

Analiza trauma u srednjovjekovnim uzorcima iz Kliškovca i Crkvara

An analysis of traumas in medieval samples from Kliškovac and Crkvari

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U radu su analizirane osobe s dva srednjovjekovna nalazišta iz kontinentalne Hrvatske: Crkvara i Kliškovca. Na spomenutim nalazištima do danas je otkopana 121 osoba (47 djece, 27 žena i 47 muškaraca), od kojih su za analizu učestalosti i distribucije trauma uzete odrasle osobe (n=74). Prosječna starost muškaraca u analiziranom uzorku je 37,4 godina, a žena 36,5 godina. Ukupno je analizirano 573 dugih kostiju. Ukupna učestalost trauma na postkranijalnim kostima iznosi 2,8% (16/573). Antemortalne traume su uočene kod 14 osoba (8 žena i 6 muškaraca), a perimortalne kod šest osoba (četiri žene i dva muškarca). Sve perimortalne traume nanese su oštrobriđnim oružjem (najvjerojatnije mačem ili bojnim nožem). Učestalost trauma glave iznosi 16,7%. Kao i kod postkranijalnih trauma prisutan je velik broj perimortalnih ozljeda. Usporedba s više osteoloških uzoraka iz Hrvatske i svijeta pokazuje da je uzorak iz Crkvara i Kliškovca specifičan po visokim učestalostima kranijalnih trauma i velikom broju perimortalnih fraktura. Zajedno, ovi podaci sugeriraju visoki rizik od međuljudskog nasilja na analiziranim nalazištima. Činjenica da su četiri od šest osoba s perimortalnim posjekotinama bile žene, sugerira da su uočene traume prije bile rezultat nasilja kojega su provodili lako naoružani i brzi pljačkaški odredi, čiji je cilj bio teroriziranje i pljačkanje civilnog stanovništva, negoli nasilja koje je bilo rezultat sukoba dviju vojski. Buduća multidisciplinarna osteološka, arheološka i povijesna istraživanja potrebna su da se potvrde rezultati dobiveni na ovom uzorku i pokušaju identificirati specifične epizode namjernog nasilja koje su prouzročile evidentirane traume.

Ključne riječi: paleopatologija, perimortalne traume, namjerno nasilje, Crkvari, Kliškovac, srednji vijek, Hrvatska.

The paper presents an analysis of human remains from two medieval sites in continental Croatia: Crkvari and Kliškovac. To date, the remains of 121 persons (47 children, 27 women and 47 men) have been excavated from the two sites, and the remains of adult individuals (n=74) have been studied to determine the frequency and distribution of traumas. The average age of males in the analysed sample was 37.4 years, while the average age of females was 36.5 years. A total of 573 long bones were analysed. The overall frequency of trauma on postcranial bones was 2.8% (16/573). In 14 persons (8 females and 6 males), signs of antemortem trauma were observed, while in 6 individuals (4 women and 2 men) perimortem trauma were observed. All perimortem traumas were caused by sharp bladed weapon (probably a sword or battle knife). The overall frequency of cranial trauma was 16.7%. Similar to the postcranial traumas, among these traumas there were several perimortem injuries.

A comparison with a number of osteological series from Croatia and other parts of the world shows that the Crkvari and Kliškovac sample is specific because of the high frequency of cranial traumas and the large number of perimortem fractures. Considered together, these results indicate that there was a high risk of interhuman violence at the analysed sites. The fact that four out of six persons with perimortem cuts were women suggests that the observed injuries may have been the results of violence committed by swiftly-moving armed marauding gangs, set on terrorising and looting the civilian population, rather than the results of armed clashes between two military groups. Further multidisciplinary research incorporating osteological, archaeological and historical analysis is necessary to confirm the results obtained from this sample, and to attempt to identify specific episodes of intentional violence that resulted in the observed traumas.

Key words: paleopathology, perimortem traumas, intentional violence, Crkvari, Kliškovac, Middle Ages, Croatia

UVOD

Traumatske ozljede spadaju u najdramatičnije promjene koje se mogu uočiti u paleopatološkim analizama ljudskog osteološkog materijala s arheoloških nalazišta. Analiza ovih ozljeda donosi informacije o važnim, ponekad i presudnim, događajima u životu jedne osobe, ali i informacije o učestalosti i distribuciji nasilja unutar jedne zajednice. To je važan preduvjet za razumijevanje načina života određene populacije te praćenje učestalosti i distribucije nesreća i namjernog nasilja u različitim ekološkim, kulturnim ili socijalnim sustavima.

Prijelomi kostiju (frakture) spadaju među najčešće tipove trauma i najlakše se dijagnosticiraju pa su stoga i potaknuli najveći interes među znanstvenicima koji se bave paleopatološkim istraživanjima. Začetnikom tih istraživanja smatra se W. Jones (1910) koji je detaljno analizirao traume na koštanom uzorku iz Donje Nubije. Nažalost, ovaj rad koji je po mnogočemu bio ispred svog vremena, nije pobudio veće zanimanje te su i nakon njega traume na osteološkom materijalu iz arheoloških nalazišta uglavnom prikazivane na razini deskriptivnih opisa pojedinih kostura koji su ponekad pridodavani arheološkim publikacijama, više kao kuriozum negoli kao ozbiljan pokušaj rekonstrukcije uvjeta i kvalitete života na tim nalazištima. Prekretnicu čini izuzetno duhovita i sveobuhvatna analiza trauma koju su na sjevernoameričkom nalazištu Libben proveli Lovejoy i Heiple (1981). Njihovu metodologiju preuzeli su i usavršili brojni drugi autori: Alvrus (1999), Bennike (1985), Jurmain (1991; 2001), Jurmain i Bellifemine (1997), Grauer i Roberts (1996), Kilgore et al. (1997), Judd i Roberts (1999), Neves et al. (1999), Standen i Ariazza (2000) itd.

Spomenuta istraživanja uglavnom su se koncentrirala na analize postkranijalnih fraktura premda postoje i radovi koji se isključivo bave traumama na glavi (npr. Bennike 1985; Walker 1989; 1997; Webb 1995; Jurmain, Bellifemine 1997; Lambert 1997).

U Hrvatskoj bioarheološkoj znanosti traume su rijetko bile zasebno analizirane. Podaci o učestalostima trauma u različitim arheološkim populacijama objavljeni su zajedno s drugim bioarheološkim podacima u kontekstu holističkih analiza različitih arheoloških populacija iz Hrvatske (Šlaus 1997; 2000; 2002; Šlaus et al. 2002; 2003; 2004; 2006). Samo jedan rad (Šlaus 1994) dominantno se bavi problemom trauma. Nedostatak ovakvih analiza potaknuo nas je na pisanje ovog rada u kojemu je analizirana učestalost i distribucija traumatskih ozljeda u osteološkom uzorku s dva srednjovjekovna nalazišta iz kontinentalne Hrvatske: Kliškovcu i Crkvarima. U radu su analizirane učestalosti trauma na različitim dijelovima tijela, uspoređene su učestalosti trauma kod muškaraca i žena i analizirane učestalosti antemortalnih (trauma koje je ozlijeđena osoba preživjela) i perimortalnih (ozljeda kao osoba nije preživjela) trauma. Zajedno, prikupljeni podaci mogu pokazati ne samo učestalost različitih trauma u analiziranom uzorku, već i je li većina trauma uočenih u uzorku rezultat nesretnih slučajeva ili namjernog nasilja.

Ovo je, jasno, izuzetno važna distinkcija koja se donekle može ustanoviti i drugim analizama. Arheološka građa, na primjer, obilno dokumentira strah od namjernog nasilja. Utvrde, gradine, oklopi, različite vrste oružja, kipovi i slikani

INTRODUCTION

Traumatic injuries belong to the most dramatic alterations that can be observed during paleopathological analyses of human remains from archaeological sites. An analysis of such injuries can not only provide information on important, sometimes crucial events in a person's life, but it can also provide unique information on the frequency and distribution of violence within a community. This knowledge is a prerequisite for understanding the way of life of a particular population, and for monitoring the frequency and distribution of accidents and intentional violence in different environmental, cultural or social systems.

The most common type of trauma is bone fracture. It is also the easiest to diagnose and has therefore drawn the highest interest of scientists engaged in paleopathological research. The pioneer of paleopathological research is W. Jones (1910) who analysed traumas on a bone sample from Lower Nubia. His work, which was in many ways ahead of its time, unfortunately did not provoke too much interest, and traumas observed on osteological material from archaeological sites continued to be presented at the level of a descriptive portrayal of individual skeletons that occasionally accompanied archaeological publications, more as a curiosity than a serious attempt to reconstruct the conditions and quality of life at the analysed sites. The turning point was marked by a very astute and comprehensive analysis of trauma observed at a North American site, carried out by Lovejoy and Heiple (1981). Afterwards, their methodology was adopted and refined by numerous authors: Alvrus (1999), Bennike (1985), Jurmain (1991; 2001), Jurmain and Bellifemine (1997), Grauer and Roberts (1996), Kilgore et al. (1997), Judd and Roberts (1999), Neves et al. (1999), Standen and Ariazza (2000), etc.

The above-mentioned research focused primarily on postcranial fractures, although there are also works that deal exclusively with cranial traumas (e.g. Bennike 1985; Walker 1989; 1997; Webb 1995; Jurmain, Bellifemine 1997; Lambert 1997).

In Croatian bioarchaeological science, traumas have rarely been the primary subject of analysis. Data on the frequency of trauma in different archaeological populations have been published jointly with other bioarchaeological data within holistic studies of various archaeological populations on the territory of Croatia (Šlaus 1997; 2000; 2002; Šlaus et al. 2002, 2003, 2004, 2006). There has been only one paper (Šlaus 1994) which predominantly addresses the issue of traumas. The lack of such analysis prompted us to write this paper which presents an analysis of the frequency and distribution of traumatic injuries in an osteological sample from two medieval sites in continental Croatia: Kliškovac and Crkvari. The analysis focuses on the frequency of traumas on different parts of the body, a comparison of the frequency of traumas in the men and women under analysis, and the frequency of antemortem traumas (which indicate that the injured person survived the injury) and perimortem traumas (which the injured person did not survive). Considered together, the collected data may reveal not only the frequency of various traumas in the analysed sample, but also whether the majority of the observed traumas were the results of accidents or intentional violence.

prikazi sukoba, samo su neke arheološke potvrde o prisutnosti nasilja u ljudskim zajednicama. Međutim, dok spomenuta građa jasno dokumentira latentne i kronične sukobe, ništa ne govori o njihovoj učestalosti, raširenosti i posljedicama. Za to je potrebna osteološka građa koja jedina donosi sigurna svjedočanstva o nasilnim sukobima u prošlosti.

