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RITUAL AND CEREMONIAL DISMEMBERING BONES IN A BURIALS IN BRONZE AND IRON CENTURIES FROM ARMENIAN PLATEAU

Abstract: In this article, we would like to highlight the religious and funerary practices in the Armenian Plateau. Since the first discovered in the XIV century, the ossuaries from Lori Berd have attracted attention as possible archaeological evidence of ancient Zoroastrian burial practice. The practice involved exposing cadavers to birds before the surviving remains were gathered for deposition in burials. Ritual and ceremonial dismembering and burning, emerging in Lori Berd, focuses on honor and respect for the dead. Archaeologists discovered three detached human skulls from Shirakavan site. Three the detached human skulls are not complete and no longer have their mandibles. Since the detached skulls belong to young female and one male adult, the assumption is that these were human sacrifices rather than venerated ancestors. The Lori Berd and Shirakavan sites contained the remains of two individual with cuts indicative of scalping. Several indications of violence were observed in the materials under study. The examination of the human remains revealed that the paleopathologies encountered infectious diseases, dental diseases, etc. Among the individuals from the Shirakavan, there is a clear indication that an increased usage of muscles would occur when spears are thrown at a downward angle and the usage of muscles is consistent with the launching of spears. The clearly expressed marker of a horse rider's pathological complex is indicated in some male burials in Armenian Plateau.

Keywords: Armenia, Iron Ages, taphonomic, dismembering bones, cremation, the detached human skulls, scalping, paleoanthropology, stress markers

Introduction

The Armenian Plateau (also known as the Armenian Uplands, the Armenian Highlands, or simply Armenia), is the centermost and highest of three land-locked plateaus that together form the northwestern sector of the Middle East. To its west is the Anatolian plateau which rises slowly from the lowland coast of the Aegean Sea and rises to an average height of 3,000 feet. In the Armenian Plateau, the average height above sea leval rises dramatically to between 3,000 and 7,000 feet. To its

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southeast is the Iranian plateau, where the elevation drops rapidly to an average 2,000 to 5,000 feet above sea level. The Armenian Plateau include all of present day Armenia, and much of eastern Anatolia, southern Georgia, northwestern Iran, and western Azerbaijan. Their eastern parts are also known as the Transcaucasian highlands.

The Armenian Plateau was in early history a crossroads, linking the worlds of East and West. At the end of the fourth millennium and beginning of the third millennium, there was an important agriculturalist culture in the Armenian plateau called the Kura-Araxes culture. Wheat and a variety of vegetables and fruits were grown, and sheep, goats, donkeys, and horses were bred, so that the food supply was ample for the entire region. Metal goods and pottery were produced and widely distributed, having been found in the Dagestan, Chechnya, Volga, Dnieper and Don-Donets systems in the north, in Syria and Palestine in the south, and to the west in Anatolia (Krupnov 1966; Gadzhiev 1966; Nechitailo 1991; Pystovalov 2002; Trifonov 1991; Badalyan and Avetisyan 2007; Sagona and Abramishvili 2008). The spread of its pottery and metal goods suggests that the Kura-Araxes people have had extensive trade contacts. Their expansion into wheeled vehicles invented in the Near East and "kibetka-houses" allowed cattle-farmers to move and survive with ease on the open steppes. Their movement across Eurasia in early times was not caused by military invasion, but a slow expansion caused by a decline in the child mortality rate and a resultant increase in population (Dubova 2009, 2010; Sarianidi 2010; Khudaverdyan 2011a). Recent genetic studies confirmed that this avenue served not only for commerce and cultural diffusion, but also for the exchange of genes (Balaresque et al., 2010).

The Craniological data allowed identification of alien Mediterranean characteristics influencing various ethnic Eurasian samples and revealed evidence of a migratory stream from the Caucasus, Near East and Central Asia (Dubova 2009, 2010; Khokhlov and Mimokhod 2008; Khudaverdyan 2009, 2011a, 2011b). The Odontological and Craniological data, exhibit close affinities with the Armenian Plateau samples (Kura-Araxes culture), and with the samples from Ukraine and Moldova (Tripolye culture) (Alekseeva and Krus 1999; Khudaverdyan 2009, 2011a, 2011b). Hence, it is possible to outline the cultural and ethnic communication in antiquity and the known role of the Armenian Plateau (Kura-Araxes culture) as the intermediary between ancient area of distribution of Tripolye cultures and the east countries (Lang 2005; Martiroyan and Mnacakanyan 1973; Passek 1949).

The Armenian Plateau and Georgian samples (Kura-Araxes culture), and the Catacomb culture samples from Kalmykia, Ukraine, Dnieper exhibit very close affinities to one another. According to a hypothesis put forward and developed by Gamkrelidze and Ivanov (1984) considering the ancestral home of Indo-European areas of the Armenian Plateau and adjoining territories, other tribes get into the Northern Black coast both through the Caucasus and through Central Asia and the Volga region (carriers of a Catacomb culture ceremony), it is necessary to assign

that movement to Aryan tribes, which were among the first to get into the Black Sea coast steppes through the Caucasus (or possibly by sea?). Though researchers connect this movement with the early Bronze Age, the process stays well within the Catacomb culture. Khlopin (1983) connects the Catacomb culture with the Indo-Aryans. Fisenko (1966) suggests that the Catacomb people were Proto-Hittites. Kuzmina (1998) also is a supporter of the hypothesis of Fisenko. Anthony (2007) assumed the Catacomb people to be ancestors of Greeks, while Berzin and Grantovsky (1962), Klejn (1984) postulated that Indo-Aryans originated from the Catacomb culture.

The contacts continued until the late Bronze Age. The Armenia samples and the steppe Bronze Age sample from Volga (Albashevo, Fatyanovo, Balanovo, Timber Grave cultures) exhibit close affinities. The presence of these Mediterranean components was marked by Shevchenko (1984, 1986), Khokhlov (2000) and Dubova (2009) in carriers of Timber Grave cultures of the forest-steppe Volga region, and also by Yusupov (1989) in the Southern Ural Mountains.

The Kingdom of Urartu flourished in the Caucasus and east- ern Asia Minor between the 9th century BC and 585 BC in the Armenian Plateau. Urartu was a remarkably developed culture that had extensive contacts with the major empires of the Ancient world stretching between the Mediterranean and India, and rivaled them for trade, military and cultural hegemony. With VIII century BC in the Armenian Plateau the interaction of different ethno- cultural units-Iranian-speaking nomadic (Scythians, Sarmatians, Sauromatians, Saka) and local. Finds of tumuli in the Caucasus show the permanent presence of Scythians in these parts. Their domain reached from north of the Danube and east of the Carpathians across the fertile plains of eastern central Europe and southern Russia to the River Don. Although the Don formed their eastern boundary, beyond it lived other groups of nomadic peoples culturally similar to the Scythians. These included the Sarmatians (Diodor II, 43; Herodotus IV, 110-117), their immediate neighbors to the east. Beyond the Sarmatians lived the Massagetae, and beyond them the Saka. The word Saka, however, was used by the Persians as a general term to include all of the nomadic peoples to the north of the Iranian plateau, in the two Turkestans. Scythian works of art have been found in the Urartian fortresses, burial mounds of the Armenian Plateau. The Urartian bronze belts form a very interesting group of examples of ancient art, revealing as they do the connections which were maintained through the Urartian centres in Transcaucasia between the Scythian culture and that of Western Asia (Piotrovskii 1959). In fact, the samples from Urartu, is identified as possessing closer affinities to the samples from the Volgo-Uralja (Sauromatians) and Moldova (Scythians) (Khudaverdyan 2012a).

