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Sergazy Sakenov, Aikumis Raissova, Olzhas Mysyr, Zerrin Aydın Tavukçu

INTERDISCIPLINARY STUDY OF ANTHROPOLOGICAL MATERIAL FROM THE SETTLEMENT OF SHAGALALY II*

Due to the widespread use of natural science methods in archaeological research, the study of intramural burials of the Bronze Age is becoming more relevant. The paper presents for the first time the results of an anthropological analysis conducted on materials obtained on the territory of the settlement of Shagalaly II (Zerendy district, Akmola region, Republic of Kazakhstan). Based on the results of archaeological and anthropological research, the burial materials given in the article are interpreted and divided into several categories. Structural and comparative analyses revealed the following types of intramural burials on the territory of the settlement: special burials, building sacrifices and the reuse of existing burial structures. Burial complexes in settlements make it possible to reconstruct the religious and ideological views of the population of the Bronze Age.

Keywords: Eurasia, Northern Kazakhstan, Bronze Age, anthropological analysis, settlement, intramural burials, construction sacrifices.

About the authors: Sakenov Sergazy[1], PhD, Alikhan Bokeikhan University; Raissova Aikumis[2], PhD Candidate of Durham University; Mysyr Olzhas[3], 3-year Doctoral Student of Alikhan Bokeikhan University; Aydın Tavukçu Zerrin[4], Doctor of Social Sciences, Associate Professor, Ataturk University.

Contact information: [1,3]071400, Alikhan Bokeikhan University, 11, Mangilik El Str., Semey, Kazakhstan; [2]Durham University, South Rd, Durham DH1 3LE, United Kingdom; [4]25240, Ataturk University, Erzurum, Turkey; e-mail: [1]sergazi_82@mail.ru; [2]aikumisraisova@mail.ru; [3]odaurenuly@mail.ru; [4]ztavukcu@atauni.edu.tr.

С.К. Сакенов, А. Раисова, О.Д. Мысыр, З. Айдын Тавукчу

МЕЖДИСЦИПЛИНАРНОЕ ИЗУЧЕНИЕ АНТРОПОЛОГИЧЕСКОГО МАТЕРИАЛА ИЗ ПОСЕЛЕНИЯ ШАГАЛАЛЫ II

В связи с широким применением в археологических исследованиях естественно-научных методов изучение интрамуральных погребений эпохи бронзы становится более актуальным. В работе впервые приводятся результаты антропологического анализа, проведённого на материалах, полученных на территории поселения Шагалалы II (Зерендинский р-н, Акмолинская обл., Республика Казахстан). Основываясь на результатах археологического и антропологического исследования, материалы погребений, приведённые в статье, интерпретированы и подразделены на несколько категорий. Структурный и компаративный анализы позволили выявить на территории поселения следующие типы интрамуральных захоронений: специальные захоронения, строительные жертвоприношения и вторичное использование существующих погребальных конструкций. Погребальные комплексы на поселениях дают возможность реконструировать религиозно-мировоззренческие взгляды населения эпохи бронзы.

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Ключевые слова: Евразия, Северный Казахстан, бронзовый век, антропологический анализ, поселение, интрамуральные погребения, строительные жертвоприношения.

Сведения об авторах: Сакенов Сергазы Кайырбекович[1], PhD, Alikhan Bokeikhan University; Раисова Айкумис[2], PhD докторант Даремского университета; Мысыр Олжас Дәуренұлы[3], докторант 3-го курса, Alikhan Bokeikhan University; Айдын Тавукчу Зерин[4], доктор социальных наук, ассоциированный профессор, Университет Ататюрка.

Контактная информация: [1,3]071400, Казахстан, г. Семей, ул. Мангилик Ел, 11, Alikhan Bokeikhan University; [2]Durham University, South Rd, Durham, DH1 3LE, United Kingdom; [4]25240, Turkey, Erzurum, Ataturk University; e-mail: [1]sergazi_82@mail.ru; [2]aikumisraisova@mail.ru; [3]odaurenuly@mail.ru; [4]ztavukcu@atauni.edu.tr.