U paleopatološkoj literaturi koja se bavi namjernim nasiljem uglavnom prevladavaju opisi pojedinačnih kostura ili malih uzoraka. Do danas su objavljeni opisi osteoloških promjena koje su posljedica: odsijecanja glave (Wells 1982; Bennike 1985; McKinley 1993; Smith 1993), odsijecanja udova (Webb 1974; Smith 1993), ranjavanja strijelama (Lewis, Lewis 1961), ritualnog žrtvovanja (Fowler 1984), razapinjanja na križ (Zias, Sekeles 1985; Aufderheide, Rodríguez-Martín 1998) i skalpiranja (Smith 1995; Ortner 2003). Premda izuzetno korisni, ti radovi ne donose informacije o raširenosti i distribuciji nasilja u arheološkim populacijama iz kojih analizirani kosturi dolaze. Samo populacijska istraživanja mogu pokazati koliko je nasilje utjecalo na svakodnevni život različitih arheoloških populacija i različitih podskupina (spolnih, starosnih ili socijalnih) unutar tih populacija.

MATERIJALI I METODE

Zbog zemljopisne i kronološke sličnosti (oba uzorka nalaze se u Slavoniji i datiraju u srednji vijek) osteološki uzorci iz Crkvara i Kliškova su za potrebe ovog rada spojena u jedan kompozitni uzorak.

Srednjovjekovna crkva Sv. Lovre s grobljem i gradištem podignuta je na nešto izdvojenom brežuljku u neposrednoj blizini sela Crkvara u općini Orahovica (Tomičić, Tkalčec 2004). Ljudski osteološki materijal analiziran u radu potječe iz tri sezone istraživanja (2003., 2004. i 2005.) koje je vodio Institut za arheologiju iz Zagreba. Prve godine iskopavanja je vodio prof. dr. sc. Ž. Tomičić u razdoblju od 1. do 13. rujna (Tomičić et al. 2004), kada je istraženo ukupno sedam grobova (1, 2, 3, 5, 8, 10 i djelomično grob 4) (Tomičić, Tkalčec 2004). Godine 2004. sustavna istraživanja vodio je prof. dr. sc. Ž. Tomičić u razdoblju od 28. kolovoza do 3. rujna, kada je dovršeno istraživanje grobova 4, 7, 9 i 11 iz 2003. godine, a u cjelini su istraženi daljnji grobovi od broja 13 do 49 (Tomičić, Tkalčec 2004). U 2005. godini iskopavanja je vodila mr. sc. T. Tkalčec u razdoblju od 5. do 17. rujna i tom prilikom je zabilježeno 66 novih grobnih cjelina (od broja 50 do 116), a istraženo ih je 63 (Tkalčec 2005). Groblje oko crkve može se podijeliti u tri sloja ukapanja: 1) najstariji horizont može se najvjerojatnije datirati u 12. i 13. stoljeće; 2) srednji sloj smješten je u kasni srednji vijek i traje do kraja 15. stoljeća; 3) novovjekovni sloj ukapanja traje do kraja 17. stoljeća (Ž. Tomičić, usmeni podatak).

Arheološko nalazište Suhopolje-Kliškovac ili Turski grad predstavlja blagi konični brežuljak, smješten jugozapadno od središta naselja Suhopolje, kojega je presjekla trasa željezničke pruge Virovitica – Suhopolje – Slatina – Osijek, zapadno od cestovnog prijelaza preko pruge. Sondažna iskopavanja 2005. godine vodio je prof. dr. sc. Ž. Tomičić iz Instituta za arheologiju iz Zagreba, a trajala su od 16. do 26. kolovoza te je tom prilikom istraženo 12 grobova (Tomičić, Jelinčić 2005). Gro-

The latter case is clearly a very important distinction that can also be made on the basis of other types of analyses. Archaeological material can, for example, show evidence of fear of intentional violence. Fortifications, hillforts, armour, different types of weapons, sculptures and pictures portraying conflicts are but some elements of archaeological data indicating the presence of violence in human communities. However, while that kind of material clearly records latent and chronic conflicts, it says nothing about their frequency, the area of conflict, or their consequences. This kind of information can only be obtained from osteological material, which is the only source that can truthfully testify to the violent conflicts of the past.

In paleopathological literature that discusses incidents of intentional violence, descriptions of individual skeletons or small samples prevail. Thus far, descriptions of osteological alterations have been described which are the consequence of the following injuries: decapitation (Wells 1982; Bennike 1985; McKinley 1993; Smith 1993), severing of limbs (Webb 1974; Smith 1993), injuries caused by arrows (Lewis, Lewis 1961), ritual sacrifices (Fowler 1984), crucifixion (Zias, Sekeles 1985; Aufderheide, Rodríguez-Martín 1998) and scalping (Smith 1995; Ortner 2003). Although these works are extremely useful, they still provide no information on the scope and distribution of violence in the archaeological populations that the analysed skeletons belonged to. Only population research can show to what extent violence affected the everyday life of different archaeological populations and various subgroups (based on gender, age or social status) within these populations.

MATERIALS AND METHODS

Given that the geographical and chronological positions of Crkvari and Kliškova are very similar (both are situated in Slavonija and have been dated to the Middle Ages), for the purpose of this work the osteological samples from both sites were taken as one composite sample.

The medieval church of St. Lawrence with the accompanying cemetery and hillfort was constructed on a detached hill in the immediate vicinity of the village of Crkvari in the municipality of Orahovica (Tomičić, Tkalčec 2004). The analysed human osteological material was excavated during three seasons of exploration (2003, 2004 and 2005), led by Institute of Archaeology. In the first year, the excavations carried out from 1-13 September were supervised by Ž. Tomičić, Ph.D. (Tomičić et al. 2004). During this period a total of seven graves were explored (graves 1, 2, 3, 5, 8, 10 and partially grave 4) (Tomičić, Tkalčec 2004). In 2004, Ž. Tomičić, Ph.D. led systematic excavations from 28 August until 3 September. His team completed the exploration of graves 4, 7, 9 and 11 initiated in 2003, as well as the exploration of the additional graves 13-49 (Tomičić, Tkalčec 2004). In 2005 the excavations were led by T. Tkalčec, M.A. in the period between 5 and 17 September. During this cycle of research, 66 new grave units were recorded (graves 50-116), and 63 of them were excavated (Tkalčec 2005). The cemetery surrounding the church can be divided into three groups, according to the burial layers: 1) the oldest horizon could probably be dated to the 12th and 13th century; 2) the middle layer was dated to the late Middle Ages up to the end of the 15th century; 3) the Modern-History burial layer stretches until the end of the 17th century (Ž. Tomičić, oral data).

blje se može podijeliti u dva horizonta: 1) stariji horizont (još neistražen) po prijašnjim nalazima (nakitne tvorevine, perforirani novac) pripada razdoblju bjelobrdske kulture tj. riječ je o ranom crkvenom groblju (svršetak 11. stoljeća i početak 12. stoljeća) (Tomičić, Jelinčić 2005); 2) mlađi horizont groblja u Kliškovicu može se smjestiti u kasni srednji vijek i traje do 30-ih godina 16. stoljeća (Ž. Tomičić, usmeni podatak).

Prilikom antropološke analize koja je provedena u laboratoriju Odsjeka za arheologiju HAZU-a u Zagrebu, spol je određen na temelju morfoloških razlika koje su prisutne u kosturima muškaraca i žena. Najvažnije razlike nalaze se u zdjelničnom obruču (Phenice 1969; Krogman, Iščan 1986; Kelley 1979; Kimura 1982; Weaver 1980; Sutherland, Suchey 1991) i te su razlike korištene kad god je to bilo moguće. U slučajevima kada zdjelica nije bila ušćuvana, korištene su druge kranijalne i postkranijalne morfološke razlike (Bass 1995). Posebno korisnim pokazale su se diskriminantne funkcije za određivanje spola odraslih osoba na temelju dimenzija butne (Šlaus 1997.a) i goljenične kosti (Šlaus, Tomičić 2005). Spol djece nije određivan.

Doživljena starost određena je na temelju više čimbenika: stupnja obliteracije kranijalnih šavova (Meindl, Lovejoy 1985), promjena na pubičnoj simfizi (Brooks, Suchey 1990; Gilbert, McKern 1973; McKern, Stewart 1957; Todd 1920; 1921), promjena na aurikularnoj ploštini zdjelčne kosti (Lovejoy et al. 1985), promjena na sternalnim krajevima rebara (Iščan et al. 1984; 1985) te pojavi degenerativnih promjena na zglobnim ploštinama dugih kostiju i kralješaka (Pfeiffer 1991). Starost dječjih kostura procijenjena je na temelju promjena koje nastaju tijekom oblikovanja i nicanja mliječnih i stalnih zubiju, stupnja osifikacije kostiju (spajanje epifiza s dijafizama) te dužini dijafiza dugih kostiju (McKern, Stewart 1957; Bass 1995; Fazekas, Kosa 1978; Moorees et al. 1963; Scheuer, Black 2000). U svim analizama korišten je najveći mogući broj kriterija da se anulira učinak loše ušćuvanosti nekih kostura. Starost dobro ušćuvanih odraslih osoba dana je u rasponu od pet godina (npr., 21-25), a za loše ušćuvane odrasle osobe u rasponu od 10 ili 15 godina, dok je starost djece dana u rasponu od jedne godine.

Budući da su traume kod djece izuzetno rijetke, u analizu su uključene samo odrasle osobe odnosno osobe starije od 15 godina. Traume kod djece samo su opisane.

U ovoj analizi traume su definirane kao prijelomi (frakture) koji su posljedica djelovanja sile ili kontakta s oštrim ili tupim predmetima. Pri analizi kranijalnih trauma uzete su u obzir lubanje koje su ušćuvane više od 50% dok su u postkranijalnom dijelu kostura za analizu uzete sljedeće kosti: ključna kost, nadlaktična kost, palčana kost, lakatna kost, bedrena kost, goljenična kost i lisna kost. Analizirane su samo kosti čija je ušćuvanost bila veća od 50% i na kojima je barem jedna zglobna ploština bila uglavnom ili potpuno ušćuvana. Prisutnost trauma ustanovljena je makroskopskom analizom koja je uključivala provjeru bilateralne asimetrije kostiju, angularnih deformiteta i prisutnosti koštanih kalusa. U slučaju nedoumice osteološki materijal je rendgenski snimljen. Učestalosti trauma izračunate su zasebno za svaku analiziranu kost. Statistička značajnost razlika ustanovljena je hi-kvadrat testom.