The present paper discusses human remains uncovered at Lori Berd by the archaeological and ethnographic team directed by Seda H. Devejyan. The excavations of Lori Berd, which were begun in 1969 by Dr. Seda Devejyan and which is still in progress. This original and interesting monument consists of an

immense cemetery near the town of Stepanavan in the village of Lori Berd. It is surrounded on both sides by the valleys of the Dzoraget and Miskhana rivers. On a high highland, on the left bank of the Miskana river is the settlement which exploration has shown to belong to the Late Bronze Age and Late Urartu Age. The inner rooms had earthen or stone walls and stone roofs. Despite plundering, great sepulchres of Lori Berd still contain archaeological materials of great importance. In the materials discovered in these sepulchres there is a large number of rich ornamented ritual vessels, beads of stone and of precious metals etc. (Devejyan 1981). Rich funerary artifacts shows that the tombs were owned and used by members of the local elite class. The ceramics with furrow bolts, stamped circles, polished ornaments and geometrical designs in red and white are especially attractive. This ornamentation occurs on the same vessels. The remaining ceramics are similar to the pottery of the northern parts of the Armenian Plateau.

The human remains second monument unearthed by archaeologists Hamazasp Khachatryan, Larisa Eganyan and Levon Petrosyan. The results of the excavations at ancient Shirakavan showed that human activities began here since the 3 rd millennium BC and continued until the 7 th – 6 th centuries BC. The excavated sample material sheds light on various sides of the life of ancient inhabitants of the region, testifying convincingly that a complex culture existed all over the Shirakavan was an important element of this system (Torosyan et al. 2002). Burials of leaders are rich, especially in the 9th – 8th centuries BC: early 1st millennium seemed to be a time of the social and economic relations and high military potency. Excavations of some settlements confirm this supposition.

Throughout this paper I will be mainly analyzing ritual and ceremonial dismembering bones at burials from Armenian Plateau (Lori Berd, Shirakavan). By studying the skeletal remains of prehistoric cases dismembering bones and comparing them against modern day examples we are better able to understand the phenomenon of consuming other humans, for whatever the reasons. This better understanding of a single aspect of human practice can also lead to a better understanding of the culture of that society and perhaps also the world at that time. White (1991) describes 17 important variables to look for when first assessing the possibility of cannibalism at a site. Bone modifications such as fragmentation, internal vault release, inner conchoidal scars, crushing, percussion pits, adhering flakes,chop marks, peeling, cut marks, polishing, intentional scraping, percussion striae, rodent gnawing, carnivore damage and burning are all among the suggested 17 observations. A relatively low count of vertebrae is also an indicator that cannibalism may have occurred at a site.

Although cannibalism is a very hot topic for anthropologists today, it is almost impossible to determine with one hundred percent accuracy that the consuming of human flesh occurred at prehistoric sites.The incredible variety of human burial practices, past and present, has also presented a problem. It is common practice for bodies to be burned, dismembered, buried in bundles, fed to animals or set

adrift, which makes it extremely hard to conclude cannibalism as the cause when many other practices modify bones in a similar manner (White 1991).

It is difficult to imagine a more striking archaeological sign than the detached skull of a human. The most common and widely distributed war trophy was the human head. The custom of head taking was a widespread method among many cultures because the head of a vanquished foe represented the most unequivocal symbol of an enemy's defeat (Keeley 1996). The deposition of human skulls has been interpreted as evidence for a headhunting cult, perhaps relating to enemy dead, whose deposition could provide symbolic protection (Wilson 1981). The human skulls were believed to have also magical and curing effects (Schmandt-Besserat et al. 2010). The skull of a deceased person was believed to provide a way to communicate with the spirit of the dead and was used in divination (Schmandt-Besserat et al. 2010). The skull also secured the use of the power to succeeding generations, perhaps this it placated the spirit, perhaps controlled it (Kenyon 1957).

Post-mortem skull removal as part of burial practices seems to have had a long history in the Near East, having stated as early as 10th-9th millennium BC. The Cult of the Skulls was a veneration of fallen defenders of the town against some enemy and that these were war heroes rather than a polite burial service within the walls of the settlement given to the slain enemies (Kenyon 1957, 63-64). According to Kenyon, the care bring to the Levantine skulls reflects an ancestor cult devoted to old men or chiefs. After, her hypothesis is recovered by Cauvin (1994) and Silistreli (Bonogofsky 2005, 133-134).

There was ample evidence of head removal as a form of trophy taking (Lambert 2007), and it has been suggested that scalping represents a derivation of this earlier practice (Hamperl and Laughlin 1959). Scalping occurred in multiple contexts. Scalping is a form of trophy taking that can be found in the earliest written records, including the fourth book of Herodotus dating to 484-425 BC. Scalping was documented and widespread among Sarmatians and Scythians (Murphy et al. 2002; Pererva and Lukyashko 2011). Scalping was associated with two forms: mourning war and shame-aggression war (Mensforth 2001). Mourning war was a mechanism developed to externalize grief and hostility. According to some Native American belief systems, death and disease were interpreted as belonging in the supernatural realm and therefore, were thought to be caused by something rather than someone (Mensforth 2001). Mourning war was a cooperative action involving a war party. Male mourners organized a response to death and disease, and the party did not establish an individual target for their grief. The goal of the war party was to kill the first member of another tribe they encountered. The scalp of the victim was brought back to the village and rituals were performed. Scalping branched into the present Gulf States territory, into both sides of the Mississippi, and spread among the Natchez, Tunican and Caddo tribes (Neumann 1940). The Iroquois and the Huron practiced the ritual in the northern regions of North America, and it was suggested that these tribes acquired scalping from the Tuscarora, Cherokee and Susquehan-

nock (Neumann 1940). Evidence of prehistoric scalping occurred in the Sargent Site Ossuary (25CU28) in Custer County Nebraska (O'Shea and Bridges 1989), Orendorf Site (AD 1150-1250) in west-central Illinois (Steadman 2008) etc.

The term cremation can "refer to the complete process of reducing a corpse to ashes, or it can be partial due to design or accident, with only parts of the body involved or the body may be subject to only cooking, roasting, or charring (Williams 2008, 241). The reason people chose to cremate their dead is not well understood. Some scholars trace the reasons for cremations to sun worship, fear of the dead, sanitary conditions, or the need to transport individuals easily (Devejyan 1981; Prothero 2001). Cremations were referenced frequently in classical literature, such as Homer's Iliad and the ancient writings of Pliny, Virgil, Ovid, and Pindar (Prothero 2001). It is suggested that cremations serve as a means of purification, a transitory symbol to society, a way to dispose of the dead without crowding the country, and a means to stop the spread of disease (Iserson 1994). With the exception of Judea, where bodies were buried in sepulchers, and Egypt, where bodies were embalmed; cremation was the preferred method of body disposal in what is now the Middle East (Rosen 2004). The belief in an afterlife made cremation a blasphemous act in the eyes of the Egyptians, but in Greece during the same era cremations were accepted.

Materials and Methods

The present paper discusses human remains uncovered at Lori Berd and Shirakavan sites. The bones are poorly preserved and inadequately represented. Inhumations in were located in the hillfort or in well-defined burial areas. Individuals were placed in extended and flexed positions, accompanied by grave goods including metalwork, pottery, etc.

