The First Evidence of Burials from Samshvilde
A preliminary archaeological and Bioarchaeological Study

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Key Words

Samshvilde, Samshvilde Archaeology, Samshvilde Burials, Samshvilde Anthropological studies

Preamble

Samshvilde is one of the most remarkable archaeological complexes in southern Georgia and in Caucasia in general. Its convenient geographical position has attracted populations since the Stone Age, but the city gained its major political and economic power in the medieval period, when it became the centre of the whole region. Its location in the historic Kvemo Kartli province, near the southern branch of the Silk Road, contributed to its rapid development, and the promontory on which it was built allowed for its easy defense.

Pic. 1. Location of Samshvilde

Despite its long history and rich archaeological stratigraphy, Samshvilde has not been excavated extensively. Only small scale excavations were conducted in the Soviet period but they were not systematic and the excavations methods were rudimentary (Chilashvili, 1970]). Therefore, to gain further knowledge, the Samshvilde scientific expedition and research project was initiated at the University of Georgia in 2012. The general goal is to develop our understanding of the multiple prehistoric and historic occupation periods by adopting a holistic and interdisciplinary approach to the archaeological study of the site.

From 2014 to 2017 two archaeological sections were studied on the site: the citadel, or main fortification system, and the area near the Sioni cathedral that is dated to the 8th century. Excavations inside the citadel walls aimed to clarify the stratigraphy of this area, and in the Sioni section the focus was on finding the city cemetery. This latter investigation was taken on by a geophysical survey in 2015-16, which successfully located the first burials on the north of Sioni cathedral (Odilavadze et al., 2015).

Pic. 2. Location of the Citadel and Sioni section

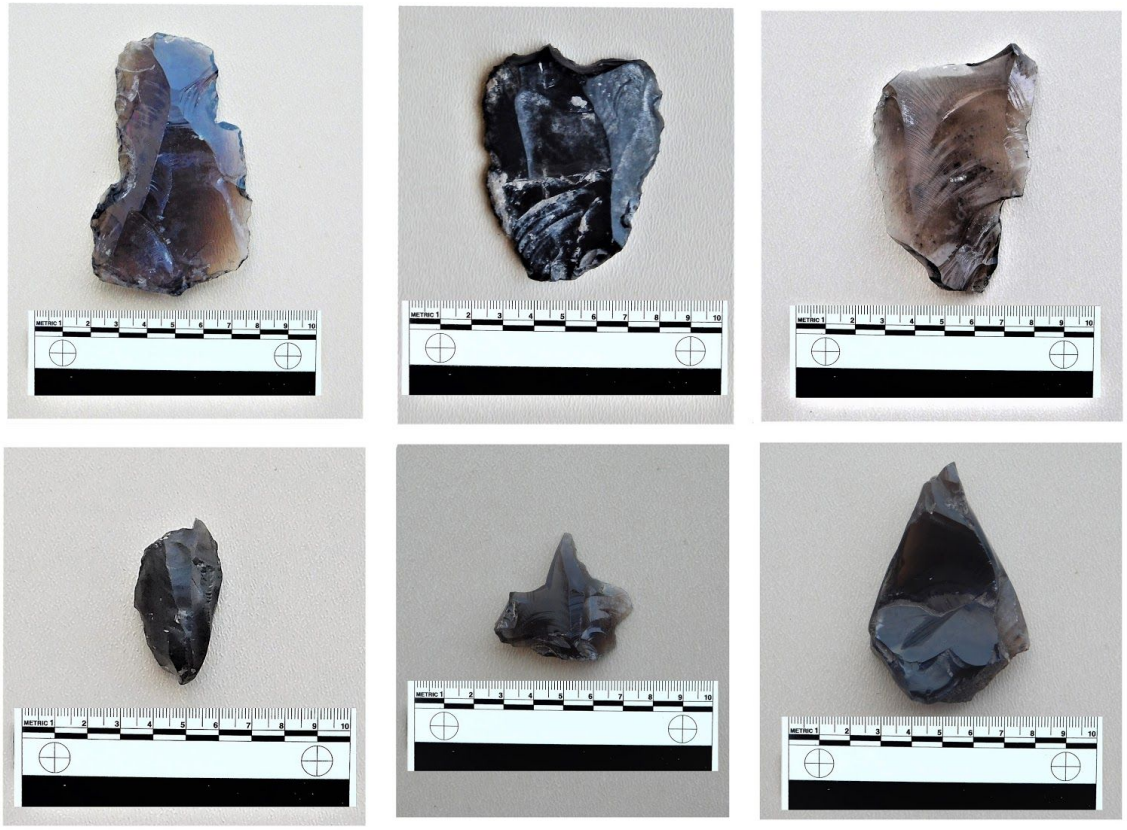
Excavations in the same area in 2017 confirmed this initial discovery and revealed several more burials. The archaeological context and results of a preliminary bioarchaeological analysis of two of these burials are presented in this article. In the absence of a full population analysis we will rather elaborate on some aspects of the cemetery that have drawn our focus. These subjects of study show the most promise for allowing us to gain knowledge on the daily lives of the inhabitants of ancient Samshvilde.