The archaeological site of Suhopolje-Kliškovac or Turski Grad is situated on a mild conical hill, southwest of the centre of the village of Suhopolje, cut in half by the railroad Virovitica – Suhopolje – Slatina – Osijek, west of the road/railway crossing. The excavation of test pits in 2005 was led by Ž. Tomičić, Ph.D. from Zagreb Institute of Archaeology. The excavations, which lasted from 16 to 26 August, revealed 12 graves (Tomičić, Jelinčić 2005). In the cemetery, a distinction can be made between two horizons: 1) the earlier horizon (still unexplored) which, according to some previous finds (jewellery items, perforated coins), belongs to the period of the Bjelobrd Culture – in other words, this is an early church cemetery from the late 11th and early 12th century (Tomičić, Jelinčić 2005); 2) the later horizon of Kliškovac cemetery which can be classified as belonging to the late Middle Ages up to the 1530s (Ž. Tomičić, oral data).

During the anthropological analysis, carried out in the laboratory of the Department of Archaeology of the Croatian Academy of Sciences and Arts in Zagreb, the sex of the recovered individuals was determined on the basis of morphological differences between the male and female skeletons. The most significant differences occur in the pelvic ring (Phenice 1969; Krogman, Iščan 1986; Kelley 1979; Kimura 1982; Weaver 1980; Sutherland, Suchey 1991) and they were used whenever possible. In cases where the pelvis had not been preserved, determination of sex was made on the basis of cranial and postcranial morphological differences (Bass 1995). Particularly useful for the determination of the sex of adults were the discriminant functions based on the size of the femur (Šlaus 1997) and tibia (Šlaus, Tomičić 2005.). No attempt was made to determine the sex of subadults.

Several factors were used to assess age at death: degree of obliteration of the cranial sutures (Meindl, Lovejoy 1985), alterations in the pubic symphysis (Brooks, Suchey 1990; Gilbert, McKern 1973; McKern, Stewart 1957; Todd 1920; 1921), alterations in the auricular surface of the ilium (Lovejoy et al. 1985), changes on the sternal ends of the ribs (Iščan et al. 1984; 1985), and the appearance of degenerative changes on the articular surfaces of long bones and vertebrae (Pfeiffer 1991). The age of subadults was assessed on the basis of the changes that occur during the development and formation of deciduous and permanent teeth, the degree of bone ossification (closure of the epiphysis and diaphysis) and the length of the diaphysis in long bones (McKern, Stewart 1957; Bass 1995; Fazekas, Kosa 1978; Moorees et al. 1963; Scheuer, Black 2000). The largest possible number of criteria was applied in all analyses in order to eliminate the impact of the poor preservation of some skeletons. The age of the well-preserved remains of adults was given within a five-year range (e.g. 21-25), and for the poorly preserved remains of adults within a 10- or 15-year range, while the age of children was determined within a range of one year.

Given that the number of traumas observed in children is very small, the analysis focused on adults, i.e. persons over 15 years of age. The traumas in subadults are just described.

In this analysis, trauma is defined as a fracture resulting from the use of force or contact with a sharp or blunt object. An analysis of cranial traumas was carried out on crania that had been preserved to more than 50% of their volume, while the analysis of the postcranial skeleton took into consideration the following bones: clavicle, humerus, radius, ulna, femur, tibia and fibula. Only bones preserved to an extent of more

Tablica 1 Distribucija spola u srednjovjekovnom uzorku iz Crkvara i Kliškovca

Starost / Age	Djeca / Subadult	Žene / Female	Muškarci / Male
0-1	15		
2-5	19		
6-10	11		
11-15	2		
16-20		3	4
21-25			1
26-30		5	4
31-35		6	8
36-40		4	12
41-45		4	10
46-50		1	6
51-55		2	1
56-60		2	1
60+			
Ukupno / Total	47	27	47
Prosječna starost ¹ / Mean age at death ¹		x = 36,5 s.d. = 10,95	x = 37,4 s.d. = 9,08

1 Prosječna dob u trenutku smrti izračunata je koristeći prosječnu vrijednost za svaku dobnu kategoriju (npr. 38 godina za dobnu kategoriju od 36 do 40 godina) i 65 godina za dobnu kategoriju 60+.

Table 1 The sex and age distribution in the composite sample from Crkvari and Kliškovac

1 The average age at death was calculated on the basis of the median value for each age group (e.g. 38 years for the age group 36-40) and 65 years for the age group 60+.

REZULTATI

Distribucija smrtnosti po spolu i starosti za uzorak iz Crkvara i Kliškova prikazana je u Tablici 1. Uzorak čini 121 osoba od kojih je 47 djece (38,8%), 27 žena (22,4%) i 47 muškaraca (38,8%). Najmlađa osoba u analiziranom uzorku bila je fetus star devet lunarnih mjeseci, dok su najstarije osobe doživjele starost između 56 i 60 godina.

Omjer između djece, žena i muškaraca u uzorku iznosi 1,00 : 0,57 : 1,00. Muškarci su gotovo dva puta (1,74) zastupljeniji od žena i podjednako zastupljeni kao djeca te se po tome ovaj uzorak razlikuje od velike većine drugih srednjovjekovnih uzoraka koje karakterizira naglašena podzastupljenost djece i sličan broj (omjer je najčešće oko 1,00 : 1,00) muškaraca i žena (Šlaus 2002a). Jedini do danas evidentiran primjer sličnog omjera u srednjovjekovnom uzorku iz Hrvatske ustanovljen je na groblju uz crkvu Sv. Franje na Opatovini (Šlaus et al. 2006, u tisku). U ovom slučaju, više bioarheoloških parametara sugerira da je naglašen nerazmjer u omjeru muškaraca i žena rezultat socijalne selekcije, odnosno da je groblje pokraj crkve Sv. Franje na Opatovini u Zagrebu bilo prestižno groblje u kojemu su se uglavnom pokapale osobe visoke socijalne kategorije.

Prosječne doživljene starosti u uzorku iz Crkvara i Kliškova iznose 37,4 godina (sd = 9,08) za muškarce i 36,5 godina (sd = 10,95) za žene.

Traume na postkranijalnom kosturu ustanovljene su kod 14 osoba (8 žena i 6 muškaraca). Ukupan broj postkranijalnih trauma iznosi 23. Kod osam osoba evidentirana je jedna

that 50% of their surface were analysed, and only if at least one articular surface was mostly or completely preserved. The presence of a trauma was determined by a macroscopic analysis which included checking for bilateral bone asymmetry, angular deformities and the presence of bone callus. In case of doubt, the osteological material was x-rayed. The frequency of traumas was calculated separately for each analysed bone. Potential differences were evaluated with the χ^2 test using Yates correction when appropriate.

RESULTS

The sex and age distribution in the composite Crkvari and Kliškovac sample is shown in Table 1. The sample consists of 121 individuals, of whom 47 were subadults (38.8%), 27 females (22.4%) and 47 males (38.8%). The youngest person in the analysed sample was a foetus at the age of nine lunar months, while the oldest persons lived to 56-60 years.

The ratio of subadults, females and males in the sample is 1.00 : 0.57 : 1.00. Males are thus almost twice (1.74 times) as frequent as females, and equally frequent as children, which makes this sample different from the majority of medieval samples in Croatia that usually include a relatively smaller number of subadults and similar numbers of men and women (often at a ratio of around 1.00 : 1.00) (Šlaus 2002a). The only other example of a similar ratio in a medieval sample from Croatia recorded to date was observed in the cemetery by the church of St. Francis at Opatovina (Šlaus et al. 2006, in print). In the case of Opatovina cemetery, several bioarchaeological parameters suggest that

Tablica 2 Raspored trauma dugih kostiju po strani i spolu u srednjovjekovnom uzorku iz Crkvara i Kliškovca

Table 2 Distribution of long bone traumas by side and sex in the composite sample from Crkvari and Kliškovac

	Lijeva strana / Left side			Desna strana / Right side		
	N ¹	n ²	% ³	N	n	%
Ključne kosti / Clavicle						
Muškarci / Men	23	0	0,0	27	1	3,7
Žene / Women	12	0	0,0	12	2	16,7
Nadlaktične kosti / Humerus						
Muškarci / Men	25	0	0,0	33	2	6,1
Žene / Women	18	3	16,7	15	1	6,7
Palčane kosti / Radius						
Muškarci / Men	26	0	0,0	25	0	0,0
Žene / Women	12	1	8,3	7	1	14,3
Lakatne kosti / Ulna						
Muškarci / Men	25	0	0,0	32	1	3,1
Žene / Women	9	0	0,0	11	1	9,1
Bedrene kosti / Femur						
Muškarci / Men	28	0	0,0	33	1	3,0
Žene / Women	22	0	0,0	19	0	0,0
Goljenične kosti / Tibia						
Muškarci / Men	31	0	0,0	31	2	6,4
Žene / Women	16	0	0,0	15	0	0,0
Lisne kosti / Fibula						
Muškarci / Men	21	0	0,0	23	0	0,0
Žene / Women	11	0	0,0	11	0	0,0
Muškarci / Men	179	0	0,0	204	7	3,4
Žene / Women	100	4	4,0	90	5	5,6
Ukupno / Total	279	4	1,4	294	12	4,1

¹ N = ukupan broj dugih kostiju

² n = broj dugih kostiju sa prisutnim traumama

³ % = % (postotak) od ukupnog broja dugih kostiju

¹ N = total number of long bones

² n = number of long bones with one or more traumas

³ % = % (percentage) of long bones with traumas

trauma, dvije traume uočene su kod tri osobe, a tri traume prisutne su kod tri osobe. Malo manje od polovice (42,9% ili 6/14) osoba s traumom na postkranijalnom kosturu imaju više od jedne traume.

Učestalost trauma po analiziranim postkranijalnim kostima prikazan je u Tablici 2. U ovoj tablici nije naznačen broj trauma na pojedinoj kosti koji je, kao što je navedeno, iznosio od jedan do najviše tri, već je evidentirana svaka kost s traumom, bez obzira na to je li ih ima jednu ili više. Analizirane su 573 kosti koje se podijeljene po spolu i strani tijela na kojoj se nalaze. Traume su evidentirane na 16/573 (2,8%) analiziranih kosti.