The Lori Berd site is remarkable due to the archaeological presence of two time periods of ancient Armenian history (Late Bronze Age /c. XIV–XII BC/: 102 /♀, 45-50 years/, 103/1 /♂, 50-55 years/, 103/2 /♂, 50-55 years/) and Iron Age (c. VI-V BC: a total of 16 skeletons were excavated from the site, including 10 males and 4 females; two children (5-9 years) were the only subadults present in the sample (Table 1).

Altogether, about 21 individuals were found from Shirakavan site (excavations 2007-2011, archaeologists: Hamazasp Khachatryan, Larisa Eganyan and Levon Petrosyan) (Table 1). Males individuals predominated (57.2% of the 21 individuals sexed): 19.1% of the young adults (20-39 years), and 38.1% of middle and older adults. 42.9% were female (23.9% of adolescent and young adults and 19.1% of middle adults). The attention prevalence absence of skeletons of babies in burial grounds is noteworthy. The absence of babies' skeletons is probably connected with the tradition of burial existing among the juvenile population or some other

ceremony. Finds of skeletal remains account for only a small proportion of the inhabitants of sites on which they were found. The cemeteries comprise mostly single burials, but double, triple also have been identified. All of the burials appear to have been typical interments of Iron Age (c. IX-VI BC), oriented in an east-west direction. Remains are recovered as isolated bones, skulls, disarticulated joints. We will especially focus on a funerary practice - the decapitation skulls.

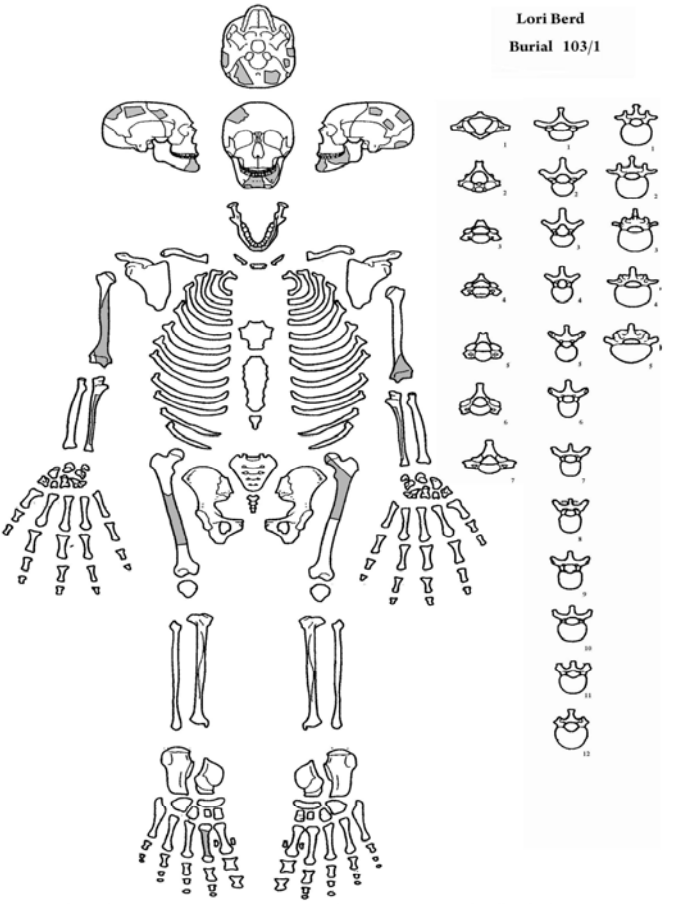
Age-at-death and sex were assessed through the use of multiple indicators. Morphological features of the pelvis and cranium were used for the determination of sex (Phenice 1969; Buikstra and Ubelaker 1994). A combination of pubic symphysis (Gilbert and McKern 1973; Katz and Suchey 1986; Meindl et al. 1985), auricular surface changes (Lovejoy et al. 1985), degree of epiphyseal union (Buikstra and Ubelaker 1994), and cranial suture closure (Meindl et al. 1985) were used for adult age estimation. Temperature of cremation was established based on the scale of Walker et al. (2008, 36).

Gross observations of abnormal changes appearing in ancient skeletons principally provide the basic direction for paleopathological diagnosis (Goodman et al. 1984; Ortner 2003). Cribra orbitalia was recorded as present or absent on individuals whose orbital roofs were present. All complete and fragmented crania were examined for porotic hyperostosis. Association between porotic hyperostosis and cribra orbitalia was recorded where present. Dental caries is defined as destruction of the enamel, dentine, and cement (resulting from acid production by bacteria in dental plaque) manifesting as a cavity in the crown or root surface (Hillson 1996). Enamel defects were described in terms of their location and characteristics (Buikstra and Ubelaker 1994). Each defect was recorded on a tooth-by-tooth basis. Musculoskeletal markers data were collected using the standards developed by Hawkey (1988) and refined by Hawkey and Merbs (1995). This scoring system has been used extensively by other researchers analyzing musculoskeletal stress markers in various populations (see: Eshed et al. 2004; Weiss 2003, 2007).

Results and Discussion

Bone Modification Evidence (Taphonomic)

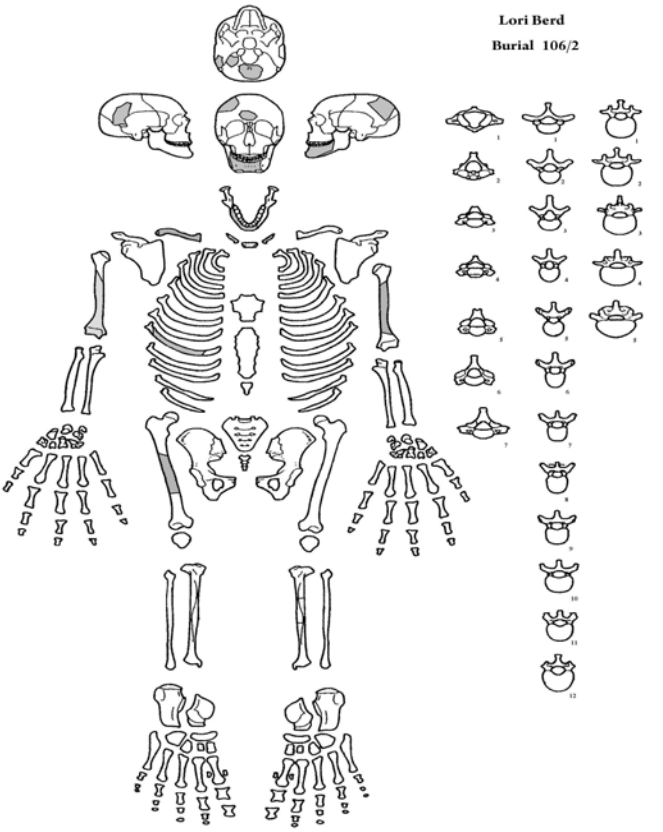
One of the most common and clear-cut criteria of the standard taphonomic qualities is the presence of cut marks. Multiple irregularities within the notches, due to the imperfect cutting edge of flint (or with a saw) tools, are indications of human processing registered in Lori Berd site. Sharp force trauma can involve a variety of weapons and tools. Any tool with a sharp edge can produce incised wounds or kerf. Most of the incised wounds are created by some class of knife and are recognized as sharp force trauma. Cut marks are V-shaped notches across the external surface of a bone.