Introduction

The archaeological microdistrict of Shagalaly-Kenotkel is located in the north of the Republic of Kazakhstan, on the territory of the modern Zerendy district, an administrative unit of the Akmola region. The microdistrict was distinguished due to the accumulation of hundreds of monuments from different periods in a relatively small area. The monuments are concentrated in a picturesque natural landscape, which is represented by the Shagalaly River and its right tributary, the small Koshkarbay River. A distinctive feature of the landscape is its vertical zoning: the wide valleys of the Shagalaly River and its tributaries are sandwiched by low mountain formations and surrounded by forests, which give way to forest-steppe space.

The earliest monuments of the archaeological microdistrict are two Neolithic sites —Kenotkel VIII and IX, located on the right bank of the Shagalaly River, 500 m east of the village of Kenotkel (Zaibert et al. 2008: 413—414). The cultural stratum of Neolithic sites contains stone labor tools, which were manufactured using light brown quartzite and gray jasper. The fragments of ceramic vessels are thick-walled, roughly shaped, and decorated with pitted impressions.

The Chalcolithic and Early Bronze Ages are represented by the multi-layered settlement of Kenotkel XIII; it is located on the right bank of the Shagalaly River and occupies an area of 25 thousand sq.m. (Zaibert, Pleshakov 1978: 242—250). This natural and climatic niche was intensively developed during the Bronze Age, as evidenced by the concentration of monuments from this period.

The Bronze Age settlement and burial ground are located on the right bank of the Koshkarbay River. One of the large burial grounds is Koshkarbay I, the area of its burial field is 30 hectares. According to the regional archaeological report, eleven burial structures were examined on its the territory. Another burial ground, Koshkarbay II, is located 800 m east from the village of Kenotkel. It consists of stone fences located along a west-east line and has a linear layout. Of the 70 stone fences visible on the ground, emergency surveys were carried out on 10 fences located along the country road.

Another large burial ground is located on the left bank of the Koshkarbay River. The Koshkarbay III burial ground consists of dozens of stone fences (mostly square in shape), with stone boxes in the central part (Ibrayev 2015). Many other monuments are concentrated on both banks of the Shagalaly River; these are burial grounds such as Kenotkel XIII, consisting of 19 mounds, the materials of which date back to the 14th century BC, and Kenotkel XIX, numbering 38 burial structures. According to data obtained from regional archaeological reports, on the territory of this burial ground there are mounds with earthen embankments, fenced with vertically placed granite slabs, tentatively dated to the 18th—16th centuries BC. It should be noted that in a relatively small area, in which entire burial fields of the Bronze Age are recorded, among the burial structures there are single barrows of the Iron Age.

At the present stage, on the territory of the archaeological microdistrict Shagalaly-Kenotkel, in particular around the Bronze Age settlement of Shagalaly II, two mounds of the Iron Age, two

mounds of the Hunno-Sarmatian period and one burial structure of the Turkic period have been studied (Valchak et al. 2017: 142—154; Yarygin, Sakenov 2021: 215—225; Khassenova et al. 2023: 18—34).

The discovery of burials on the territory of the Shagalaly II settlement itself was interesting and unexpected (Fig. 1). Inlet burials were explored in the inter-dwelling space. They were performed in ready-made burial structures where burials had previously taken place. Archaeological studies of burial structures of the Bronze Age, Iron Age mounds and inlet burials on the territory of the settlement allowed us to accumulate multi-temporal and interesting anthropological material.

In this work, anthropological material was selected specifically from these non-standard inlet burials (Fig. 2). The main goal of the scientific research is to determine the absolute chronology of the inlet burials discovered in the inter-dwelling space using radiocarbon dating. To determine the radiocarbon analysis, samples of coals collected from the studied dwellings were selected. The dwellings were of the frame-and-post type. One of the reasons for the destruction of the settlement was a fire. After the fire, the charred logs were well preserved. For radiocarbon dating, bone materials from individuals (selected samples of teeth and ribs) were used. An anthropological analysis of the available skeletons was conducted, focusing on their morphological, craniological, osteometric, and paleopathological characteristics.