Traume su najčešće evidentirane na nadlaktičnim kostima (6/91 ili 6,6%), nakon čega slijede ključne kosti (3/74 ili 4,0%) i palčane kosti (2/70 ili 2,8%). Kada se ovi rezultati zbroje, proizlazi da se na gornjim ekstremitetima (uključujući i ključne kosti) nalaze čak 81,3% svih postkranijalnih kosti s traumama. Iz Tablice 2 također se vidi da postoji razlika u učestalostima trauma, s obzirom na stranu tijela – ukupna

the significant difference between the number of men and women is the result of social selection, i.e. that the cemetery by the church of St. Francis at Opatovina in Zagreb was a prestigious graveyard, primarily used to bury individuals of high social rank.

The average age at death of individuals from Crkvari and Kliškovac is 37.4 years (sd = 9.08) for men and 36.5 years (sd = 10.95) for women.

Traumas in the postcranial skeleton were observed in 14 individuals (8 women and 6 men). The total number of postcranial traumas in the series is 23. Eight individuals suffered one trauma, two traumas were observed in three persons, and three traumas in three persons. Fewer than half (42.9% or 6/14) of the individuals with traumas in their postcranial skeleton suffered more than one injury.

The frequency of traumas on the analysed postcranial skeletons is shown in Table 2. The number of traumas in a single bone is not provided in the table, but, as previously mentioned, it ranged between one and three. The table provides a list of all bones with traumas, regardless of the number of injuries on

učestalost trauma na lijevoj strani tijela iznosi 1,4%, a na desnoj 4,1%. Međutim, razlika nije statistički značajna. Kada se, pak, uzorak podijeli po spolu, statistički značajne razlike prisutne su kod muškaraca. Niti jedan muškarac iz analiziranog uzorka nema traumu na lijevoj strani tijela (0/179 kostiju s lijeve strane), dok učestalost trauma na desnoj strani tijela iznosi 3,4% (7/204). Ova razlika jest statistički značajna ($\chi^2 = 4,49$; $P < 0,05$). Učestalost trauma na lijevoj i desnoj strani je kod žena gotovo identična (4,0% na lijevoj strani prema 5,6% na desnoj).

U analiziranom uzorku nema statistički značajnih razlika u učestalosti trauma na postkranijalnom kosturu između muškaraca i žena. Najveća razlika uočena je kod nadlaktičnih kostiju gdje su frakture evidentirane na 4/33 ili 12,1% kostiju žena i 2/58 ili 3,4% kostiju muškaraca. No razlika nije statistički značajna. Još jedna razlika između muškaraca i žena uočena je u distribuciji trauma. Sve traume postkranijalnoga kostura kod žena se nalaze na gornjim ekstremitetima (9/9), dok isto vrijedi samo za 57,1% ili 4/7 fraktura kod muškaraca. Niti ova razlika nije statistički značajna.

Doživljena je starost precizno određena kod 10/14 osoba s traumama postkranijalnoga kostura, dok su 4 osobe (dvije žene i dva muškarca) zbog iznimno loše ušćuvanosti osteološkog uzorka svrstane u kategoriju "stariji od 35 godina". U poduzorku osoba s točno određenom starošću prosječna starost muškaraca s traumama na postkranijalnom kosturu iznosi 40,5 godina, a žena 42,5 godina. Usporedba s prosječnim doživljenim starostima u čitavom uzorku pokazuje da su muškarci s traumama postkranijalnoga kostura u prosjeku doživjeli nešto veću starost od drugih muškaraca u uzorku (za 3,1 godina). Slična distribucija prisutna je i kod žena. Osobe s traumama postkranijalnoga kostura živjele su u prosjeku 6,0 godina dulje od drugih žena u uzorku.

Analizirani uzorak specifičan je po visokoj učestalosti perimortalnih trauma na postkranijalnim kostima odraslih osoba. Postkranijalne kosti s jasnim perimortalnim ozljedama čine 37,5% (6/16) svih postkranijalnih kostiju s traumama. Perimortalne ozljede postkranijalnih kostiju uočene su na 4 kostura žena i 2 kostura muškaraca, a njihova morfologija sugerira da su nanosene oštrobridnim predmetima (najvjerojatnije nožem ili mačem).

Kod dvije odrasle osobe prisutna je jedna perimortalna trauma, dvije perimortalne traume evidentirane su kod dvije, a tri perimortalne traume također kod dvije osobe. Na postkranijalnom kosturu ukupno je evidentirano 12 perimortalnih ozljeda. Gotovo sve perimortalne traume na postkranijalnom kosturu odraslih osoba nalaze se na nadlaktičnim kostima (11/12 ili 91,7%), a samo jedna posjekotina uočena je na ključnoj kosti. Zanimljivo je da su perimortalne ozljede postkranijalnih kostiju češće kod žena nego li muškaraca.

Većina perimortalnih trauma nanosena je oštrobridnim oružjem. U takve ozljede spadaju dvije perimortalne posjekotine uočene na desnoj nadlaktičnoj kosti 21-25 godina starog muškarca, nađenog u grobu broj 7 s nalazišta Kliškovac (sl. 1). Prva trauma (označena slovom "A") nalazi se na medijalnoj strani kosti oko 50 mm superiorno od distalnoga kraja. Dugačka je 12 mm te je zarezala nadlakticu pod istim kutom kao i druga posjekotina. Morfologija perimortalnih posjekotina ili ubodnih

each bone. A total of 573 bones were analysed. Traumas were observed in 16/573 (2.8%) of the analysed bones.

Most traumas were present in the upper arm bones (humerus) (6/91 or 6.6%), followed by the clavicle (3/74 or 4.0%) and radius (2/70 or 2.8%). When these results are added up, it follows that as many as 81.3% of all postcranial bones that exhibit traumas were located in the upper extremities (including the collar bones). Table 2 also shows that differences in the frequencies of traumas are present, depending on the side of the body: the overall frequency of traumas on the left side of the body is 1.4%, whereas on the right side it is 4.1%. However, the difference is not statistically significant. When the sample is divided by sex, statistically significant differences emerge in the male sample. No traumas are present on the left side of the body (0/179 bones from the left side), while the frequency of traumas on the right side of the body is 3.4% (7/204). This difference is statistically significant ($\chi^2 = 4,49$; $P < 0,05$). In women, the frequency of traumas on the left and right side of the body is almost identical (4.0% on the left side; 5.6% on the right side).

There are no statistically significant differences in the frequencies of traumas on the postcranial skeleton between men and women in the analysed sample. All traumas in the postcranial skeleton in females are located in the upper limbs (9/9), while these bones are affected in only 57.1% or 4/7 of all fractures in males. The difference is not statistically significant.

Age at death was determined in 10/14 persons with traumas in the postcranial skeleton, while, because of the poor preservation, the remains of four individuals (two women and two men) could only be classified as "older than 35". In the sub-sample of individuals with precisely determined age, the average age of males with traumas in the postcranial skeleton is 40.5 years, while the average age of females was 42.5 years. A comparison with the average age at death in the complete sample indicates that men with traumas on the postcranial skeleton on average lived longer than males without traumas (3.1 years). Females exhibit a similar distribution: individuals with traumas in the postcranial skeleton lived on average 6.0 years longer than women without skeletal evidence of traumas.

The analysed sample is specific because of the high frequency of perimortem traumas in the postcranial bones of adults. Postcranial bones with clear perimortem injuries make up 37.5% (6/16) of all injured postcranial bones. Perimortem injuries of postcranial bones were observed on 4 female and 2 male skeletons. Their morphology suggests that they had been inflicted by sharp-bladed objects (possibly a knife or sword).

One perimortem trauma was observed in two adults, two perimortem traumas in two individuals, and three perimortem traumas in two individuals. A total of 12 perimortem injuries were recorded in the postcranial skeleton. Nearly all perimortem traumas on the postcranial skeleton of adults were found on the humerus (11/12 or 91.7%). Only one cut was observed on the clavicle. It is worth mentioning that perimortem injuries of postcranial bones are more frequent in females than in males.

Most perimortem traumas were inflicted by sharp-bladed weapons. Among them are two perimortem cuts on the right upper arm bone of a man aged between 21-25 years, recovered from grave 7 in Kliškovac (Fig. 1). The first trauma (marked "A") is on the medial side of the bone, approximately 50 mm above its distal end. The injury is 12 mm long and was delivered at the same angle as the second cut. The morphology of the perimortem cuts or stab wounds allows reconstruction of

rana omogućuje rekonstruiranje kuta i smjera iz kojega je rana nanescena. Ovakve rane imaju, naime, polirane rubove. Kod posjekotina kost je polirana na mjestu inicijalnoga kontakta između oštrice i kosti, dok je paralelni rub rane grub i nepravilan. U ovom slučaju polirana kost se nalazi superiorno, što pokazuje da je udarac nanesen iz smjera odozgo prema dolje. Druga perimortalna posjekotina (označena slovom "B") nalazi se 18 mm inferiorno od prve. Ova posjekotina je veća. Odsjekla je medijalni kondil nadlaktične kosti izloživši pri tome trabekularnu kost. Defekt je velik 17×31 mm. Posjekotina je konzistentna s prvom u smislu da je i ovaj udarac nanesen iz smjera odozgo prema dolje, pod manje-više istim kutom. Niti jedna rana ne pokazuje znakove zarađivanja ili upalnog procesa. Morfologija rana jasno pokazuje da su obje nanescene u, ili oko, trenutka smrti.

Posjekotina je uočena i na lijevoj nadlaktičnoj kosti 46-50 godina starog muškarca iz groba broj 15 s nalazišta Kliškovac. Posjekotina je uzrokovala defekt veličine 14×4 mm. Udarac je nanesen pod oštrim kutom iz smjera odozgo prema dolje.

Dvije perimortalne posjekotine prisutne su i na dva fragmenta loše ušćuvane desne nadlaktične kosti 21-35 godina stare žene (uzorak br. 29) s nalazišta Kliškovac. Na superiornom komadu kosti prisutna je ravna, polirana kost dimenzija 9×9 mm, koja je konzistentna s posjekotinom, dok se na inferiornom komadu kosti nalazi plitka, djelomično postmortalno uništena posjekotina.

Tri perimortalne posjekotine uočene su i na srednjoj trećini dijafize lijeve nadlaktične kosti 31-40 godina stare žene (uzorak broj 39) s nalazišta Kliškovac. Sve tri posjekotine nalaze se na anteriornoj strani kosti. Dvije su dugačke 6 mm, a jedna 8 mm.