Appendix A. This diagrams of an anterior skeleton. Burial 103/1 & bones present.

In Figure 1, a dismembered femur is shown (burial 103/1, ♂, 50-55 years: Appendix A). If cut marks follow the contour of a bone onto different surfaces or if a knife is used in a reciprocating motion, the resulting features most likely indicate postmortem dismemberment rather than perimortem trauma to the victim (Symes et al. 2002).

Figure 1. Dismembered femur (Lori Berd, burial 103/1, ♂, 50-55 years)

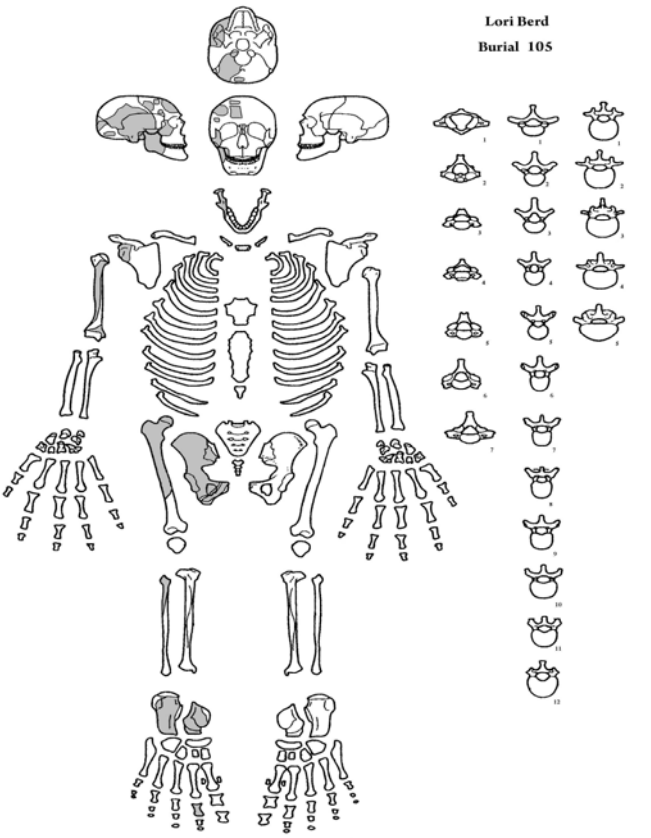


Appendix B. This diagrams of an anterior skeleton. Burial 106/2 & bones present.

In Figure 2, a postmortem dismemberment femur is shown (burial 106/2, ♂, 50-55 years: Appendix B).

Figure 2. Dismembered femur (Lori Berd, burial 106/2, ♂, 50-55 years)

Figures 3 and 4 illustrates examples of false starts in a femur and a hip bone dismemberment (burial 105, ♂, 18-20 years: Appendix C). It would appear the saw was limited in gutting ability for deep cuts. This likely indicates a short blade or a blade not designed of deep cuts. Bones cut during the process of dismemberment commonly exhibit smooth cut surfaces and straight edges.



Appendix C. This diagrams of an anterior skeleton. Burial 105 & bones present.

Figure 3. False starts in a femur dismemberment (Lori Berd, burial 105, ♂, 18-20 years)

Figure 4. False starts in a hip bone dismemberment (Lori Berd, burial 105, ♂, 18-20 years)

The starvation or nutritional cannibalism was not the cause of this bone assemblage, and more likely it was due to ritual dismembering. Accepted that human bone assemblages at certain sites have undergone modification in the respect of muscle and marrow removal, burning, fracturing and crushing but this osteological evidence does not prove that cannibalism, or the actual consuming of human flesh, occurred at a site. Ritual dismembering was a common occurrence in the Caucasus (Dadudov 1974; Munchaev and Smirnov 1958*)*.

Vertebrae were absent in Lori Berd site. Scholars, however, are unsure as to causes Absence of vertebrae at an archaeological site. A possible explanation given by Hurlbut (2000) is that vertebrae were smashed and boiled for grease extraction, a technique that may not leave much evidence of the vertebrae. However, one can then argue that fragments would be readily found due to the loss of interest by animals thus enhancing their survivorship because of the lack of grease. Lyman (1994) places vertebrae in the low-density column of bones, making them very susceptible to damage and destruction. This susceptibility to weathering, chemical processes and breakdown seems like a more reasonable explanation for absence vertebrae at an archaeological site from Lori Berd. We also should observe the absence of phalanges. For Lori Berd we confirm the hypothesis of body transportation from one place to another.

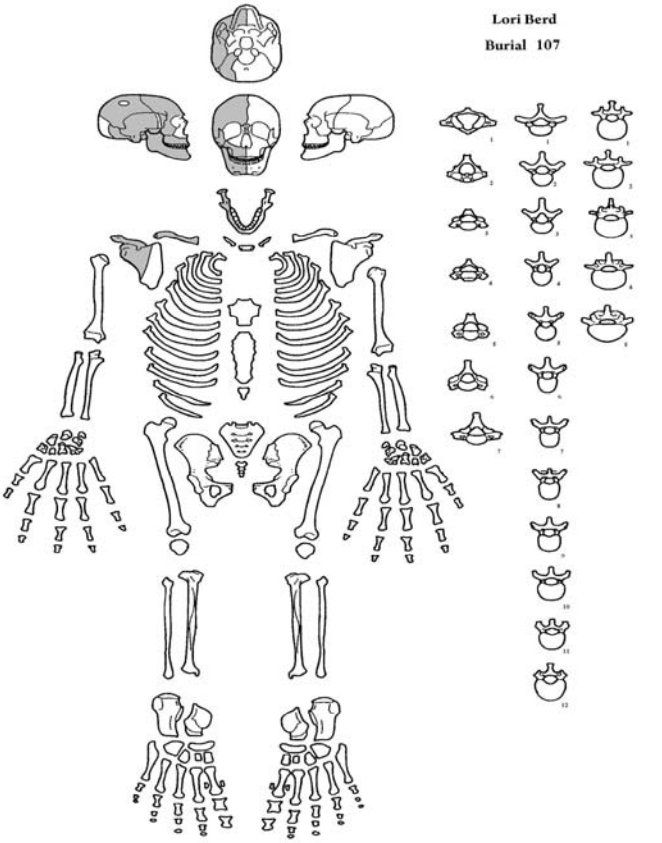
Of all the human bone assemblages analyzed for this paper in Lori Berd site contain grave goods. The presence of grave goods most likely indicates that these assemblages were part of a common burial practice. Burial were clearly secondary; that is, the bodies were left in the open for a time, and then the bones were bundled and placed in the grave. Nevertheless, it might also be an image relating to a funeral cult where bodies of the deceased members of the society were exposed to birds of prey before being buried. Since first discovered in the early 14th century, the ossuaries from Lori Berd, Armenian Plateau, have attracted attention as possible archaeological evidence for ancient Zoroastrian burial practice. Iconography may prove that this practice was featured in similar ways in prehistory as in history. "Assyrian battlefields are shown surrounded by vultures voraciously pecking the heads of dead and dying strangers. The Sumerians pictured the birds as they flew away with a head or an arm after tearing apart the corpses" (Schmandt-Besserat et al. 2010, Online).