Materials and methods

To determine the absolute age of carbon-bearing objects, the radiocarbon method was used. Three dates were obtained in the radiocarbon dating and electron microscopy laboratory at the Institute of Geography of the Russian Academy of Sciences (Moscow, Russian Federation), two dates were obtained in the Vilnius Radiocarbon mass spectrometry laboratory (Vilnius, Republic of Lithuania) and two dates in the 14CHRONO center of Queen's University (Belfast, Northern Ireland, Great Britain). Charred logs, as well as bones and teeth of buried individuals, were used as dating materials. All samples for radiocarbon analysis were selected on the territory of the Shagalaly II settlement. In radiocarbon laboratories, samples were pretreated using a standard alkaline-acid-base-acid bleaching protocol. IAEA C3, OXII and IAEA C9 were used as reference materials. To convert conventional age to calendar age, a calibration procedure was applied, which also eliminates the difference of 3% in half-life. Equipment used for analysis: single-stage accelerator mass spectrometer (SSAMS, NEC, USA), automated graphitization equipment AGE-3 (IonPlus AG). Radiocarbon dates were compared using traditional methods of archaeological science and the method of stratigraphy.

The following methods were used to study the anthropological material. Determination of sex and age was carried out comprehensively, in combination of several standard methods by examining the supraorbital ridges, mastoid processes, mental eminence, gonial angles, occipital crests, glabella, as well as the frontal and parietal eminences, the greater sciatic notch, the inferior ramus of the pubis, and the proportions and curvature of the sacral wings, and the shape of the ilium. These anatomical features provide reliable indicators when combined, as suggested by established research (Buikstra and Ubelaker 1994; Cox and Mays 2000; White and Folkens 2000; Brickley and McKinley 2004; Mitchell and Brickley 2017).

Additionally, age estimation incorporated the analysis of degenerative changes in the pubic symphysis (Brooks and Suchey 1990), the morphology of the auricular surface (Meindl and Lovejoy 1985), the morphology of the sternal ribs (Işcan et al. 1984; 1985; İşcan 1985), and patterns of tooth wear (Brothwell 1981). Methodologies, including those developed by Walker (2008), Bruzek (2002), and Rogers T.L. (1999), Rogers N.L. et al. (2000), were also utilized to enhance accuracy.

Results of the study of anthropological material

Funeral structures were examined on the territory of the settlement of Shagalaly II; they were identified in the open space between dwellings no. 5 and 6.

Burial no. 1 is located four meters to the east of dwelling no. 6 (Fig. 3: *1*). When clearing the inter-dwelling space in a square E/3 at a level of 40 cm, an accumulation of stones was discovered. During thorough cleaning, a spot of a grave pit was identified, filled with flat granite slabs. The grave spot measures 1.75×1.0 m. At the level of 0.60 m, the grave spot acquired an oval shape. The length at this level was 2 m, width 1 m. Oriented with long sides along the north-south line. In the northern part of the grave spot, at the same level, a vertical stone was dug in. A human burial was discovered at a depth of 1.10 m. The burial consists of the remains of the upper part of the skeleton up to the wide vertebrae. Based on the remaining bones, the orientation was determined — head to the south, face to the east. Only the upper part of the skeleton up to the pelvis was recorded. There are traces of damage on the skull of the buried person (Fig. 4).

In the northern part of the burial chamber, the bones of a sacrificial animal (lower jaw, tibia, astragalus and vertebrae of small cattle) lay scattered (Shagirbayev, Sakenov 2023). This burial is secondary; a pre-existing ready-made burial structure was used to perform it. In the process of performing ritual actions, the burial chamber was cleared of the skeleton of a previously buried person, the skeleton was thrown outside the grave pit; During archaeological excavations, a separate and nearby human skull and some bones were found. In archaeological documentation, the burial is recorded as burial 2. In this work, the designations will be as follows: the secondary burial and the skeleton found directly in the grave pit is burial 1, individual no. 1, and the burial chamber and the buried, then discarded human skeleton is burial 1, individual no. 2 (Fig. 3: *2*).