Na desnoj ključnoj kosti žene starije od 35 godina (uzorak broj 227) s nalazišta Crkvari prisutna je duboka perimortalna posjekotina dugačka 11 mm. Rana je zasjekla gotovo do polovice kosti (sl. 2). Polirani dio kosti nalazi se na lateralnoj strani, što sugerira da je udarac nanesen oštrobridnim oružjem (mačem?) s desne na lijevu stranu. Najvjerojatiji scenarij jest da ga je nanio desnoruki napadač koji se nalazio ispred žrtve.

Na srednjoj trećini dijafize desne nadlaktične kosti žene starije od 35 godina (uzorak broj 266) s nalazišta Crkvari, prisutne su tri perimortalne traume (sl. 3). Najveća posjekotina (označena slovom "A") nalazi se na anteriornoj strani kosti. Rana duljine 13 mm je tanka i ravna s oštrim rubovima. Druga posjekotina (označena slovom "B") nalazi se na medijalnoj strani i u istoj je visini kao i prva. Dugačka je 7 mm, a nanescena je udarcem koji je išao odozgo prema dolje. Najmanja posjekotina (označena slovom "C") nalazi se na medijalnoj strani kost oko 10 mm inferiorno od druge posjekotine. Najtanja je i najkraća (6 mm) od svih posjekotina.

Pored perimortalnih ozljeda u analiziranom su uzorku prisutne i antemortalne frakture postkranijalnih kostiju. Antemortalne frakture evidentirane su na 10 kostiju kod 4 muškarca i 4 žene. Kod šest osoba evidentirana je jedna antemortalna fraktura, kod jedne su prisutne dvije, a kod jedne tri frakture. Za razliku od perimortalnih ozljeda ove traume s podjednakom su učestalošću prisutne kod muškaraca i žena i ravnomjernije su raspoređene na postkranijalnom kosturu. Antemortalne frakture prisutne su na: dvije ključne kosti, jednoj nadlaktičnoj, dvije palčane kosti, dvije lakatne, jednoj bedrenoj i dvije potkoljenične kosti.

Osim postkranijalnih trauma u uzorku iz Crkvara i Kliškova prisutne su i traume glave i lica. Kranijalne traume

both the angle and direction from which they were inflicted. In cut wounds, the bone is smooth and sometimes polished at the point of initial contact between the blade and the bone, while the parallel edge of the injury is rough and irregular. In this case, the smooth bone is located in the superior part of the bone indicating that the blow was delivered from above. The second perimortem cut (marked "B") is located 18 mm below the first trauma. This cut is longer. It completely severed the medial condyle of the humerus and exposed the underlying trabecular bone. The size of the defect is approximately 17×31 mm. The cut is consistent with the first injury, in that this blow was also delivered from above, at more or less the same angle. Neither wound shows signs of healing or infection. The morphology of the wounds clearly indicates that both were inflicted at or around the moment of death.

A cut was also observed on the left upper arm bone of a man aged between 46-50 years, excavated from grave 15 in Kliškovac. The cut caused a defect of approximately 14×4 mm. The blow was delivered at a sharp angle, in a top-down direction.

Two perimortem cuts are also present on two fragments of the poorly preserved right humerus of a woman aged between 21-35 years (sample n. 29) from Kliškovac. On the upper part of the bone, there is a flat, polished area of bone approximately 9×9 mm, consistent with the morphology of a perimortem cut. On the inferior part of the bone there is a shallower cut, partially destroyed.

Three perimortem cuts were also observed in the middle third of the diaphysis of the left humerus of a woman aged between 31-40 years (sample n. 39) from Kliškovac. All three cuts are on the anterior side of the bone. Two of them are 6 mm long, and one is 8 mm long.

On the right clavicle of a woman older than 35 years (sample n. 227) from the Crkvari site, there is a deep perimortem cut 11 mm long. The cut reaches nearly to the centre of the bone (Fig. 2). The smooth part of the bone is situated on the lateral side, suggesting that the injury was inflicted with a sharp-bladed object (possibly a sword?) in a right-to-left direction. The most likely scenario is that the blow was delivered by a right-handed attacker who was standing in front of the victim.

Three perimortem traumas were observed in the middle third of the diaphysis of the right humerus of a woman older than 35 years of age (sample n. 266) from Crkvari (Fig. 3). The largest cut (marked "A") is on the anterior side of the bone. The cut is 13 mm long, thin and straight, with sharp edges. The second cut (marked "B") is located on the medial side, at the same height as the first one. It is 7 mm long and was caused by a blow delivered from above. The smallest cut (marked "C") is located on the medial side of the bone, approximately 10 mm below the second cut. It is the thinnest and shortest (6 mm) of all the cuts on this bone.

Apart from the perimortem injuries, the analysed sample exhibited several antemortem fractures of postcranial bones. Antemortem fractures were observed on 10 bones from 4 men and 4 women. Six individuals exhibited one antemortem fracture, one person had two fractures, while one had three antemortem fractures. Unlike the perimortem injuries, these traumas are as frequent in men as they are in women, and their distribution on the postcranial skeleton is also more balanced. The antemortem fractures were noted on the following bones: two clavicles, one humerus, two radia, two ulnae, one femur, and two tibiae.

uočene su kod šest osoba (5 muškaraca i 1 žene). Učestalost kranijalnih trauma u čitavom uzorku je relativno visoka. Šest od trideset i šest (16,7%) ušćuvanih lubanja pokazuje neku vrstu traume. Traume glave i lica su gotovo tri puta češće kod muškaraca (5/23 ili 21,7%) nego kod žena (1/13 ili 7,7%), ali razlika nije statistički značajna.

Na tri lubanje prisutna je jedna trauma, dok su dvije traume prisutne na dvije, a tri na jednoj lubanji. Ukupno je evidentirano 10 kranijalnih trauma, od kojih su 5 antemortalne, a 5 perimortalne.

Traume su uglavnom locirane na svodu lubanje. Samo na jednoj lubanji uočena je i trauma lica. Shematski prikaz položaja kranijalnih trauma u analiziranom uzorku prikazan je na slici 4. Kao što se iz sl. 4 može vidjeti, većina kranijalnih trauma nalazi se na lijevom anteriornom dijelu lubanje: dvije traume nalaze se na lijevoj strani čeonu kosti, četiri na lijevoj tjemennoj kosti, jedna na desnoj tjemennoj kosti, jedna na nosnim kostima, jedna na lijevom dijelu koronarnog šava (spoju čeonu i lijeve tjemenne kosti) i jedna na lamboidnom šavu (spoju zatiljne i desne tjemenne kosti).

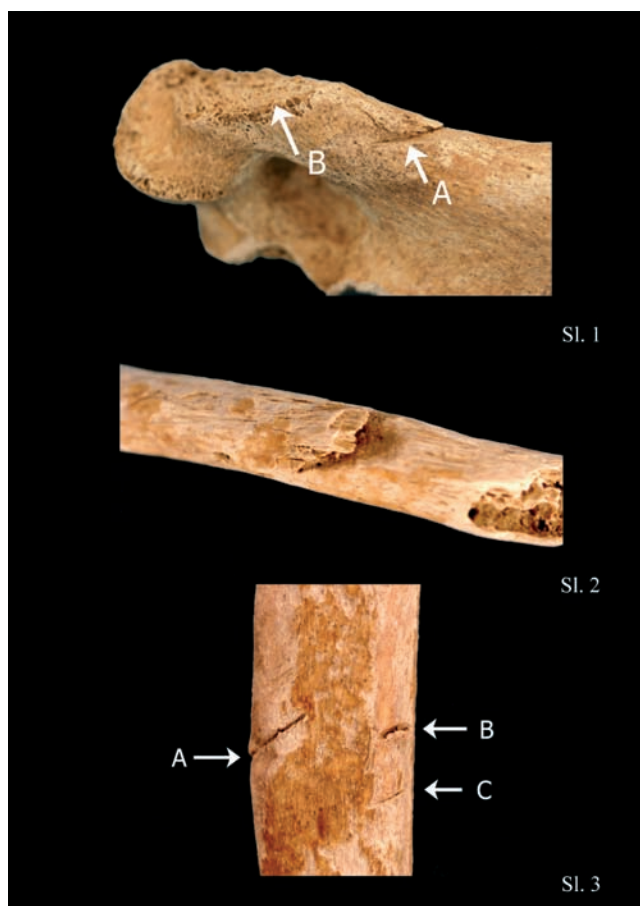
Pet od uočenih deset trauma bile su perimortalne. Preostale traume su plitke, dobro zarasle depresijske frakture svoda lubanje najvećeg promjera 25x13 mm i jedna fraktura obiju nosnih kostiju.

Ova fraktura uočena je na djelomično ušćuvanoj lubanji 36-40 godina starog muškarca (uzorak broj 116) s nalazišta Crkvari (sl. 5). Fraktura je ovalno/okruglog oblika najvećeg promjera 8 mm. Zahvatila je obje nosne kosti. Ima dobro izremodelirane i glatke rubove. Ne pokazuje znakove upalnog procesa, što sugerira da je nanescena dulje vremena prije smrti. Morfologija traume je konzistentna s udarcem zadanim malim i relativno oštrim predmetom, kao što je na primjer drška mača ili noža. Obje nosne kosti duboko su utisnute u nosni otvor, a na ušćuvanom superiornom dijelu nosne pregrade vidi se naglašena devijacija na lijevu stranu, što sugerira da je smjer udarac bio s desne prema lijevoj strani.

Kod ove osobe prisutna je i velika perimortalna fraktura trokutastog oblika na lijevoj tjemennoj kosti (sl. 6). Dimenzije frakture su 36x47x36 mm. Rubovi frakture su vrlo oštri i mjestimično utisnuti unutra. Fraktura je probila i vanjski i unutrašnji svod lubanje, a defekt na unutrašnjoj (endokranijalnoj) strani je veći od defekta na vanjskoj (ektokranijalnoj) strani, što je karakteristično za penetrirajuće ozljede.

Dvije perimortalne posjekotine prisutne su na lijevoj tjemennoj kosti 36-50 godina stare žene iz groba broj 91 s nalazišta Crkvari (sl. 7). Veća posjekotina nalazi se 21 mm superiorno od šava (spoja) između lijeve tjemenne i sljepoočne kosti. Dugačka je 42 mm. Anteriorni rub rane je oštar, a posteriorni grub i nepravilan. Druga, tanja i kraća posjekotina, dugačka 22 mm, položena je okomito na prvu. Morfologija obiju rana sugerira da su zadane oštrobridnim oružjem, najvjerojatnije mačem ili sabljom.