Figure 5. Rodent gnawing marks on the left femur (Lori Berd, burial 106/2, ♂, 50-55 years)

Figure 6. Taphonomic qualities on the ulna and radius (Lori Berd, burial 106/2, ♂, 50-55 years)

So, identified both natural and cultural alterations to skeletal remains of Lori Berd in Figure 5, including rodent gnawing, cut marks, hacking marks, and pounding or hammering marks. Rodent gnawing was characterized by its location along boney projections and points of muscle attachment and by the parallel nature of the grooves and is present on elements in burials 102, 103/1, 105, 106/2 (Figures 5, 6). Bodies of the deceased members of the society were exposed to birds of prey before being buried. After a certain period the bodies are decomposed or defleshed and secondarily buried.

Some individuals may have been decapitated and skulls smashed. It is possible that heads were broken from either naturally deceased individuals. Once partial or total disarticulation occurs different parts of the body are deposited in different locations. In burials 105 and 107 buried (burial 105, ♂, 18-20 years: Appendix C and burial 107, ♂, 50-55 years: Appendix D), only the right part of the man. The half of the head was facing east. The orientation of the skulls towards east, the direction of the rising sun and the deposit of funerary offerings can denote a belief in an afterlife.



Appendix D. This diagrams of an anterior skeleton. Burial 107 & bones present.

Fracturing is a common occurrence for a multiplicity of reasons at archaeological sites. However, there are several characteristics that help in determining whether or not a bone has been purposefully fractured or if it was due to sediment loading or due to carnivores. One constant in fracturing at this site was the breakage of the mandible. The fracture could be associated with blow struck to the skull (Figure 7). It is not about revenge, ritual. The division of the body and the differential treatment of its constituent parts is indicative of a depersonalisation of the individual, emphasising strong communal bonds in society. Ceremonies involving whole communities, surrounding the symbolic depersonalisation of the individual would serve to further reaffirm the tightly bounded nature of society. Following this, it seems unlikely that those individuals are outcasts or people who have led an unclean life or death as some researchers have suggested (e.g. Cunliffe 1995; Wait 1985; Walker 1984). Various explanations have also been offered to account for multiple disarticulated, partially articulated and fragmented human bones. Dunning (1976) and Stanford (1974) have suggested that cannibalism was the cause of isolated bones and articulated limbs, although the scarcity of butchery marks renders this explanation unlikely. Other possible interpretations include scavenger disturbance (Carr and Knusel 1997), curation of ancestral remains (Cunliffe 1992; Woodward 1993), a belief system concerned with the regeneration of life by scattering remains as fertiliser (Parker Pearson, 1996) and human sacrifice and exposure (Wait 1985). Ritual and ceremonial dismembering in Lori Berd focuses on honor and respect for the dead. Here the body is treated with compassion and respect for the deceased. Ritual or ceremonial dismembering also implies that humans have evolved symbolic capacities to the point where they are able to view death and the deceased as something and someone meaningful, rather than just another part of life. In this type of dismembering those were likely not killed by members of their own society, but rather died in battle or of natural causes.

Figure 7. Dismemberment and fracturing of the mandible (Lori Berd, burial 107, ♂, 50-55 years)

Cremation rites were suspected in the tomb of Lori Berd. However, burnt human bones are rarely found. Cremation is a ritual practice that could have taken place in the furnace, which smelts the role of smith and cremator into a transformer. The smith was not only a «smith» – as the master of fi re he controlled and mastered several domains and mediated between various realms – between humans and gods, life and death (Goldhahn and Østigård 2007). The smith was truly «in between and betwixt» (Turner 1967), dangerous but necessary in society and cosmos.

Figure 8. Thermal changes in teeth (Lori Berd, burial 106/2, ♂, 50-55 years)

Figure 9. Cremated animal bones (Lori Berd, burial 109)

Thermal changes in teeth are similar to those made in bone (Schmidt and Symes 2008). Teeth that are exposed to lower temperatures and/or durations of heat tend to be dark black or brown in color. As temperature and/or duration increases, teeth turn blue-gay, then stark and chalky white: a condition known as calcination (Lori Berd, burial 106/2, ♂, 50-55 years, Figure 8). The cremated temperature was about 300 - 500°C. The use of cremation to mark elevated social status individual. Cremated animal bones were found in burial of Lori Berd (burial 109), the color of bone is white and temperature of cremations was about 800 - 900°C (Figure 9).

Evidence of violence in the Shirakavan site

Traumatic mutilations, such as scalping, decapitation and other trophy taking, are all manifest on skeletal remains as clearly distinguishable forms of intentional interpersonal violence (Walker 2001). One of the most interesting and unique discoveries made at Shirakavan – the detached human skulls. The skulls of the individuals, male or female and ranging in ages from 16 years old to 55 years old had been detached from their bodies and placed into burials in Shirakavan site. Among the detached human skulls, 2 are females (burials 1 /20-25 years/ (Figure 10), 4 /16-20 years//) and 1 are male (burial 1/1 /♂, 50-55 years/). The skulls is not complete because its mandible is missing. Teeth were extracted to the skull and buried separately. Acephalous skeletons not were discovered in the cemetery. We can say without doubts that the detached human skull is not reserved for individuals of a specific gender or age.

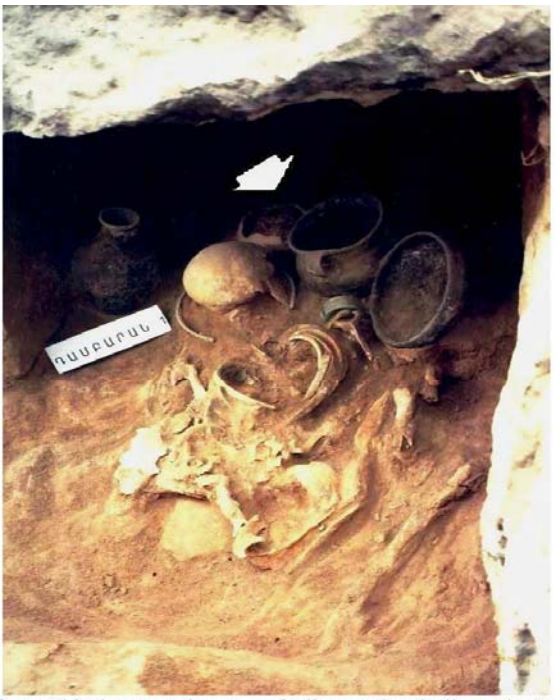


Figure 10. Burial 1 from Shirakavan. The arrow indicates the skull-trophy (photograph by L. Eganyan)

Various researchers have outlined and refined these parameters (Bridges & al. 2000; Lambert 2007; Milner & al. 1991; Smith 2003; Smith 2008) which include: trophy-taking activities including decapitation, scalping, and removal of limbs or other body parts taken away by the attacker(s). Decapitation is ascertained by a combination of factors, such as a missing skull and the first one or two cervical vertebrae, or a missing skull and cut marks on the upper cervical vertebrae. Scalping generally, but not always, leaves evidence of cut marks on the front, sides, or back of the cranium. Often, cases of scalping are identified by specific morphological changes to the endocranial surface brought about by infection during healing (Smith 2008; Khudaverdyan 2012b). Missing and/or extra elements within a burial may be the result of trophy-taking; however, they may also result from burial disturbance or commingling (Milner & al. 1991).

Skulls were buried with other human remains (burials 1 /♂: 45-50 years/, 1/1 /♂: 35-40 years and ♂: 30 -35 years/; 4 /♀: 45-50 years/) (Figure 10). Integrity of the bones were satisfactory. These men and women buried in the cemetery stood at the top of the power hierarchy. Human skeletons were found with multiple archaeological evidence of proper graves.