Archaeological Context

The archaeological study of Samshvilde shows evidence of materials from three different periods: Neolithic, Bronze Age and Medieval period. Even though the artefacts from the Neolithic and Bronze Age periods come from the demolished archaeological stratums and are largely disturbed by medieval contexts, the existence of these materials on Samshvilde promontory are of great scientific value.

Neolithic

The oldest artefacts come from the lowest stratigraphic layers and are composed of opaque and semi-transparent black obsidian, flint and argillite tools. The major part of this assemblage is composed of short, wide flakes fragments of different shape. On a large number of flakes one massive side is processed to form an abrupt edge, as is common for scraping tools. Different forms of scrapers are well represented in this complex, end scrapers, side scrapers and thumbnail scrapers being the most common. Micronuclei, drills, cutting tools, arrowheads and various lamellas are also represented here (Grigolia & Berikashvili, 2018).



Pic.3. Neolithic tools from Samshvilde

The most noteworthy among Samshvilde Neolithic materials are flint and argillite sickle blades, found in the so called “midden pits” cut in the basalt bedrock. The most well-preserved sample is a two-sided flint lamella with four denticules, formed by an abrupt retouch to one of its longitudinal sides. At first the tool is processed from the dorsal surface, then the denticles are formed by retouching the lower plane. In addition, one of the lateral sides of the lamella is knapped by fine retouch from the proximal end, suggesting that the tools must have been fitted with a wooden or bone haft. Denticulated sickle blades appear with the advent of the food transformation industry and are typical for a Neolithic flint tool assemblage. It is assumed that such tools must have been used in agricultural activities such as harvesting.

Even though the Neolithic tools from Samshvilde did not come from intact archaeological strata, but rather derive from disturbed ones, we are confident that their context of origin, or the location of the former Neolithic settlement, is located nearby.

Pic 4. The Flint and Argillite sickle blades. Samshvilde, Neolithic.