A craniological analysis of the skull of individual no. 2 from burial 1 was carried out (Fig. 5). Sex assessment was based on the "Standards for data collection from human skeletal remains" diagram, as well as using a 1—5 point scale adapted by Walker (Buikstra and Ubelaker 1994; Walker 2008). Dimorphic features of the skull (the nuchal crest, the mastoid process, the supraorbital margin, the glabella and the mental eminence) were assessed to determine sex. According to the analysis of the presented features, the skull is presumably, belonged to a female individual. The integrity of the dental remains does not permit a reliable estimation of the individual's age, as the teeth were lost during excavation activities, despite being fully preserved during the individual's lifetimeAs a result of a craniological examination, traces of restoration after trepanation performed by curettage were found on the skull (Fig. 6). The healed wound is an oval depression measuring 15×30 mm, 4 cm in diameter in the left part of the parietal bone, 3 cm from the sagittal suture. Traces of ossification indicate that the individual continued to live with the injury for some time (Fig. 6).

Burial 3 was discovered in squares B, C-2 at a level of 0.4 m. The burial structure consisted of stone slabs placed on edge, and in the central part the stones were matched to each other and laid flat. The grave is oval in shape, oriented with its long side along the north-south line. The dimensions of the grave pit are 1.9×1 m (Fig. 3: *3*).

At a level of 1.05 m, the skeleton of a buried individual was discovered, lying in a crouched position on the right side, head to the south, face to the east. On the right side, the shoulder and back of the buried person are supported by two flat stones (individual no. 1). The bones are poorly preserved, the pelvic bones and tibia are completely missing. Several boards 30—65 cm long are recorded on the surface of the skeleton. Just above the head, a whole jar-shaped vessel 17.5 cm high was found, with a rim 12.5 cm in diameter. The surface of the vessel is light brown, dark gray at the fracture. The firing was of poor quality, and the mixture contained coarse-grained impurities. There is an inexpressive rim along the shoulder of the vessel, decorated along the entire circumference with a carved ornament in the form of the Latin numeral X. According to its morphological characteristics, this vessel belongs to the Alekseev-Sargara group. At the same level, in the northwestern corner of the burial chamber, the skull of another person was discovered, most likely buried earlier (individual no. 2); his bones were moved aside for the purpose of subburying another, above-described individual no. 1.

Anthropological characteristics and analysis of individual no. 1 from burial 3. The individual's skull is not completely represented, the bones of the facial part of the left side are missing (palatine

bone, vomer, zygomatic bone, inferior nasal concha, nasal bone, hyoid bone, upper jaw). No individual abnormal changes were found on the skull. There is no caries on the remaining teeth, the condition of the teeth is excellent.

The cranial remains of Individual no. 1 from burial 3 are preserved incompletely, with the absence of several bones from the facial region of the left side, specifically the palatine, vomer, zygomatic, inferior nasal concha, nasal, hyoid bones, and upper jaw. Inspection of the cranial remains shows no evidence of abnormal morphological alterations. The dentition is well-preserved, exhibiting neither carious lesions nor other dental anomalies, and overall dental condition is assessed as good.

The postcranial skeletal inventory is similarly incomplete, lacking bones of the lumbar vertebrae, pelvic bones, and phalanges from both the upper and lower limb bones. The distal ends of the limbs are unfused, correlating with the individual's juvenile age. There are no observed degenerative-dystrophic changes in the vertebrae, and no pathologies are evident in the preserved bones. Notably, there is a normal level of porosity in the diaphyses of the long bones, consistent with ongoing growth processes typical in non-adults.

According to the analysis of the dental system, the bones belong to an individual no older than 9—12 years. Also, the diphyseal ends of the long bones were in the process of fusion (bones are still fusing). The determination of biological sex through morphological characteristics is challenging due to the absence of definitive sex and age-related skeletal features, which are typically unreliable before puberty. Consequently, peptide analysis is recommended as a more definitive method for sex determination in prepubescent individuals, as detailed in recent studies.

In the same burial with the juvenile skeleton, the fully preserved skull of an adult, referred to as Individual no. 2, was located in the northeast corner of the unpaved burial chamber of Burial 3. It is likely that this skull pertains to an individual who was interred prior to the juvenile. Over time, the grave structure and burial chamber were repurposed for the interment of the juvenile. The only remnant of the initially interred individual was the skull, which had been relegated to the corner of the chamber.