Osim perimortalnih fraktura nanesenih oštrobridnim predmetima, u analiziranom su uzorku evidentirane i perimortalne traume nanescene tupotvrdim predmetima. Tako su na lubanji 36-40 godina starog muškarca iz groba broj 5 s nalazišta Crkvari uočene dvije velike nepravilno ovalne perimortalne depresijske frakture. Pored ovih trauma kod ove osobe evidentirane su i zarasla fraktura superiorne površine 11. prsnoga



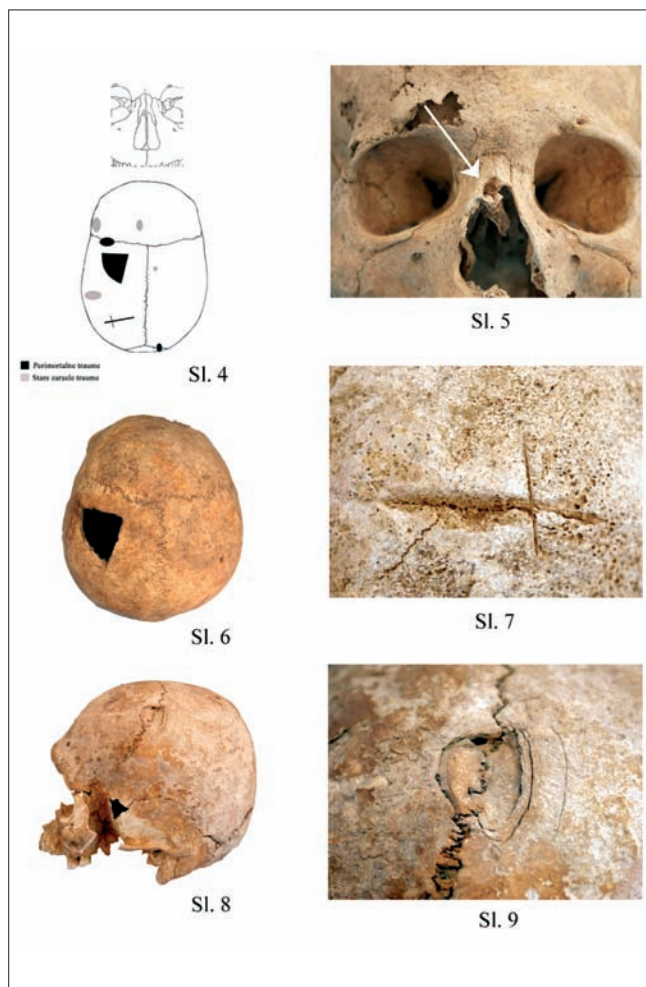
- Sl. 1 Dvije perimortalne posjekotine na distalnom dijelu desne nadlaktične kosti 21-25 godina starog muškarca iz groba broj 7 s nalazišta Kliškovac. Superiorna trauma (A) dugačka je 12 mm i zarezala je nadlakticu pod istim kutom kao i druga posjekotina. Inferiorna posjekotina (B) je veća i dublja. Odsjekla je medijalni kondil nadlaktične kosti izloživši pri tome trabekularnu kost
- Sl. 2 Perimortalna posjekotina na superiornom dijelu sredine desne ključne kosti žene starije od 35 godina (uzorak broj 227) s nalazišta Crkvari
- Sl. 3 Tri perimortalne posjekotine na anteriornoj (A) i medijalnoj (B i C) strani sredine desne nadlaktične kosti žene starije od 35t godina (uzorak broj 266) s nalazišta Crkvari

Fig. 1 Two perimortal cuts on the distal part of the right humerus of a 21-25 years old male recovered from grave 7 in Kliškovac. The superior trauma (A) is 12 mm long and cuts the upper arm at the same angle as the second cut. The inferior cut (B) is longer and deeper. It completely separated the medial condyle of the humerus exposing the underlying trabecular bone

Fig. 2 Perimortal cut to the superior side of the clavicle of a woman older than 35 years (sample n. 227) from Crkvari.

Fig. 3 Three perimortal cuts on the anterior (A) and medial (B and C) sides of the right humerus of a woman older than 35 years (sample n. 266) from Crkvari

Beside the postcranial traumas, the sample from Crkvari and Kliškovac contains cranial and facial traumas. Cranial traumas were observed in six individuals (5 males and 1 female). The frequency of cranial traumas in the entire sample is relatively high. Six out of 36 preserved skulls (16.7%) exhibit some type of trauma. Head and face traumas are three times



- SI. 4 Shematski prikaz položaja trauma na lubanji i licu u analiziranom uzorku
- SI. 5 Mala, zarasla depresijska fraktura na obim nosnim kostima 36-40 starog muškarca (uzorak broj 116) s nalazišta Crkvari
- SI. 6 Penetrirajuća perimortalna fraktura trokutastog oblika na lijevoj tjemennoj kosti iste osobe. Rubovi frakture su vrlo oštri i na posteriornom kraju endokranijski utisnuti
- SI. 7 Dvije perimortalne posjekotine na lijevoj tjemennoj kosti 36-50 godina stare žene iz groba broj 91 s nalazišta Crkvari
- SI. 8 Velika perimortalna ozljeda nanesena tupotvrdim predmetom na lijevom dijelu koronalnog šava 36-40 godina starog muškarca iz groba broj 5 s nalazišta Crkvari
- SI. 9 Uvećani detalj iste traume na kojemu se vide koncentrične linije koje okružuju središte udarca

Fig. 4 Schematic of the location of traumas on the skull vault and face in the samples from Kliškovac and Crkvari

Fig. 5 Small, healed, depressed fracture on both nasal bones of a 36-40 years old male (sample n. 116) from Crkvari

Fig. 6 Penetrating perimortem fracture of a triangular shape in the left parietal bone of the same individual. The fracture edges are very sharp and, at the posterior part, depressed endocranially

Fig. 7 Two perimortem cuts on the left parietal bone of a woman aged between 36-50 years from grave 91 in Crkvari

Fig. 8 Large perimortem injury inflicted by a hard blunt object on the left part of the coronal suture of a 36-40 years old male from grave 5 in Crkvari

Fig. 9 Enlarged detail of the same trauma. Concentric lines are visible around the impact point of the blow

more frequent in men (5/23 or 21.7%) than in women (1/13 or 7.7%), but that difference is not statistically significant.

Three skulls exhibit one injury, two skulls have two, and one skull has three injuries. A total of 10 cranial traumas were observed, five of which were delivered antemortem and five perimortem.

The traumas were mostly located on the cranial vault. Only one skull exhibited an injury to the face. A schematic of the positions of the cranial traumas in the analysed sample is shown in Fig. 4. As can be seen from this picture, most cranial traumas were located on the left anterior part of the skull: two traumas were located on the left side of the frontal bone, four on the left parietal bone, one on the right parietal bone, one on the nasal bones, one on the left part of the coronal suture and one on the lamboid suture.

Five out of ten observed traumas were perimortem. The remaining injuries were shallow, well healed, depression fractures on the cranial vault (the largest measuring approximately 25x13 mm) while one fracture was located on both nasal bones.

This fracture was observed on the partially preserved skull of a man aged between 36-40 years (sample n. 116) from the Crkvari site (Fig. 5). The fracture is oval/round in shape, with a diameter of approximately 8 mm. Both nasal bones are affected. The edges of the wound are smooth and remodeled. There are no signs of infection, which suggests the injury was inflicted a considerable time before the individual died. The morphology of the trauma is consistent with a blow of a small and relatively sharp object, such as a sword or knife handle. Both nasal bones are thrust deep into the nasal cavity, and the preserved superior part of the nasal septum reveals a significant deviation to the left, suggesting that the blow was delivered in a right-to-left direction.

The same individual exhibits a large, triangularly shaped perimortem fracture on the left parietal bone (Fig. 6). The size of the fracture is 36x47x36 mm. The edges of the injury are very sharp and in some places pressed inwards. The fracture perforated both the external and the internal surface of the cranial vault with the defect on the internal (endocranial) side being larger than the defect on the external (ectocranial) side - a feature typical of penetrating wounds.

Two perimortem cuts are also present on the left parietal bone of a woman aged between 36-50 years excavated from grave 91 in Crkvari (Fig. 7). The larger cut is situated 21 mm above the suture between the left parietal and temporal bones. It is 42 mm long. The anterior edge of the injury is sharp, while the posterior edge is rough and irregular. The second cut is thinner and shorter (22 mm long), and crosses the first cut at an almost vertical angle. The morphology of both injuries suggests that they were inflicted by sharp-bladed weapons, possibly a sword or sabre.

Apart from the perimortem fractures caused by sharp-bladed objects, the analysed sample also contains perimortem traumas inflicted by blunt objects. The skull of a 36-40 years old male recovered from grave 5 at the Crkvari site, exhibits two irregular oval perimortem depressed fractures. The same individual also had a healed fracture of the upper surface of the 11th thoracic vertebra, a healed fracture of the left ankle bone, and a shallow, healed depressed fracture of the right parietal bone.

The perimortem fractures are located in the left part of the coronal suture (Fig. 8) and in the right part of the lamboid suture. The fracture on the anterior side of the skull is

kralješka, zarasla fraktura lijeve skočne kosti i plitka, zarasla depresijska fraktura na desnoj tjemenoj kosti.

Perimortalne frakture nalaze se na lijevom dijelu koronalnog šava koji spaja čeonu i lijevu tjemenu kost (sl. 8) i desnom dijelu lamboidnog šava koji spaja zatiljnu s desnom tjemenom kosti. Fraktura na anteriornom dijelu lubanje ima dimenzije 27x20 mm. Probila je svod lubanje, a odlomljena kost je djelomično utisnuta endokranijalno (sl. 9). Rubovi frakture su oštri, bez znakova zacjeljivanja i koncentrično okružuju mjesto udarca. Fraktura ima vrlo karakterističan izgled koji forenzičari nekada nazivaju "paukova mreža". Njezino nastajanje objašnjava se na sljedeći način: u trenutku udarca tupotvrdim predmetom po svodu lubanje na mjestu udarca dolazi do promjene oblika lubanje. Radi se o vrlo kratkotrajnoj promjeni koja nastaje zbog elastičnosti kostiju. Na mjestu udarca kost se udubi, što na susjednom dijelu kosti izaziva istodobno izbočenje. Kosti koje čine svod lubanje građene su od dva paralelna lista, vanjske i unutrašnje lamine. Na mjestu udarca dolazi do utiskivanja vanjske i istodobnog istežanja unutrašnje lamine kosti. Kada mehanička sila nadjača elastičnost kosti, ona puca. Budući da kost lakše podnosi kompresiju nego istežanje, prvo puca na unutarnjoj lamini, a tek onda na vanjskoj. Kod slabijih udaraca kost ponekad puca samo na unutrašnjoj lamini. Ovisno o jačini udarca, na vanjskoj će lamini nastati jedan ili više radijalnih prijeloma. Isti mehanizam, samo obrnutog smjera, događa se na susjednom dijelu kosti koji je zbog udarca kratkotrajno izbočen. Tu zbog istežanja najprije puca vanjska lamina, a tek zatim unutrašnja. Ako je udarac dovoljno jak, rezultat će biti da iz središta udarca radijalno izlaze linije frakture, dok se na određenoj udaljenosti od središta nalaze koncentrični prijelomi, što svemu daje izgled paukove mreže (Zečević et al. 2004).