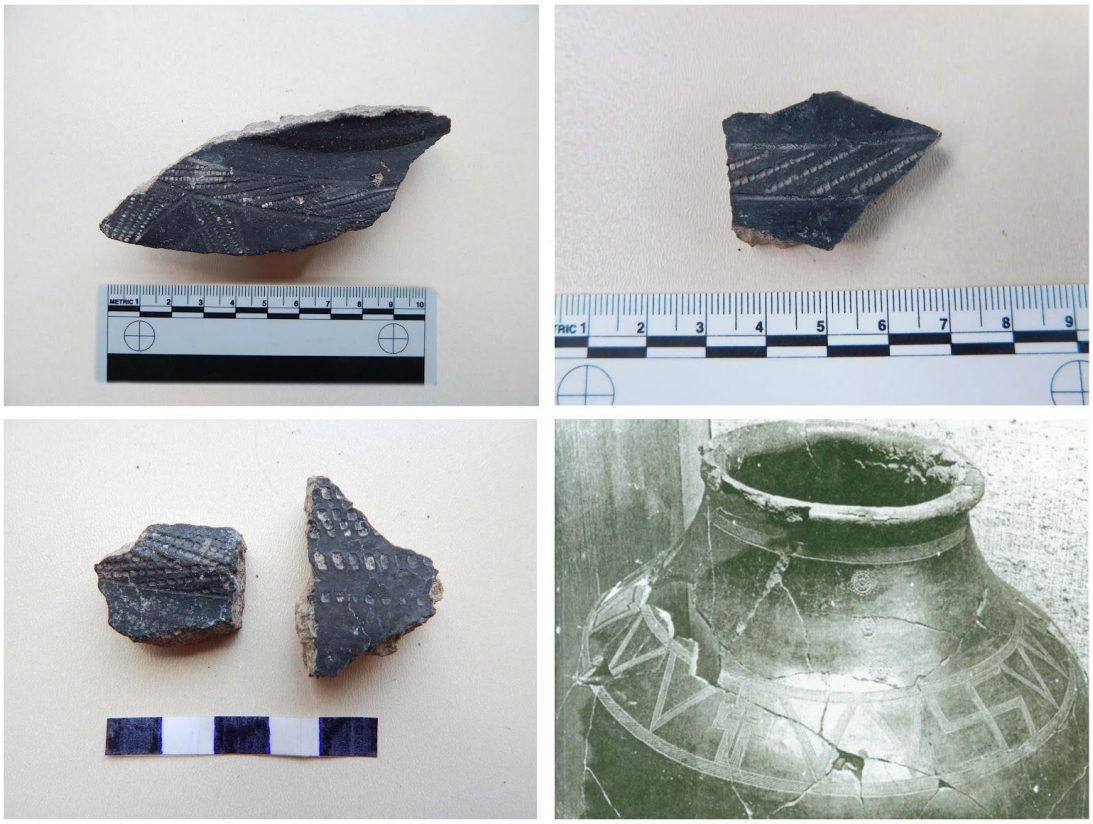
Bronze Age

The next archaeological stage in Samshvilde is the Bronze Age. It should be noted that archaeologist Guram Mirtskhulava conducted excavations of these strata in 1968-70 (Mirtskhulava, 1975). At that time a Kura-Araksian settlement and cemetery were uncovered

in an area slightly north-east of the settlement, but the promontory itself was left untouched. Mirtskhulava and his team only hypothesized about the medieval city's location.

The excavations of the University of Georgia in the years 2016-17 revealed a large amount of the pottery fragments characteristic for the Middle and Late Bronze periods in Georgia. Indeed, this material is mainly composed of fragments, but their black polished surface, shapes, zoomorphic handles and decorations suggest their preliminary date and affiliation to Bronze Period cultures (Berikashvili, 2016).

In the first half of the second millennium the Middle Bronze Age Trialeti culture was flourishing in the South Caucasus (Djaparidze 2006; Kuftin, 1941). This culture is widely known for its complex funeral rites and rich burials mounds with golden items and black polished pottery of various forms, but settlements are very rare and this leaves many questions about settlement pattern and subsistence unanswered (Gogadze, 1972). In such a situation archaeological material characteristic for the Trialeti Culture discovered at Samshvilde suggest that in the Middle Bronze Age some kind of settlement or cemetery was present.



Pic.5 The pottery fragments from Samshvilde excavations and Middle Bronze Age vessel from Trialeti burial mound (by O. Djaparidze)

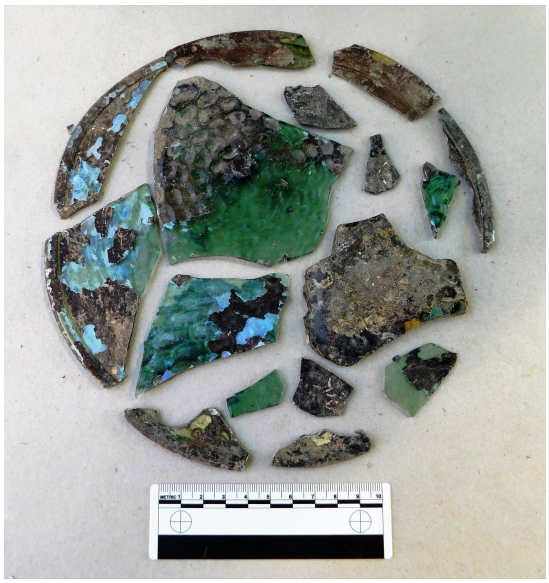
Another group of the black polished pottery with zoomorphic handles and geometric decorations find bear a close resemblance with the materials of Ior-Alazani Late Bronze archaeological culture from East Georgia. The sites of this culture are well known from the Kartli and Kakheti regions (East Georgia) and are characterized by multilayer settlements and

cemeteries (Pitskhelauri, 2005). The settlements from Kartli and Kakheti regions, as well as the cemeteries have yielded large amounts of the pottery that is very similar with those from Samshvilde. This evidence is a clear sign that Samshvilde was in the sphere of this archaeological culture in the second half of the second millennium B.C.

Middle Ages

The Medieval period archaeological contexts are best preserved on the site. The complex fortification system, religious and civil buildings, the hydrological net and organized urban parts are the witnesses of the city's active life. Excavations inside the citadel walls revealed artefacts from the 10-14th centuries, representing various types of locally made and imported pottery, coins, stone tools and glass items. The Sioni section yielded a rich collection of metal artefacts, including arrowheads, knives and needles.

