equally represented. The authors explain the distribution at Stranče with the fact that the skeletal material comes from merely three excavation campaigns which were carried out in only one section of the cemetery (Šlaus et al, 2011). However, the comparison of Tribalj and Stranče samples with the composite Dalmatian material, which shows an equal number of males and females (117:112) (Šlaus, 2006), singles out these two Vinodol sites, and at present it seems this is not a coincidence. Although the influence of environmental factors and the poor level of exploration of the site cannot be denied, such significant differences in the number of males and females should be checked against other sites from similar period and region. One possible explanation that has yet to be confirmed is that males were in a majority of cases buried separately from females and infants.

On the ground plan of the excavated section of the cemetery we attempted to identify a pattern in the arrangement of burials, depending on sex and age of the deceased. We were not able to observe any regularity in the arrangement of the graves, since the analyzed sample comes from only one part of the cemetery, and is also numerically small.

On several individuals in the analyzed sample we observed the presence of the following pathological changes: fractures, degenerative changes in joints with Schmorl's nodes, scurvy, as well as osteopenia and osteoporosis.

kostiju, degenerativne promjene zglobova sa Schmorlovim defektima, skorbut te osteopenija i osteoporoza.

Na analiziranom uzorku uočena su samo četiri slučaja prijeloma kostiju. Od 11 očuvanih lubanja depresijske frakture uočene su na njih dvije (18%), što je znatno više nego u Stranču, gdje je učestalost tek 6,9%. Frakture dugih kostiju u uzorku iz Triblja prisutne su na samo 6% očuvanih kostiju ruku. Iako se uzrok loma kosti rijetko može utvrditi s potpunom sigurnošću, mala učestalost uočenih fraktura, koje su vrlo vjerojatno nastale slučajno, upućuje na nisku razinu nasilja u zajednici iz Triblja.

Veći broj osoba s degenerativnim promjenama zglobova dugih kostiju (36%) i kralježnice (69%), u kombinaciji sa Schmorlovim defektima (44%), navode na zaključak da su se starohrvatski stanovnici Vinodola bavili nekom vrstom fizičke aktivnosti, moguće poljoprivrednim radovima. Za sada su povijesni podaci koji bi potvrdili ovu pretpostavku nedostupni. Dobivene podatke nije moguće usporediti s materijalom sa Stranča i kompozitnim materijalom iz Dalmacije zbog korištenja različitih metoda u prikupljanju i obradi podataka.

Skorbut je uočen kod čak 80% djece. Tako velika učestalost donekle iznenađuje, budući da se skorbut javlja nakon dugotrajnog nedostatka vitamina C. S obzirom na zemljopisni smještaj i vremenski period, stanovnici Triblja egzistenciju su barem djelomično osiguravali poljoprivrednim radom, što bi sugeriralo donekle redovitu dostupnost svježeg voća i povrća bogatog vitaminom C. Jedino duža razdoblja poljoprivredne katastrofe mogla su dovesti do propadanja uroda, a time i smanjene konzumacije voća i povrća te povećane upotrebe žitarica i mesa. Potvrda mogućih razdoblja ovakve prehrane je velika učestalost skorbuta kod djece te dodatno slučajevi osteopenije i osteoporoze kod odraslih osoba. Naime, osteopeniju i osteoporozu karakterizira smanjena gustoća kostiju, na čiji nastanak utječu razni čimbenici, među kojima i prehrana siromašna kalcijem ili bogata proteinima (Roberts i Manchester, 2005).

Uz navedene patološke promjene, u analiziranom uzorku prisutan je i izolirani slučaj tuberkuloze, bolesti koja se povezuje sa siromaštvom i lošim životnim uvjetima (Waldron, 2009).

Dosadašnje spoznaje o starohrvatskim stanovnicima Vinodola dopunila je ova analiza skeletnog materijala s groblja iz Triblja. Prema dobivenim podacima možemo zaključiti da su životni uvjeti u Triblju bili relativno loši. Neprimjerena prehrana očituje se velikom učestalošću skorbuta kod djece, dok je dugotrajni fizički rad potvrđen visokom učestalošću degenerativnih

Only four cases of fracture were detected in the analyzed sample. Of the 11 preserved skulls, two of them had depression fractures (18%), which is significantly higher in comparison with Stranče where their incidence was only 6.9%. Fractures of long bones in the Tribalj sample are present on only 6% of the preserved arm bones. Although the cause of fracture can rarely be determined with absolute certainty, the low incidence of observed fractures that were most probably caused by accident indicates a low level of violence in the community from Tribalj.

A relatively large number of individuals with degenerative changes in the joints of long bones (36%) and spine (69%), combined with Schmorl's nodes (44%), suggests that the Early Croatian inhabitants of Vinodol performed some kind of habitual physical activity, perhaps connected to agriculture. The historical data that would confirm this assumption are currently unavailable. The obtained data cannot be compared with the material from Stranče and the composite Dalmatian material, because different methods were used for the collection and processing of data.