There is a significant relationship between the location of the victim in the burials, suggesting that individuals were placed in the burials not at random.

All the skulls were found in with various objects that can be interpreted as funerary offerings. The skulls were not thrown carelessly into burials but carefully placed into them. The detached human skulls were not broken during their discovery but before being buried. Human heads were clearly part of an elaborate ritual complex within Shirakavan society. Since the detached skulls belong to young female and one male adults I guess that these were human sacrifices rather than venerated ancestors. Sacrifice as cosmological transition. Ritual being associated with social differentiation.

Variants of the practice of recovering, curating, modeling, decapitating, and caching or redepositing skulls, dismembering bones, have been evidenced across south-east Turkey and northern Iraq, Iran and at later Neolithic settlements in central Anatolia and Levant (Rollefson 1985; Rollefson et al. 1992; Kuijt 2000, 2008; Schmandt-Besserat 2002; Bonogofsky 2005; Özbek 2009; Molleson 2009). I have recently argued (Khudaverdyan 2011, 2012a) that the exchange of goods and materials among communities at local, regional and supra-regional levels should be understood in association with the sharing of symbols and symbolic behaviour. These are evidence of nested networks, local (within communities, among local communities), regional and supra-regional. Detached human skulls in Shirakavan are the symbol of a social organization. The skulls are reflection of a family nucleus and wider of the social organization of the Iron Age society that practice this technique. The choice of the skull may have been made from a hierarchical system. In order to build and sustain communities of many hundreds thousands of persons, various kinds of symbolising artefacts and practices needed to be shared as the outward and visible signs of the abstract concepts of household, neighbourhood and social memory.

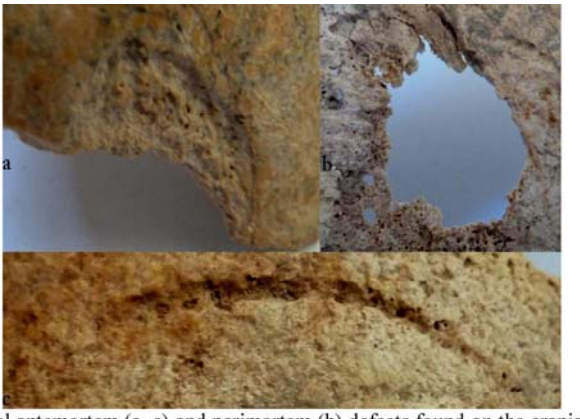


Figure 11. Typical antemortem (a, c) and perimortem (b) defects found on the crania. Burial 4/2 healed blunt force trauma on the right parietal bone, produced several years before death (a, view on the outer table; scale bar = 19 mm.); sharp force trauma on the right parietal bone most probably caused by a cut (c, burial 1); typical perimortem (b) defect found on the skull /burial 4/4, view on the outer table/; singular punctured sharp force trauma on the parietal bone, most probably caused a hammerhead.

Bioarchaeological research demonstrates that humans have been prone to interpersonal violence (Khudaverdyan 2012b). The trauma were produced long before the individual's death (Shirakavan, burial 4/2, ♂ 25-30 years, Figure 11a), the margins are smoothed and the initial compressed bone region has been reduced and replaced by normal bone, because the fracture occurred several years before death. The trauma (Shirakavan, burial 1/3, ♂ 20-25 years, Figure 9c) shows a large angular blade wound, 7 cm long, broad and 2.5 mm deep, which occurs above the right parietal bone. This antemortem wound does not perforate the endocranium. This wound was produced by a blow from an anterior position; the blade – most likely. Perimortem typical defect found on the skull (Figure 11b, burial 4/4 (Shirakavan), view on the outer table) the male 30-35 years. Singular punctured sharp force trauma on the parietal bone, most probably caused a hammerhead. The imprint of the wound could be recovered. Because of the form and the frequency of its appearance, the hammer was most probably the weapon that caused lesion. The only metal objects that show an approximately round profile are a special kind of lancet peak, and a hammerhead similar to those used today by masons and brick workers. In Lori Berd, 9 individuals (56.3%) displayed evidence of antemortem blunt force trauma of the cranium.

Figure 12. A case of traumatic blow hole in the skull (Lori Berd, burial 63-I, children 4-6 years)

A perforated fracture is present with traces of healing in the parietal bone on an child skull (4-6 years) from burial 63-I (Lori Berd) (Figure 12). Fractures differ the merger of separate fragments with those lying next to the bone. The dent has a roundish form with a diameter of 4,2 – 3,5 cm. The trauma could not be an immediate cause of the subject's death. The integrity of the cranial vault was broken by trauma from a blunt object, and the shape of the wound reflects the form of this object.

Scalping is probably the most reliable and most easily identified expression of intergroup conflict (Olsen and Shipman 1994). Scalping is defined as "the forcible removal of all or part of the scalp" (Nadeau 1944, 1677). One old-aged

male (Shirakavan, burial 11) was found to have undergone two surgical procedures. The defect (in diameter approximately 34 mm) on skull is not round - it appears round in the upper part and then has straight sides more inferiorly. The hole was in the left parietal bone (Figure 13). Differential diagnosis for this defect include weapon injury (depressed fracture with the section of bone removed surgically). The scalp had been ressected; several fine incision marks were observed around the line of the craniotomy cut, some parallel to each other, around the sides of the head. Cuts tended to be short (usually about 1cm in length), thin, and following a characteristically circular patterning on the vault, consistent with those created with a stone knife. It is likely then that the scalp from the top of the head was removed by cutting across the front and along the sides, (roughly following the hairline in front but cutting through it posteriorly) and then lifting the scalp back, making subdermal incisions to the back of the head to further the reflection of the scalp.

Figure 13. Trauma, scalping and infection (Shirakavan, burial 11, ♂ 55-60 years)

A Lori Berd site also yielded evidence of historic scalping (burial 107). The scalping victim was a male, approximately 55 years in age. This individual displayed cut marks consistent with scalping. A cluster of cuts were observed on the right portion of the occipital bone.

Scalping was not directly intended to take another's life because it removes only the skin of the head, the practice was an act of violence that was most often performed upon the enemy, except in certain cases of tribal ritual (Reese 1940). To guarantee entry into the afterlife, certain Native American tribes believed that an individual must be physically complete, and removal of an enemy's scalp precludes physical wholeness (Jacobi 2007). Scalping, therefore, provides a tangible token of physical and spiritual dominance and was rarely practiced upon members of one's own society (Seeman 2007). The scalps of individuals in non-combatant categories, such as women, children, the sick and elderly, were considered valuable because they provided evidence that a warrior had penetrated an enemy's defenses (Allen et al. 1985; Owsley 1994).

Infectious Diseases

Pathological changes of male from Shirakavan (burial 11, ♂ 55-60 years) observed in the cranial vault include several focal cavitations that penetrate into the diploë but do not affect the inner table (Figure 13). The cranial lesions in this case are focused on the frontal bone. The anterior endocranium contains regions of hypervascularity and thickened diploë of the vault that are nonspecific, but in conjunction with the ectocranial lesions are suggestive of infection. Osteomyletis is a combination of inflammation of the bone (osteitis) and the bone marrow (myelitis) by pus producing bacteria (Aufderheide and Rodriguez-Martin 1998). Severe osteomyelitis and osteitis are caused by the spread of Staphylococcus and Streptococcus microorganisms. Depending on the virulence of the microorganisms and/or host resistance, the reaction may be localized and acute or chronic and systematic (Goodman et al. 1984). Ortner (2003) points out that other infectious agents, such as viruses, fungi, and multicelled parasites can also affect the bone marrow. The skeletal changes consist of bone destruction along with new bone formation (involucrum) and necrotic bone (sequestrum) (Aufderheide and Rodriguez-Martin 1998).