Besides that, as previously mentioned, the first graves were found to the north and north-east of Sioni cathedral. Surveys will continue in this area to identify the borders of the cemetery and the archaeological contexts of earlier periods located beneath them.



Pic. 6 Medieval glazed bowls and fragments of glass vessel

Bioarchaeological analysis

During the summers of 2016 and 2017 human remains were exhumed from the Sioni section at Samshvilde. A bioarchaeological and brief mortuary analysis of graves no. 2 and 4 is presented here. Fieldwork is still under way in the cemetery, therefore it is too soon to have a global image of its features, such as typical burial practices, or a demographic profile of the population, but we hope to pursue this analysis in upcoming years. This article will therefore focus on introducing the bioarchaeological methodology that was used, in an effort to highlight the subjects of study that have stood out as most potentially informative.

Methodology

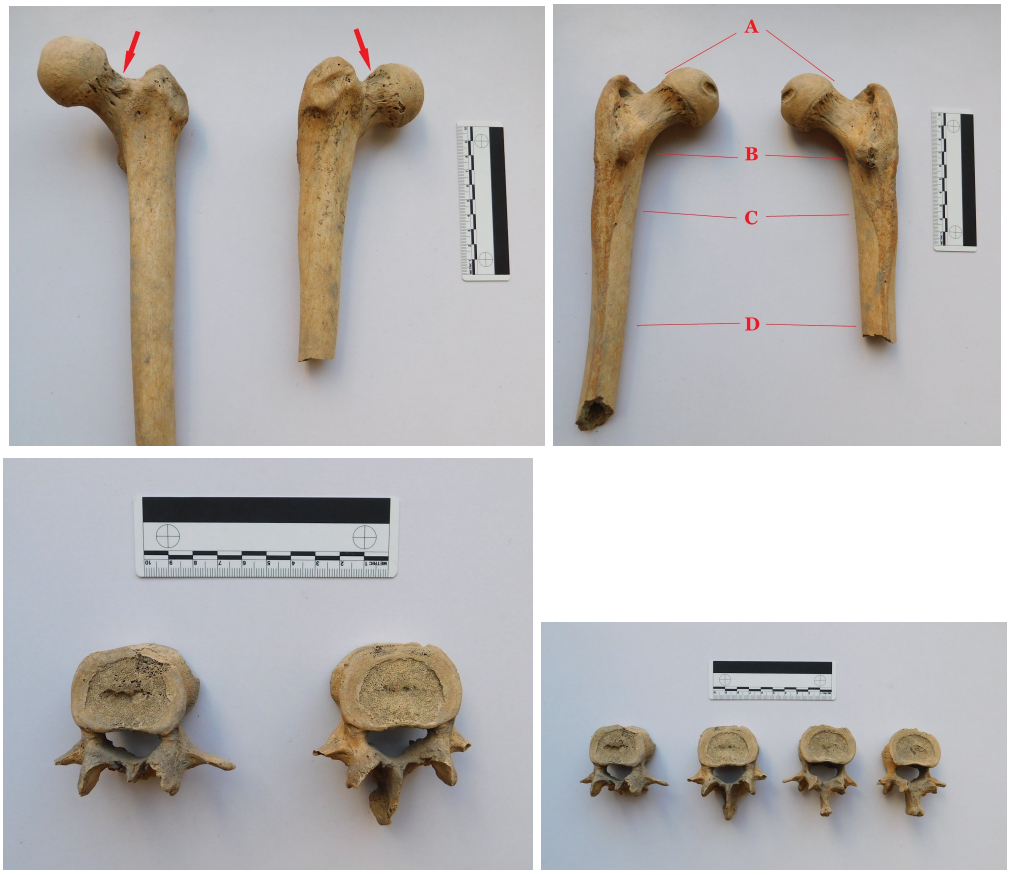
Excavation of the remains was carried on by the University of Georgia team at Samshvilde. The exhumation process was not supervised by a bioarchaeologist, although the procedure followed strict excavation protocol and the grave fill was sieved to retrieve small bones for a complete post-excavation analysis. Once separated by grave context and carefully transported to the university, the skeletal remains were examined by the second author following standard bioarchaeological methodology. This includes, first of all, the identification and lateralization of bones (White & Folkens, 2005). Teeth are recorded separately and in detail due to the great amount of information they can yield. If preservation allows, an age-at-death estimation may be done. This method should not be confused with the time elapsed since the death of the individual, it rather attests of the individual's approximate age at the time of their death. This is done based on the skeletal changes in growing children (Scheuer & Black, 2000), degeneration in the adult skeleton (methods described in Albert & Maples, 1995; Buikstra & Ubelaker, 1994; DiGangi et al., 2009), and dental wear caused by chewing coarse foods (Brothwell, 1981; Lovejoy, 1985). The male or female sex of individuals may also be estimated, based on sexually dimorphic traits of the skull and pelvic bones (Buikstra & Ubelaker, 1994). In addition to this, logistic regressions were applied to strengthen conclusions (Albanese et al., 2008; Walker, 2008). Variation in measurements, musculoskeletal markers (MSM) and discrete traits, or non-metric variation,