Druga perimortalna depresijska fraktura nalazi se na desnom dijelu lamboidnog šava (spoja). Manja je od prve – veličina joj iznosi 18x13 mm. Morfološki je, međutim, gotovo identična većoj traumi.

Pored navedenih trauma, u analiziranom su uzorku kod pet osoba (4 muškarca i 1 žene) evidentirane i traume manjih kostiju. Zarasle frakture uočene su na lijevoj skočnoj kosti, 8., 9. i 10. lijevom rebru, lijevoj i desnoj lopatici, te na 11. prsnom kralješku.

RASPRAVA

Kada se učestalost i distribucija trauma u uzorku iz Crkvara i Kliškova uspoređi s uzorcima iz drugih dijelova svijeta vidljive su sličnosti, ali i bitne razlike koje daju rijedak i do danas nepoznat uvid u način i kvalitetu života nekadašnjih stanovnika Slavonije. Uzorak je uspoređen s drugim osteološkim uzorcima koji su istraživani sličnom metodologijom (Tablica 3). Radi se o osteološkim uzorcima s prapovijesnog indijanskog nalazišta SCI-038 u Kaliforniji, SAD (Jurmain 2001), kompozitnoga prapovijesnog do povijesnog uzorka iz Danske (Bennike 1985), srednjovjekovnog uzorka s nalazišta Raunds u Velikoj Britaniji (Judd, Roberts 1999), te srednjovjekovnog uzorka s nalazišta Kulubnarti u Sudanu (Kilgore et al. 1997).

Podaci iz Tablice 3 pokazuju da je po učestalostima trauma na postkranijalnom kosturu uzorak iz Crkvara i Kliškova vrlo sličan drugim analiziranim uzorcima. Višu ukupnu

aproximativno 27x20 mm in size (Fig. 9). The edges of the fracture are sharp and show no signs of healing. Since they encircle the point of impact concentrically, the injury has a very characteristic shape, sometimes described by forensic scientists as a "spider's web". It is believed that such a wound is formed by the following process: at the moment of the impact of a hard blunt object, the shape of the skull momentarily changes at the point of impact. This is a very short-term change which occurs due to bone elasticity. At the point of impact, the bone becomes depressed, causing a simultaneous convexity to the surrounding bone. The bones that make up the cranial vault are built of two parallel plates: the internal and external lamina. At the point of impact, the external lamina becomes depressed, while, at the same time, the internal lamina stretches. Once the mechanical force overcomes the bone elasticity, the bone breaks. Given that the bone is more resistant to compression than stretching, it breaks first on the internal surface, and following that, if the force of the blow is sufficient, on the external surface. If the blow is not hard enough, only the internal lamina will break. Depending on the strength of the blow, the external lamina will suffer one or more radial breaks. The same mechanism, only in a reverse direction, occurs in the surrounding bone that was temporarily pushed out by the blow. In this part of the skull, the stretching of bone will cause breaks in the external surface after which, depending on the force of the blow, the internal surface may break. If the blow is sufficiently hard, radial fracture lines will appear around the impact area of the blow, and at a certain distance from the central point concentric fractures will also be visible, contributing to a "spiders web" appearance (Zečević et al. 2004).

The second perimortem fracture is located on the right side of the lamboid suture. It is smaller than the first one – approximately 18x13 mm in diameter. From the point of view of its morphology it is, however, almost identical to the larger trauma.

Beside the above-mentioned traumas, the analysed sample contains skeletons of five individuals (4 men and 1 woman) which exhibit traumas on their short bones. Healed fractures were noted on the left talus, on the 8th, 9th and 10th left ribs, the left and right shoulder-blades and on the 11th thoracic vertebra.

DISCUSSION

When the frequency and distribution of traumas in the composite sample from Crkvari and Kliškovac are compared with samples from other parts of the world, certain similarities may be observed, but also some significant differences which provide a rare and new insight into the quality and way of life of the past inhabitants of Slavonija. The sample was compared to other osteological samples analysed with similar research methodologies (Table 3). These osteological samples were recovered from the prehistoric Indian site SCI-038 in California, USA (Jurmain, 2001), a composite prehistoric/historic sample from Denmark (Bennike, 1985), a medieval sample from the site of Raunds in the UK (Judd, Roberts 1999), and a medieval sample from the site of Kulubnarti in Sudan (Kilgore et al. 1997).

The data in Table 3 show that the frequency of traumas in the postcranial skeleton in the Crkvari and Kliškovac sample is very similar to other analysed samples. A higher over-

učestalost trauma imaju uzorci iz Sudana i Velike Britanije, dok su niže učestalosti evidentirane u uzorcima iz Danske i Sjeverne Amerike. Najslabiji uzorci iz Hrvatske je prapovijesna populacija sjevernoameričkih Indijanaca iz uzorka SCI-038 – premda se i tu mogu uočiti bitne razlike: uzorak iz Crkvara i Kliškovca ima višu učestalost trauma ključnih i nadlaktičnih kostiju, a uzorak SCI-038 ima višu učestalost trauma na lakatnim kostima. Na razini ukupnih učestalosti trauma na svim postkranijalnim kostima samo se uzorak iz Danske statistički značajno razlikuje od onoga iz Hrvatske. Ukupna učestalost trauma u Danskoj značajno je manja od one u Hrvatskoj (0,8% prema 2,8%, $\chi^2 = 18,20$; $P < 0,01$).

Najizraženija razlika između uzorka iz Crkvara i Kliškovca i drugih uzoraka je u učestalostima trauma nadlaktičnih kostiju. Učestalost trauma nadlaktičnih kostiju u uzorku iz Crkvara i Kliškovca (6/91 ili 6,6%), bitno je viša od učestalosti evidentiranih u drugim uzorcima. Statistički značajne razlike prisutne su u odnosu na uzorak iz Danske (6,6% prema 0,1%, $\chi^2 = 31,34$; $P < 0,01$) i u odnosu na srednjovjekovni uzorak iz Velike Britanije (6,6% prema 1,1%, $\chi^2 = 4,49$; $P < 0,05$). Uzorak iz Crkvara i Kliškovca ima i najvišu učestalost trauma goljenične kosti (2,1%), ali usporedba s drugim uzorcima pokazuje da razlika nije statistički značajna.

Dio postkranijalnoga kostura koji se donedavno koristio kao glavni parametar za određivanje količine namjernog nasilja u nekoj zajednici jest prisutnost tzv. "parir" fraktura na distalnoj ili srednjoj trećini dijafize lakatne kosti.

Ove ozljede nazivaju se još i "pendrek" ili na engleskom "nightstick" frakture, a njihova etiologija objašnjava se sljedećim scenarijem: u pokušaju da zaštiti glavu od udara (koji napadač namjerava zadati, na primjer, pendrekom), osoba refleksno podiže ruku ispred lica. U tom položaju lakatna kost je najbliža napadaču zbog čega apsorbira najveću količinu sile od udara i puca (npr., Elliot-Smith, Wood Jones 1910; Wells 1964; Merbs 1989; Ortner, Putschar 1985 itd.).

Problem atribuiranja ovakvih fraktura isključivo namjernom nasilju istaknuli su i detaljno obrazložili Smith (1996) i Judd i Roberts (1999). Ovi autori slažu se s činjenicom da fraktura (pogotovo srednje trećine) dijafize lakatne kosti najvjerojatnije ukazuje na udarac tvrdim ili oštrim predmetom u podlakticu koja je u pronaciji. Ističu, međutim, da se ovakve ozljede podjednako lako mogu zadobiti i ako osoba padne i udari u oštar rub kamena ili nekog oruđa. Namjerno nasilje sigurno je indicirano samo kada su antemortalne frakture lakatne kosti praćene drugim nedvosmislenim pokazateljima namjernog nasilja, kao što je na primjer prisutnost perimortalnih ozljeda ili pak visokih učestalosti kranijalnih trauma. U tom kontekstu, relativno niska učestalost fraktura lakatne kosti u uzorku iz Crkvara i Kliškovca (2/77 ili 2,6%) nije vjerodostojan dokaz za odsutnost namjernog nasilja u tim zajednicama. Visoke učestalosti perimortalnih trauma na lubanji i postkranijalnom kosturu, naime, sigurno dokazuju visoku razinu međuljudskog nasilja kod nekadašnjih stanovnika Slavonije.

Perimortalne traume uočene su kod šest odraslih osoba iz Crkvara i Kliškovca. Morfologija trauma konzistentna je s ozljedama nanesenim oštrobriđnim oružjem, kao što su mač ili bojni nož. Na dva kostura prisutno je više perimortalnih trauma, čiji izgled i lokacija jasno svjedoče o brutalnosti sukoba u

all frequency was noted in the samples from Sudan and the UK, while lower frequencies were recorded in the samples from Denmark and North America. The sample most consistent with the series from Croatia is the site SCI-038 from North America. However, important differences between the series are also present: the Crkvari and Kliškovac sample has a higher frequency of traumas to clavicles and humerii, while the SCI-038 sample has a higher frequency of traumas to ulnas. When the overall frequency of traumas is compared, only the Danish sample differs significantly from the Croatian one. The overall frequency of traumas in Denmark is significantly lower than in Croatia (0.8% vs. 2.8%, $\chi^2 = 18.20$; $P < 0.01$).

The most noticeable difference between the Crkvari and Kliškovac sample and other samples concerns the frequency of traumas of the humerus. The frequency of traumas to the humerus in the Crkvari and Kliškovac sample (6/91 or 6.6%) is much higher than the frequency noted in the other samples. Significant differences are present in the case of the Danish sample (6.6% vs. 0.1%, $\chi^2 = 31.34$; $P < 0.01$) and in the medieval sample from the UK (6.6% vs. 1.1%, $\chi^2 = 4.49$; $P < 0.05$). The Crkvari and Kliškovac sample also has the highest frequency of traumas to the tibia (2.1%), but a comparison with other samples reveals that the differences are not statistically significant.