Another typical manifestation of osteomyelitis is the formation of cloacae (drainage canals) that may be present in many cases. Osteomyelitis does not only occur in an acute form, but also in a subacute as well as a chronic form that can reappear over a period of several years and, according to Larsen (1997), it can be the response to systemic or localized stress. Death can occur if the infection spreads from the bone to the circulatory system and finally affects vital organs. If osteomyelitis heals, the bone becomes dense and becomes part of the normal cortical tissue and sclerotic scarring may occur (Larsen 1997; Ortner 2003). Aufderheide and Rodriguez-Martin (1998) discussed that acute osteomyelitis can result from infections due to compound fractures, injuries, or surgery, and it occurs most frequently in adults over 40 years of age.

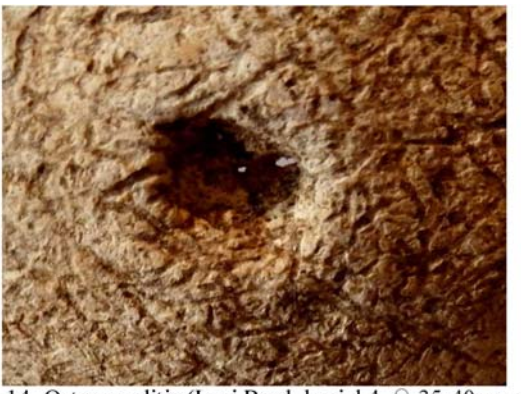


Figure 14. Osteomyelitis (Lori Berd, burial 4, ♀ 35-40years)

Figure 14 shows a middle adult woman approximately 35-40 years old in group Lori Berd, diagnosed with severe osteitis and periodontal disease. This unfortunate individual had lesions on his entire skull. The cranium of exhibits lesions on the frontal bone. The frontal contains lesion ranging in size from <14 mm to 11 mm in length and sclerotic reaction.

Abscesses of a tooth lead frequently to its exfoliation and cause a remodeling process that usually destroys the alveolus and reduces the size of the alveolar process at the site of the tooth loss (Ortner 2003). Some researchers note that abscesses are caused by Streptococcus milleri, Fusobacterium nucleatum, or Streptococcus mitis (Lewis et al. 1986). Abscesses can be instigated by various conditions, such as pulp necrosis, periodontal infection, or trauma. One out of 17 dentitions from Shirakavan showed evidence of dental abscesses (5,9%). A total of 1 out of 10 observable individuals from Lori Berd showed evidence of dental abscesses

Dental caries is an infectious disease that destroys the tooth structure, the root and the crown (Aufderheide and Rodriguez-Martin 1998). Ortner (2003) mentions that caries are caused by acid-producing bacteria in dental plaque that initiate the destructive process. Larsen (1997) argues that caries do not refer to lesions in teeth resulting from the invasion of microorganisms, but that the disease is characterized by the focal demineralization of dental hard tissues by organic acids produced by bacterial fermentation of dietary carbohydrates, especially sugars. According to Larsen (1997), there are several modifying factors for the development of dental caries: crown size and morphology, enamel defects, occlusal surface attrition, oral and plaque pH, food texture, speed of food consumption, some systemic diseases, age, child abuse, heredity, salivary composition and flow, periodontal disease, nutrition, enamel elemental composition, and the presence of fluoride and other geochemical factors. Caries were observed in 5 people from Shirakavan (5.9%) and the Lori Berd (28,6%).

Skeletal Indicators of Health: Systemic Stress

Anthropologists often consider porotic hyperostosis and cribra orbitalia as indicators of iron deficiency anemia, although these markers may have other, less-common etiologies, such as hemolytic anemia and thalassemia (Stuart-Macadam 1989, 1992a, 1992b; Schultz 1993, 2001). Iron is an important element found in blood, as it assists in oxygen transport to tissues throughout the body. Iron deficiency, which can have detrimental consequences, results from a number of factors, including malnutrition, parasitic infection, blood loss, and disease (Stuart-Macadam 1989, 1992b). The overall frequency of cribra orbitalia in the Lori Berd is 42,5%. The prevalence of cribra orbitalia is 42,9% from Shirakavan. The overall frequency of porotic hyperostosis in the Lori Berd is 12,5%. The prevalence of porotic hyperostosis is 23,9% from Shirakavan.

Enamel hypoplasias are indicators of growth disruptions during dental development and are visible on teeth as areas of enamel deficiency. Most of these hypoplastic defects are oriented horizontally across the tooth, and multiple grooves reflect multiple stress episodes. Like porotic hyperostosis and cribra orbitalia, these stress markers are indicative of a childhood condition, as tooth formation is complete before adulthood. The etiological factors implicated in the occurrence of a growth disruption and resulting in a hypoplastic defect, include disease, malnutrition, trauma, and hereditary conditions (Goodman and Rose 1990, 1991; Hillson 1996, 2000; Roberts and Manchester 2005). The prevalence of hypoplasia from the Lori Berd sample is 64,3 % (n = 14) and 35,3 % (n =17) from Shirakavan.

Figure 15. Healthy enthuses and enthesopathies.

Constant stress can cause enthesopathies or cortical bone defects at the point of muscle or ligament attachments when they lose the capacity to absorb the stress imposed properly (Hawkey and Merbs 1995). The activities performed by the individuals who inhabited in the Armenian Plateau are represented in adult ages (Shirakavan: n = 12; Lori Berd: n= 4) (Figure 15). Percentages of moderate to severe MSMs scored per individual were calculated based on the available number of attachment points present. In the upper limb, the deltoid, pectoralis major/latissimus dorsi, supinator, finger flexors, lateral scapula, and costocla-

vicular ligament were among the most common MSM for both males. Among the individuals from the Armenian Plateau (Shirakavan) there is a clear indication that an increased usage of muscles would occur when spears are thrown at a downward angle, and the usage of muscles is consistent with the launching of spears (Khudaverdyan 2012b). I focus on the supinator, anconeus, and triceps muscles because their attachment sites on the ulna are indicators of habitual stress due to throwing. Individuals from the Armenian Plateau (Shirakavan, Lori Berd) also tended to use muscles primarily in brachialis (bending the elbow), subclavius (lowering the shoulder blade), supinator (supination of the forearm), and teres major (rotation of the arm outward). An analysis of paired humeri of individuals from the Shirakavan found them to be asymmetric. The Shirakavan sample included professional archers who most likely utilized a longbow. Although the sample size is small, the findings are consistent with the archaeological data. Sepulchral barrows of the Iron Age of the Armenia finds of war chariots confirm that there were regular military collisions here. The clearly expressed marker of a horse rider's pathological complex is indicated in some male burials (2 from the Shirakavan, 2 from the Lori Berd). It should be noted that for the most part they frequently rode horses.