Craniological analysis of the skull of individual no. 2 showed the following results. Only the skull is preserved. The sex determination was conducted using the criteria outlined in the "Standards for Data Collection from Human Skeletal Remains" (Buikstra and Ubelaker 1994), employing a 1—5 point scale adapted by Walker (2008). Dimorphic features assessed included the nuchal crest, mastoid process, supraorbital margin, glabella, and mental eminence. The analysis suggested that the skull likely belonged to a male (M?). The dentition was fully preserved, showing a significant degree of dental wear consistent with an estimated age of 35—40 years at the time of death. Notable features include exposed dentin and worn enamel on both the lower and upper teeth, indicative of advanced tooth wear (Meindl and Lovejoy 1985).

Due to the incomplete representation of the individual's skeleton, the conclusions regarding sex and age differentiation are less reliable. For a more accurate determination, it is necessary to utilize sex and age markers from the postcranial skeleton comprehensively. No individual pathological, abnormal, or traumatic alterations were detected on the skull.

Burial 4 was examined in the inter-dwelling space. In square A-1, at a level of 20 cm, an accumulation of stones was recorded (Fig. 3: *4*). After clearing away small stones, a large stone slab was identified, under which a burial was discovered at a level of 0.50 m. The man was lying in a crouched position on his left side, with his head to the southeast. Near the head of the buried person, one intact pot-shaped vessel was found. It had a smooth profile, high of 12 cm and a rim with diameter of 13 cm. On the fracture, the dough is dark gray in color with coarse-grained impurities. The thickness of the vessel wall is 0.6 cm, the thickness of the rim is 0.8 cm. The firing is of high quality; the ornament is applied only along the shoulder with horizontal «herringbones». The second

vessel is can-shaped, height and diameter 10 cm. The vessel is dark gray in color, well fired. Along the rim the ornament is applied with horizontal lines in the form of cut stripes. The walls of the vessel are decorated with vertical «herringbones».

Anthropological analysis of the skeleton from burial 4. The preservation of the bones is incomplete (45%), most of the bones are presented in fragments, and general fragility of the bones is observed. The remains are represented by fragments of the bones of the skull (frontal, right side of mandibular) and postcranial skeleton (upper limbs: radius, ulna; lower limbs, illum and acetabulum of the right-side pelvis), fragments of rib bones, phalanges of bones of the lower and upper extremities. The sex of the individual is determined; presumably belonged to a female (F?) based on the available bones of the postcranial skeleton and skull Walker (2008), Bruzek (2002), Rogers G.F. (2011). Dimorphic features of the skull were assessed (the nuchal crest, the mastoid process, the supraorbital margin, the glabella and the mental eminence). Considering that the pelvic bones are represented only by the ilium and acetabulum depression of the right side of the paired pelvic bone, markers of the greater sciatic notch were used (Bruzek 2002). Discriminant analysis of long bones is related to various aspects: the absence of large samples of articulated skeletons of this chronology for the reasons already mentioned; the poor preservation and usual fractionation of prehistoric bone remains which hinders anthropometric analysis; the usual reuse of Late Prehistoric tombs which frequently leads to the identification of human remains from different chrono-cultural periods; and the handicap of making reliable sex estimations in archaeological populations (Díaz-Navarroet al. 2024: 7).

As for the teeth, only the first premolar and canine of the left lower part of the jaw were preserved; the remaining three molars of the lower jaw were lost intravitally. Destruction of the alveolar process as a result of an abscess in the area of the mandibular molars was also noted. Exposed dentin and worn enamel on existing teeth are observed, and the abrasion (wear) of the teeth is high (Fig. 8: *B*). A process involving wear of the tooth surface by several mechanisms that are not mutually exclusive: a) tooth-tooth friction; b) friction of the tooth against foreign bodies; c) destructive chemical processes not associated with bacteria.

Dental wear is not defined as pathological unless it causes exposure of the pulp chamber, resulting in infection of the pulp. Diet is also a modifying factor in tooth surface wear: a harsh and/or abrasive and/or chemically erosive diet provokes faster wear, while a refined, non-abrasive, non-erosive diet leads to slower wear. In addition, the mandibular torus (torus mandibularis) was recorded from the inside of the individual's lower jaw.