were recorded in anticipation for future demographic studies of this population. Finally, paleopathologies and degenerative joint diseases were also recorded.

Grave no. 2

This burial contains the remains of a well-preserved female, estimated to have died between the ages of 30 and 39 (Pic. 7). Her height was approximately 150-160 cm during life. The body was placed extended on its back in the east-west orientation, with the head in the west and the forearms crossed over the stomach. The bones are in articulation, meaning that the anatomical connections that we see during life were not altered. This shows that the body was not moved after being buried (Duday, 2005, pp. 166-168). A noteworthy feature of this individual is the extremely poor dental health. Periodontal disease, tooth loss, caries and extreme dental wear were all observed. One final significant attribute of this skeleton is the development of MSM on the femora. These traits include bilateral Allen's fossa, femoral plaque, and strongly marked gluteus muscle insertions and linea aspera (pilasterism) (Pic. 8 top). Lumbar vertebra herniations, or Schmorl's nodes, were also noted on the inferior body of four vertebra and on the superior body of two vertebra (Pic. 8 bottom).

Pic. 7. Grave #2. Sioni Section. Samshvilde. 2017.



Pic. 8. Grave #2 (detail). Sioni Section. Samshvilde. 2017. Top left: proximal left and right femurs, anterior view, bilateral Allen's fossa indicated; Top right: proximal left and right femur, posterior view, MSM include A) posterior extension of the femoral head, B) lesser trochanter, C) gluteal line, D) linea aspera; Bottom left: two lumbar vertebra, superior view, single Schmorl's nodes; Bottom right: four lumbar vertebra, inferior view, single Schmorl's nodes.

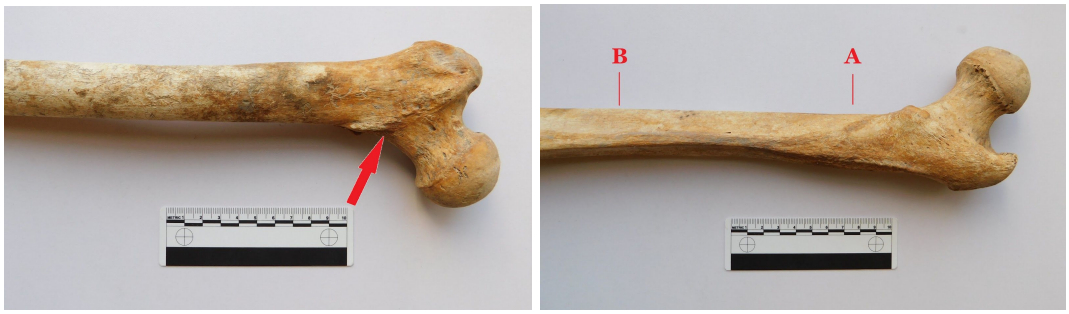
Grave no. 4

Unlike the previous grave the bones from grave no. 4 are disarticulated and commingled. This signifies that anatomical connections have not been preserved. The first step of analysis in this case was therefore the determination of the minimum number of individuals (MNI) in the grave. To accomplish this, in addition to following the methodology described in White and Folkens (2009 p. 339), the Albanese et al. (2008) linear regression was used to identify one adult female (individual 4A) and one male (individual 4B). Two other individuals were identified as infants from different age groups (individual 4C at age 6 and individual 4D younger than 6 years), giving this assemblage a MNI of four. Individual 4A died at approximately 35-39 years of age, while individual 4B died between 14 and 19 years. It was not possible to associate the skull and mandible from this assemblage to either individual 4A or 4B. Sex remains undetermined and the age estimated by dental wear (25-30 years), although imprecise, does not conform to the estimates for either adult individual of this grave (Pic. 10). We could cautiously assume that a third adult is present, but this should be confirmed after a better understanding of dental wear rates in medieval Georgia has been gained. It was not possible to estimate the height of the adult individuals as this is measured

on the long bones (bones of the arms and legs), and none were completely preserved. Notable development of muscle attachment areas on the femur of individual 4A include the intertrochanteric line (origin of the vastus muscles), the gluteal line (origin of the gluteal muscles) and the linea aspera (origin of the adductor, femoral biceps, gluteal and pectineal muscles) (Pic. 11). The femur of individual 4B is marked by advanced cribra femoris (Pic. 12), which is more commonly observed on juveniles in literature (Radi et al., 2013). This conforms with the previously noted age estimation, which was done by observing the epiphyseal line on the same element. Pathological lesions include three Schmorl's nodes and 2 osteophytic lipping on thoracic vertebra.