Conclusion

In this article, we would like to highlight about the religious and funerary practices in the Armenian Plateau. In this paper, the human remains recovered from two ossuaries at Lori Berd and Shirakavan are described. Since first discovered in the XIV century, the ossuaries from Lori Berd have attracted attention as possible archaeological evidence for ancient Zoroastrian burial practice. This practice involved exposing cadavers to birds before the surviving remains were gathered for deposition in an burials. Ritual and ceremonial dismembering and burning emerging in Lori Berd focuses on honor and respect for the dead. Here the body is treated with compassion and respect for the deceased. In two burials (105, 107) buried, only the right part of the human skeletons. The half of the head was facing east. In this type of dismembering those were likely not killed by members of their own society, but rather died in battle or of natural causes. The right part of the human skeletons at Lori Berd site might belong to warriors or to distinguished elders.

The archaeologists discovered three detached human skulls from Shirakavan site. Three the detached human skulls are not complete and no longer have their mandibles. What on earth were the intentions of the prehistoric people of Shirakavan in detaching heads from the deceased? What function did these heads serve for the inhabitants of the society? Who and why were individuals chosen for such bizarre ritual? Since the detached skulls belong to young female

and one male adults I guess that these were human sacrifices rather than venerated ancestors. Several indications of violence were observed in the material under study. The Lori Berd and Shirakavan sites contained the remains of two individual with cuts indicative of scalping. Although the sample size was small in the case of both sites, bioarchaeological data from the studied historical population of Lori Berd and Shirakavan are useful in understanding the religious and funerary practices of the ancient Armenian population

Analysis of the materials has provided new and important physical evidence of the diseases peculiar to populations from Armenian Plateau during Iron Age. Although the analysis of skeletal materials is limited, many pathological changes were recorded. The paleopathologies in the skeletal material are very diverse. The examination of the human remains revealed that the paleopathologies encountered traumas, infectious diseases, dental diseases, etc. High caries incidence fit this dietary profile (Lori Berd). Females tend to suffer from caries more often than males. Dental abscesses was less severe with Armenian Plateau population. Enamel hypoplasias were more prevalent in the Lori Berd population. Defective enamel formation observed in the permanent teeth suggested some individuals experienced episodes of ill health (perhaps disease or poor nutrition) during childhood. Trauma is a frequent pathology among Armenian Plateau population. It is possibly connected to the populations participation in military actions. It indicates the perilous nature of life at this time, and/or simply the fact that the ever-increasing population density resulted in a greater risk of accidents. Among the individuals from the Shirakavan there is a clear indication that an increased usage of muscles would occur when spears are thrown at a downward angle, and the usage of muscles is consistent with the launching of spears. The clearly expressed marker of a horse rider's pathological complex is indicated in some male burials in Armenian Plateau.

We believe that the Lori Berd and Shirakavan sites represent a unique and highly valuable collection of human skeletal remains from the Iron Age. Further excavations at the sites and the continual study of their remains will soon enhance our understanding of skeletal biology and patterns during the Iron Age in Armenian Plateau.

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Table 1. Number of individuals from Shirakavan and Lori Berd

Age categories	**Shirakavan**			**Lori Berd**		
	male	female	indeterm.	male	female	indeterm.
0-4						
5-9						2
10-14						
15-19		1		2		
20-24	1	1			1	
25-29	1	1				

Age categories	Shirakavan			Lori Berd		
	male	female	indeterm.	male	female	indeterm.
30-34	1	1				
35-39						
40-44	2	2		2		
45-49	1	1		3	1	
50-54	2	2		2	2	
55-59	2			1		
60+	2					
Total	**12**	**9**	**-**	**10**	**4**	**2**

Figure 1. Dismembered femur (Lori Berd, burial 103/1, ♂, 50-55 years)
Figure 2. Dismembered femur (Lori Berd, burial 106/2, ♂, 50-55 years)
Figure 3. False starts in a femur dismemberment (Lori Berd, burial 105, ♂, 18-20 years)
Figure 4. False starts in a hip bone dismemberment (Lori Berd, burial 105, ♂, 18-20 years)
Figure 5. Rodent gnawing marks on the left femur (Lori Berd, burial 106/2, ♂, 50-55 years) Figure 6. Taphonomic qualities on the ulna and radius (Lori Berd, burial 106/2, ♂, 50-55
years)
Figure 7. Dismemberment and fracturing of the mandible (Lori Berd, burial 107, ♂, 50-55 years)
Figure 8. Thermal changes in teeth (Lori Berd, burial 106/2, ♂, 50-55 years)
Figure 9. Cremated animal bones (Lori Berd, burial 109)
Figure 10. Burial 1 from Shirakavan. The arrow indicates the skull-trophy (photograph by L. Eganyan)
Figure 11. Typical antemortem (a, c) and perimortem (b) defects found on the crania. Burial 4/2 healed blunt force trauma on the right parietal bone, produced several years before death (a, view on the outer table; scale bar = 19 mm.); sharp force trauma on the right parietal bone most probably caused by a cut (c, burial 1); typical perimortem (b) defect found on the skull /burial 4/4, view on the outer table/; singular punctured sharp force trauma on the parietal bone, most probably caused a hammerhead.
Figure 12. A case of traumatic blow hole in the skull (Lori Berd, burial 63-I, children 4-6 years)

Figure 13. Trauma, scalping and infection (Shirakavan, burial 11, ♂ 55-60 years)
Figure 14. Osteomyelitis (Lori Berd, burial 4, ♀ 35-40years)
Figure 15. Healthy enthuses and enthesopathies.

Appendix A. This diagrams of an anterior skeleton. Burial 103/1 & bones present.
Appendix B. This diagrams of an anterior skeleton. Burial 106/2 & bones present.
Appendix C. This diagrams of an anterior skeleton. Burial 105 & bones present.
Appendix D. This diagrams of an anterior skeleton. Burial 107 & bones present.

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RITUALNO I CEREMONOIJALNO DEKOMPONOVANJE KOSTIJU U SAHRANAMA IZ BRONZANOG I GVOZDENOG DOBA NA JERMENSKOJ VISORAVNI

U ovom članku ću skrenuti pažnju na religijske i prakse sahranjivanja na Jermenskoj visoravni. Još od kako su prvi put otkriveni u XIV veku, osteološki ostaci iz Lori Berda su privlačili pažnju kao mogući arheološki dokazi starih zoroastrijanskih praksi sahranjivanja. Ritualno i ceremonijalno dekomponovanje i spaljivanje koje se javlja u Lori Berdu se usredsređuje na ukazivanje počasti i poštovanja mrtvima.
Na lokalitetu Širakavan arheolozi su pronašli tri lobanje kojima nedostaje postkranijalni skelet. Tri lobanje nisu kompletne – nedostaju im mandibule. Budući da pripadaju dvema mladim ženama i jednom mladom muškarcu, pretpostavlja se da je reč o ljudskim žrtvama a ne precima koji su bili uvaženi. Lokaliteti Lori Berd i Širakavan su takođe sadržali ostatke dve individue koji ukažuju na skalpiranje. Nekoliko indikatora nasilja je primećeno na proučavanom materijalu. Paleopatološka analiza ostataka ukazala je na to da se populacija susretala sa infektivnim bolestima, bolestima zuba itd. Među individuama sa lokaliteta Širakavan postoje jasne indikacije pojačane upotrebe mišića koja se pojavljuje prilikom bacanja kopalja. Jasno izraženi

patološki kompleks koji ukazuje na jahanje konja je primetan kod nekih muških ostataka na Jermenskoj visoravni.

Ključne reči: Jermenija, gvozdeno doba, tafonomski, dekomponovanje skeletnog materijala, kremacija, ljudske lobanje, skalpiranje, paleoantropologija, markeri okupacionog stresa.