Scurvy was observed in as much as 80% of the infants. Such a high incidence of scurvy is surprising, since illness occurs after a prolonged lack of vitamin C. If we take into account the geographical location as well as the period of time, we can assume that the inhabitants of Tribalj practised farming in order to survive, which would suggest a more or less regular access to fresh fruits and vegetables rich in vitamin C. Only longer periods characterized by a disaster could endanger the crops, which in turn would result in a reduced consumption of fruits and vegetables and an increased use of grain and meat. The possible existence of such periods is corroborated by the high incidence of scurvy in children, coupled with additional cases of osteopenia and osteoporosis in adults. Both osteopenia and osteoporosis are characterized by a decreased bone density that is a consequence of various factors, among which a diet low in calcium or rich with proteins (Roberts and Manchester, 2005).

In addition to these pathological changes, in the analyzed sample we also recorded an isolated case of tuberculosis, a disease that is associated with poverty and poor living conditions (Waldron, 2009).

Our understanding of the Early Croatian inhabitants of Vinodol was improved by this analysis of skeletal material from the cemetery at Tribalj. According to the obtained data, we are able to conclude that the living conditions at Tribalj were relatively poor. Inadequate

promjena na zglobovima i Schmorlovih defekata kod odraslih osoba. Podaci dobiveni analizom uspoređeni su s onima prostorno i vremenski bliskima iz Stranča te je uočena sličnost u spolnoj i dobnoj raspodjeli. Time se ova dva groblja razlikuju od kompozitnog starohrvatskog dalmatinskog uzorka, što otvara pitanja o pogrebnim običajima i načinu pokapanja na području starohrvatskog Vinodola.

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nutrition is reflected in a high incidence of infant scurvy, while extended physical activity is confirmed by the high incidence of degenerative changes on joints and by Schmorl's nodes found in adults. Comparison with data from Stranče, a site close in space and time, showed similarities in sex and age distribution. Thus these two cemeteries differ from the Early Croatian composite sample from Dalmatia, which raises numerous questions related to burial customs in Early Croatian Vinodol.

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Tablica 1. Prikaz analiziranog uzorka po spolu i dobi

GROB (OSOBA)	SPOL	DOB
1 (donji ukop)	muški	20-34
1 (gornji ukop)	muški	35-49
1	muški	20-34
2	dijete	10-15
3	muški	35-49
4	dijete	5-10
5	muški	50+
6	ženski	35-49
7 (osoba A)	ženski	20-34
7 (osoba B)	muški	35-49
8	ženski	35-49
9	muški	50+
10	muški	35-49
11 (osoba A)	ženski	35-49
11 (osoba B)	dijete	5-10
11 (osoba C)	dijete	5-10
12	muški	35-49
13 (osoba A)	ženski	35-49
13 (osoba B)	dijete	0-5
14	muški	35-49
15/16 (osoba A)	muški	50+
15/16 (osoba B)	ženski	20-34
15/16 (osoba C)	odrasla	odrasla
17	muški	50+
18	muški	35-49

Table 1. Sex and age distribution of the analyzed sample

GRAVE (INDIVIDUAL)	SEX	AGE
1 (lower)	male	20-34
1 (upper)	male	35-49
1	male	20-34
2	infant	10-15
3	male	35-49
4	infant	5-10
5	male	50+
6	female	35-49
7 (individual A)	female	20-34
7 (individual B)	male	35-49
8	female	35-49
9	male	50+
10	male	35-49
11 (individual A)	female	35-49
11 (individual B)	infant	5-10
11 (individual C)	infant	5-10
12	male	35-49
13 (individual A)	female	35-49
13 (individual B)	infant	0-5
14	male	35-49
15/16 (individual A)	male	50+
15/16 (individual B)	female	20-34
15/16 (individual C)	adult	adult
17	male	50+
18	male	35-49

Tablica 2. Usporedba spolne podjele između Triblja, Stranča i kompozitnog starohrvatskog uzorka

SPOL		TRIBALJ	STRANČE	KOMPOZITNI UZORAK
ODRASLI	**muškarci**	13 (52%)	22 (49%)	117 (35%)
	žene	6 (24%)	12 (27%)	112 (34%)
	odrasli	1 (4%)	0	0
	ukupno	20 (80%)	34 (76%)	229 (69%)
DJECA		5 (20%)	11 (24%)	102 (31%)
UKUPNO		**25**	**45**	**331**

Table 2. A comparison of the sex distribution between Tribalj, Stranče and the composite Early Croatian sample

SEX		TRIBALJ	STRANČE	COMPOSITE SAMPLE
ADULTS	**males**	13 (52%)	22 (49%)	117 (35%)
	females	6 (24%)	12 (27%)	112 (34%)
	adults	1 (4%)	0	0
	total	20 (80%)	34 (76%)	229 (69%)
INFANTS		5 (20%)	11 (24%)	102 (31%)
TOTAL		**25**	**45**	**331**

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