Pic. 9. Grave #4. Sioni Section. Samshvilde. 2017.

Pic. 10. Grave #4 (detail). Sioni Section. Samshvilde. 2017. Unassigned skull and mandible belonging to one individual (3rd adult?), age-at-death 25-30 years, sex undetermined.



Pic. 11. Grave #4 (detail). Sioni Section. Samshvilde. 2017. Ind. 4A (female), proximal right femur. Left: anterior view, vastus MSM indicated; Right: posterior view, MSM include A) gluteal line and B) linea aspera (pilasterism).

Pic. 12. Grave #4 (detail). Sioni Section. Samshvilde. 2017. Ind. 4B (male), proximal left femur, anterior view, cribra femoris indicated and epiphyseal line visible.

Preliminary conclusions

After having completed this preliminary phase of analysis, it appears that the preservation conditions of the bones from the Sioni cemetery of Samshvilde make them suitable for bioarchaeological, demographic and mortuary analysis. Because these all require a larger amount of individuals to yield significant results (ideally the entire cemetery population) we intend to continue the excavation in upcoming seasons. In addition to assessing the main biological traits of all future individuals (age-at-death, sex, height) we will record a maximum of information (measurements, non-metric variation, pathologies, articular surface modification and MOS) so that any patterns in the cemetery population can be brought to light.

Determining the precise chronology of the cemetery will be a central topic. There are no grave goods to aid us in this task and, despite the fact that the 8th century A.D. Sioni cathedral is peripheral to the cemetery, there is no way to confirm their contemporaneity. As of now it is only possible to affirm that graves no. 2 and no. 4 are cut into the high medieval period stratigraphic layers from the 11-13th century, putting them in the earlier 14-15th century layer. This chronology is supported by a palynological analysis on soil samples gathered under the skeleton from grave no. 2. Kvavadze (2017) notes the presence of blue fibers in the grave, indicating that the woman was dressed in a blue garment on the day of her death. It is considered that blue was the “royal color” in the medieval period and that it was reserved for women. We will therefore suggest that the woman from grave no. 2 was a high social status individual in Samshvilde, despite her modest grave. This valuable information is not only corroborating our estimation of biological sex (done on the bones) with social gender, but could also prove useful in identifying burial practices of different social classes.

Already we can see that there is a diversity in burial practices at Samshvilde. Although the extended supine position such as seen in grave no. 2 is widely accepted as the most typical position for medieval burials, this question has never been studied in depth using mortuary analysis in Georgia. At this point it seems like a fairly straightforward assumption to say that the occupants were Christians. This is mainly due to the burial style and the proximity to the cathedral. The individual from grave no. 2 is buried in a very typical Christian fashion: laying extended on the back, with the arms crossed on the abdomen, with modest to no grave goods, and oriented in the east-west axis with the head to the west (Mindorashvili, 2014, p. 210). Disturbed burials such as grave no. 4 were also commonplace in this burial tradition, since consecrated ground was limited and burials reused. Nonetheless, even after stating this, we still cannot exclude the possibility that these burials arise from Islamic tradition, since muslim burials practices were diverse and their elements are known to overlap with Christian ones (Peterson, 2013).

Another topic of interest for the Sioni cemetery population will be MSM, particularly those that can be interpreted as markers of occupational stress (MOS). We have observed numerous enthesopathies in both graves so far. Enthesopathies are changes on bone tissue at the site of muscle and ligament insertions. They occur when the muscle is solicited repetitively, causing irregularities on the bone from the prolonged and repeated external stress (Kennedy, 1989). In certain cases they can be associated to certain habitual or occupational activities such as squatting (Singh, 1959) or load bearing (Capasso et al., 1998), which in turn may give us valuable information on the lifestyle of the ancient inhabitants of Samshvilde. So far such traits have been observed on the femurs of the woman from grave no. 2 and individual 4A. Although this sample size is small, a pattern has already emerged:

both individuals are female and died in their thirties. The younger individuals from grave 4 are not affected, which is consistent with previous observations that their prevalence in a population increases with age (Radi et al., 2013). We also hope to determine if any sexual dimorphism can be observed, or, in other words, if tasks were distributed differently between men and women, as it has been observed osteologically in some medieval populations (Molleson, 2007, p. 21). One hypothesis is that observed MSM on the proximal end and shaft (upper leg) were caused by walking, running or climbing on the uneven landscape at Samshvilde. As was noted earlier, the city is located on a promontory delimited by a rocky escarpment, one that may have been climbed down regularly to gather resources. Another plausible explanation is a long-distance walking and running or squatting.