The part of the postcranial skeleton which has frequently been utilized as an indicator of intentional violence is the ulna or, to be more precise, the presence of the so-called "parry" fracture on the distal or middle third of the ulna.

This type of injury is also called the "nightstick" fracture, and its aetiology is explained by the following scenario: in an attempt to protect his head from blows (that the attacker intends to deliver, for example, with a nightstick), the person reflexively raises his arm to protect his head and face. In this position, the elbow bone is closest to the attacker and as a consequence suffers the largest amount of force from the blow, and therefore breaks (e.g. Elliot-Smith, Wood Jones 1910; Wells 1964; Merbs 1989; Ortner, Putschar 1985, etc.).

The problem caused by the attributing such fractures exclusively to intentional violence was raised and thoroughly explained by Smith (1996) and Judd and Roberts (1999). The authors agree that a fracture of the ulna, especially in its middle third, is likely to indicate that a blow was delivered by a hard or sharp object to the lower arm that was in pronation. However, they point out that the same injury could be suffered by a person who falls and hits the sharp edge of a rock or tool. Certain evidence of intentional violence exist only when fractures of the ulna are accompanied by other clear indicators of intentional violence, such as the presence of perimortem injuries or a high frequency of cranial traumas. In this context, the relatively low frequency of ulna fractures in the Crkvari and Kliškovac sample (2/77 or 2.6%) is not a reliable proof of the presence of intentional violence in the two communities. However, the high frequencies of perimortem traumas to the skull and postcranial skeleton clearly indicate that interhuman violence was frequent among the past inhabitants of Slavonija.

As previously noted, perimortem traumas were observed in six adults from Crkvari and Kliškovac. The morphology of the wounds is consistent with injuries inflicted by sharp-bladed weapons, such as swords or battle knives. Two skeletons exhibit several perimortem traumas. Their appearance and location they clearly testify to the brutality of conflicts that were waged

Tablica 3 Učestalost trauma dugih kostiju u različitim osteološkim uzorcima

Table 3 Frequencies of long bone traumas in osteological samples from different parts of the world

	Crkvari i Kliškovac / Crkvari and Kliškovac			SCI-038			Danska / Denmark			Raunds			Kulubnarti		
	N ¹	n ²	% ³	N	n	%	N	n	%	N	n	%	N	n	%
Ključne kosti / Clavicle	74	3	4,0	159	0	0,0	386	5	1,3	171	12	7,0	262	1	0,4
Nadlaktične kosti / Humerus	91	6	6,6	142	3	2,1	703	1	0,1	178	2	1,1	276	10	3,6
Palčane kosti / Radius	70	2	2,8	161	6	3,7	608	9	1,5	167	8	4,8	259	16	6,2
Lakatne kosti / Ulna	77	2	2,6	144	10	6,9	607	13	2,1	164	6	3,7	260	34	13,1
Bedrene kosti / Femur	102	1	1,0	119	2	1,7	998	0	0,0	186	2	1,1	281	3	1,1
Potkoljениčne kosti / Tibia	93	2	2,1	164	1	0,6	852	6	0,7	163	3	1,8	232	0	0,0
Lisne kosti / Fibula	66	0	0,0	129	1	0,8	364	2	0,5	86	6	7,0	218	3	1,4
Ukupno / Total	573	16	2,8	1018	23	2,3	4518	36	0,8	1115	39	3,5	1788	67	3,7

¹ N = ukupan broj dugih kostiju² n = broj dugih kostiju sa prisutnim traumama³ % = % (postotak) od ukupnog broja dugih kostiju

1 N = total number of long bones

2 n = number of long bones with trauma

3 % = % (percentage) of long bones with traumas

kojima se uglavnom upotrebljavalo hladno oružje. Posebno je zanimljiv podatak da su čak četiri od šest osoba s perimortalnim traumama bile žene. Ova distribucija konzistentnija je sa scenarijem u kojemu su traume rezultat nasilja kojeg provode lako naoružani, brzi pljačkaški odredi, čiji je cilj teroriziranje i pljačkanje civilnog stanovništva, a ne nasilja koje je rezultat sukoba dviju vojski. Valja imati na umu da je ubacivanje lako naoružanih konjaničkih odreda u nebranjeni dio neprijateljskog teritorija bila omiljena taktika kako Mongola koji su Slavonijom prošli u 13. stoljeću, tako i Turaka koji su ovaj kraj terorizirali pljačkaškim upadima svojih akindžija tijekom kasnog srednjeg vijeka (Matuz 1992).

Vrlo visoke učestalosti trauma glave i lice u uzorku iz Crkvara i Kliškova dodatno potvrđuju visoki rizik od namjernog nasilja kojemu su nekadašnji stanovnici Slavonije bili izloženi. Više autora (npr. Alvrus 1999; Walker 1989; 1997; Tyson 1977; Standen, Ariazza 2000 itd.) ističe da su visoke učestalosti trauma glave i lica siguran dokaz povećanog rizika od namjernog nasilja u nekoj zajednici.

Ukupna učestalost trauma lica i svoda lubanje u Crkvari i Kliškovcu iznosi 16,7%, što je bitno više od učestalosti evidentiranih u drugim osteološkim uzorcima diljem svijeta.

with cold steel. Particularly interesting is the fact that four of six individuals with perimortem injuries were women. This distribution corresponds to a scenario in which the traumas were the results of violence inflicted by lightly armed, swift marauding gangs, set to terrorise and loot the civilian population, rather than the results of armed clashes between two armed forces. In this context it is relevant to remember that the infiltration of lightly armed cavalry units in an undefended part of the enemy's territory was the favourite tactic employed both by Mongols who passed through Slavonija in the 13th century, and by Turks, who terrorised this area with their plundering incursions during the late Middle Ages (Matuz 1992).

The high frequency of head and face traumas in the sample from Crkvari and Kliškovac additionally confirms the risk of intentional violence that the former inhabitants of Slavonija were exposed to. Several authors (e.g. Alvrus 1999; Walker 1989; 1997; Tyson 1977; Standen, Ariazza 2000 etc.) point out that high frequencies of head and face traumas in a community are conclusive proof of intentional interhuman violence.

The total frequency of face and cranial vault traumas in Crkvari and Kliškovac is 16.7%, which is much higher than the frequencies observed in other osteological samples from

Tako Jurmain (2001) donosi podatak o učestalosti kranijalnih trauma u uzorku SCL-038 od 4,4%, a Bennike (1985) u uzorku iz Danske govori o najvećoj učestalosti od 4,6%. Robb (1997) donosi podatak o učestalosti od 8,9% u željeznodobnom uzorku iz Italije, a Owsley et al. (1994) o učestalosti od 2,5% u uzorku s Uskršnjih otoka.

Analize sjevernoameričkih uzoraka koje su proveli Hooton (1930), Snow (1948), Newman (1957), Stewart i Quade (1969), Morse (1969), Miles (1975) i Ferguson (1980) pokazale su učestalosti kranijalnih trauma od 2 do 5%. Tek je nekolicina autora evidentirala učestalosti slične onima iz Crkvara i Kliškovca. U prapovijesnom uzorku iz Australije Webb (1995) je ustanovio učestalost kranijalnih trauma koja je bila oko 15%, a Walker (1989) i Tyson (1977) u analizama prapovijesnih indijanskih populacija iz Kalifornije uočavaju učestalosti od 19,9 i čak 30%.

Izneseni podaci prilično čvrsto sugeriraju da je namjerno međuljudsko nasilje bila tužna konstanta svakodnevnog života nekadašnjih stanovnika Slavonije. Ovi rezultati, dakako, samo otvaraju nova pitanja. Najjednostavnije je možemo li identificirati specifične epizode namjernog nasilja koje su prouzročile evidentirane traume? Buduća, multidisciplinarna osteološka, arheološka i povijesna istraživanja koja planiramo provesti u suradnji sa stručnjacima s Instituta za arheologiju u Zagrebu pokušat će odgovoriti na to pitanje. Drugo pitanje koje se nameće jest u kojoj korelaciji su rezultati ovih istraživanja s učestalostima i distribuciji trauma u Slavoniji tijekom kasne antike i ranog srednjeg vijeka? Budući da odgovor i na ovo pitanje mogu dati samo buduća bioarheološka istraživanja, čini nam se da je, pored toga što nedvojbeno dokumentira jednu do danas nepoznatu osobinu života u srednjovjekovnoj Slavoniji, najveći rezultat ove analize u tome što demonstrira korist koju ovakva istraživanja imaju u rekonstrukciji svakodnevnog života naših predaka.

around the world. Jurmain (2001) reports that the frequency of cranial traumas in the SCL-038 sample is 4.4%, while Bennike (1985) notes that the frequency of these traumas in the Danish sample is 4.6%. Robb (1997) reports a frequency of 8.9% in an Iron Age sample from Italy, while Owsley et al. (1994) note a frequency of 2.5% in a sample from the Easter Islands.

The analysis of North American samples carried out by Hooton (1930), Snow (1948), Newman (1957), Stewart and Quade (1969), Morse (1969), Miles (1975) and Ferguson (1980) show a frequency of cranial trauma of between 2 and 5%. Few authors record frequencies similar to the one from Crkvari and Kliškovac. Webb (1995) noted that the frequency of cranial traumas in a prehistoric sample from Australia was around 15%, while Walker (1989) and Tyson (1977) noted frequencies as high as 19.9% and 30% when they analysed samples of prehistoric Indian populations of California.

The presented data suggest rather convincingly that the intentional interhuman violence was a sad constant of the everyday life of the past inhabitants of Slavonija. Obviously, these results only raise new questions. The most obvious among them is: can we identify a specific episode which resulted in the recorded traumas? Future multidisciplinary osteological, archaeological and historical research that we intend to undertake together with experts of Institute of Archaeology will attempt to provide an answer to this question. The second question that arises concerns the correlation between the results of this analysis and the frequency and distribution of traumas in Slavonija during late antiquity and the early Middle Ages. Since this is yet another question that can be answered only by future bioarchaeological explorations, it seems that the most important result of this analysis, beside the fact that it has documented a previously unknown feature of life in medieval Slavonija, is that it has once again demonstrated the benefit of osteological research when attempting to reconstruct the everyday life of our ancestors.

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