A final subject of interest will be health and diet at Samshvilde. Poor bucco-dental health is the norm in medieval populations (Hillson 2005:293), and the individuals from Samshvilde fit this profile so far. The woman from grave 2 has lost two molar teeth to tooth decay. This is most likely due to honey, fruit and/or wine consumption, since there is a strong association between this dental disease and sugar in the diet (Hillson 2005:291) these foods are the most likely causes. Another commonly found pathology on this individual, and some unassigned vertebra from grave 4, is Schmorl's nodes (Waldron 2009:45). Characterized as circular depressions on the body of the vertebra (Pic. 8, bottom), they are the result of heavy load bearing and will be studied in conjunction with OSMs to identify the strenuous activities potentially at cause. A final lesion noted on individual 4B is far less well prevalent, and far less studied. Cribra femoris has been linked to various aetiologies such as calcium- or iron-deficiency anemia (Saunders & Havencroft, 1980) and tuberculosis (Blondiaux et al,. 2015), but according to Waldron (2009) this has not been verified clinically and has a multifactorial etiology (many causes) (Djuric, 2008).

It must be mentioned that, although the Sioni cemetery at Samshvilde promises to lead to valuable bioarchaeological research, there are some limits to consider. Most are due to the paucity of similar studies in the Caucasus, and therefore our relative lack of knowledge on the osteological characteristics of medieval Caucasian populations. The observer has already noted some inconsistencies with the dental wear methods of age estimation by Brothwell (1981) and Lovejoy (1985) so they were excluded from results. Because they rely heavily on food sources (grit and sand in flour causes dental enamel deterioration) we will need to pursue research on this subject and adjust the wear stages based on local wear rates.

We strongly believe, as has been shown in a growing body of literature (for example Bigoni et al., 2013; Connell, 2012; Kowaleski, 2014), that the bioarchaeological study of georgian medieval populations can yield new information on demography, occupation, diet, nutrition, and much more… complimentary to historical sources.

Conclusion

Because only two graves have been studied and presented in this article, and most methods in bioarchaeology target the study of populations, results presented here are only preliminary. In the coming field season 2018 we intend to study several more graves from Sioni section and prepare bioarchaeological and archaeological materials from the graves excavated in 2016 for publication.

Bibliography

Albanese, J., Eklics, G., & Tuck, A. (2008). A metric method for sex determination using the proximal femur and fragmentary hipbone. *Journal of forensic sciences, 53*(6), 1283-1288.

Albert, A. M., & Maples, W. R. (1995). Stages of epiphyseal union for thoracic and lumbar vertebral centra as a method of age determination for teenage and young adult skeletons. *Journal of Forensic Science, 40*(4), 623-633.

Berikashvili D. Archaeological Excavations in Samshvilde (materials of the years 2015-2016). The publishing house of the University of Georgia. Tbilisi. 2016

Bigoni, L., Krajíček, V., Sládek, V., Velemínský, P., & Velemínská, J. (2013). Skull shape asymmetry and the socioeconomic structure of an early medieval central European society. *American journal of physical anthropology*, *150*(3), 349-364.

Blondiaux, J., de Broucker, A., Colard, T., Haque, A., & Naji, S. (2015). Tuberculosis and survival in past populations: A paleo-epidemiological appraisal. *Tuberculosis*, *95*, S93-S100.

Brothwell, D. R. (1989). The relationship of tooth wear to aging. *Age markers in the human skeleton*, 303-318.

Buikstra, J. E., and Ubelaker, D. H. 1994. *Standards for Data Collection from Human Skeletal Remains*. Fayetteville: Arkansas Archaeological Survey Report Number 44.

Capasso L., Kennedy K.A.R. and Wilczak C.A. 1990 Atlas of Occupational Markers on Human Remains. Edigrafital S.P.A. Teramo, Italy.

Chilashvili L. ქალაქები ფეოდალურ საქართველოში II. / The cities in Feudal Georgia. Vol. II. Tbilisi. 1970 [in Georgian]

Connell, B., Jones, A. G., Redfern, R., & Walker, D. (2012). *A bioarchaeological study of medieval burials on the site of St Mary Spital: Excavations at Spitalfields Market, London E1, 1991-2007*. Museum of London Archaeology.

Djaparidze Ot. ქართველი ერის ეთნოგენეზისი / Georgia at its Prehistoric Origins. Tbilisi. 2006. [in Georgian]

Djuric, M., Milovanovic, P., Janovic, A., Draskovic, M., Djukic, K., & Milenkovic, P. (2008). Porotic lesions in immature skeletons from Stara Torina, late medieval Serbia. International Journal of Osteoarchaeology, 18(5), 458-475.

DiGangi, E. A., Bethard, J. D., Kimmerle, E. H., & Konigsberg, L. W. (2009). A new method for estimating age-at-death from the first rib. *American Journal of Physical Anthropology, 138*(2), 164-176.

Grigolia G; Berikashvili D. Samshvilde Neolithic Stone Industry. Archaeology. Vol.2. The publishing house of the University of Georgia. Tbilisi. 2018

Gogadze E. თრიალეთის კულტურის პერიოდიზაცია და გენეზისი / The Genesis and Periodization of Trialeti Culture. Tbilisi. 1972. [in Georgian]

Kennedy K. A. R., 1989. Skeletal markers of occupational stress. In Iscan M. Y. et Kennedy K. A. R. (eds.), *Reconstruction of life from the skeleton*. New York, Liss, pp. 130-160.

Kowaleski, M. (2014). Medieval people in town and country: new perspectives from demography and bioarchaeology. *Speculum*, *89*(3), 573-600.

Kuftin B. არქეოლოგიური გათხრები თრიალეთში / Archaeological Excavations in Trialeti. Tbilisi. 1941. [in Russian]

Kvavadze E. პალინოლოგიური კვლევის შედეგები სამშვილდეში 2017 წელს / The Results of Palynological Studies in Samshvilde in 2017. Tbilisi. 2017 [in Georgian]

Lovejoy, C. O., Meindl, R. S., Pryzbeck, T. R., & Mensforth, R. P. (1985). Chronological metamorphosis of the auricular surface of the ilium: a new method for the determination of adult skeletal age at death. *American journal of physical anthropology, 68*(1), 15-28.

Mindorashvili, D. საქართველოს არქეოლოგია / Archaeology of Georgia: Medieval period. Batumi. 2014. [in Georgian]

Mirtskhulava G. სამშვილდე / Samshvilde. Tbilisi. 1975. [in Georgian]

Molleson, T. (2007). A method for the study of activity related skeletal morphologies. *Bioarchaeology of the Near East*, *1*, 5-33.

Odilavadze; Berikashvili; Gabunia; Gagoshidze. სამშვილდის არქეოლოგიური ექსპედიციის 2015 წლის წინასწარული კვლევის შედეგები / The preliminary results of Samshvilde Archaeological Expedition of the University of Georgia. Tbilisi. 2015 [in Georgian]

Petersen, A. (2013). The archaeology of death and Burial in the Islamic world. In *The oxford handbook of the archaeology of death and burial*.

Pitskhelauri K. ცენტრალურ ამიერკავკასიური კულტურა ძვ.წ. XIV-XIII საუკუნეებში / the Central Transcaucasian Archaeological Culture of XIV-XIII cc B.C.. Tbilisi. 2005 [in Georgian]

Radi, N., Mariotti, V., Riga, A., Zampetti, S., Villa, C., & Belcastro, M. G. (2013). Variation of the anterior aspect of the femoral head-neck junction in a modern human identified skeletal collection. *American journal of physical anthropology*, *152*(2), 261-272.

Saunders, C., Havercroft, A. B., & POWERS, R. (1980). Excavations at St Helen's Church, Wheathampstead. *Hertfordshire Archaeology*, *8*, 102.

Scheuer, L. and Black, S. (2000). *Developmental Juvenile Osteology*. Elsevier, Academic Press.

Singh, I. (1959). Squatting facets on the talus and tibia in Indians. *Journal of anatomy*, *93*(Pt 4), 540.

Walker, P. L. (2008). Sexing skulls using discriminant function analysis of visually assessed traits. *American Journal of Physical Anthropology, 136*(1), 39-50.

White, T. D., & Folkens, P. A. (2005). *The human bone manual*. Academic Press.