Torus mandibularis (Fig. 8: *A*), a nonmetric feature commonly recorded in bioarchaeological studies, is a bony growth located on the lingual side of the mandible, in the area between the canines and fifth premolars (Hassett 2006). There is no consensus on the aetiology of torus mandibularis. Some postulate genetic factors, others note environmental factors (Huda Yousef et al. 2022; Mattoo, Kumar 2009). Masticatory hyperfunction has also been proposed as a possible mechanism for additional bone growth, as teeth are closely related to bone development (Huda Yousef et al. 2022). Mandibular tori are usually asymptomatic and painless. Determining the age of an individual remains impossible due to the poor preservation of the dental system and the absence of most teeth and bones of the postcranial skeleton.

The preservation of the bones of the postcranial skeleton is unsatisfactory, the compact bone is fragile. The skeleton is represented by the bones of the upper extremities (clavicle, humerus, ulna, radius on both sides), lower extremities (left femur, the proximal part of the right femur is broken in the midshaft area under the influence of taphonomic factors), tibia, ilium, acetabulum of the right pelvis bones, small phalanges and rib fragments. The remaining bones of the postcranial skeleton are not preserved. There are pronounced enthesial changes on the diaphysis of the ulna, tibia and fibula.

The aetiology of the formation of enthesopathies in places of muscle attachment can be the result of excessive physical activity, as well as age. Archaeological observation shows that the burial belongs to a juvenile individuum, next to whom two small vessels were placed. If we consider in the

general context, the burial is located near the entrance of the dwelling, the skeleton is covered with a flat stone, the results of anthropological analysis showed wear of the ulna bones and flattening of the vertebrae. The totality of these data suggests that the teenager was engaged in excessive physical labor during his lifetime, and then she/he could be killed as a construction victim. No individual pathological changes or traumatic injuries were found on the bones.

It should be noted that in addition to adult burials, burials of children were found on the territory of the settlement, the skeletons of which were poorly preserved. Two infant burials were discovered under the walls of dwelling no. 6, one burial was revealed thanks to a preserved vessel, that is, a poorly preserved skull and bones of a baby were discovered under the vessel.

Chronology and historical and cultural affiliation

Based on the traditional stratigraphic method in archaeological science, it can be argued that the settlement of Shagalaly II is a multi-layered monument (Sakenov 2020: 378—384). Stratigraphic analysis of cultural layers made it possible to identify three construction horizons. The settlement arose at the very beginning of the 2nd millennium BC. The early cultural layer is characterized by ceramic complexes dating back to the early Alakul and early Fedorov stages of archaeological cultures, and there are also fragments of imported easel ceramics from the Namazga V and VI periods. The first burial structures around dwellings were built during this period. Samples of charred logs taken from the dwellings of the Shagalaly II settlement, according to radiocarbon dating, are considered within the chronological framework of the 18th—14th centuries BCE (see Table 1).

According to the results of stratigraphy and radiocarbon dating, the first burial structures appeared not far from the dwellings; we consider them within the framework of the 18th—16th centuries BCE. The following burials belong to this chronological period: individual no. 2 (separately found skull), burial 1; separate skull of individual no. 2 from burial 3 and burial 4.

Secondary burials: burial 1, individual no. 1; burial 3, individual no. 1. The anthropomorphic stele discovered in the burial chamber of burial 1, as well as a whole vessel found in burial 3 at the head of individual no. 1, are characteristic of the final stage of the Late Bronze Age, which corresponds to the materials of the third building horizon of the Shagalaly II settlement. Secondary burials are tentatively dated to the 14th—13th/12th centuries BCE.

Discussion

In the steppe zone of Eurasia, non-standard and secondary burials are occasionally recorded at Bronze Age monuments. On the territory of Kazakhstan, burials of this type have been noted and studied at the following monuments. In the west, in the Aktobe region of Kazakhstan, in the burial chamber of fence no. 30 of the Shanshar burial ground, a secondary burial was cleared (Tkachev 2010: 258). A burial located under a stone lining in the internal space of a rectangular stone fence (object no. 4) of the Aktogay burial ground was examined. The burial structure was reused (Tkachev 2010: 262).

The secondary use of funeral structures, as well as their very location directly on the territory of the ancient settlement, are among the non-standard phenomena and stand out from the traditional canons of the funeral rite. For example, as an analogy we can cite burials near dwellings explored in the Toksanbay settlement, located on the territory of the modern Beineu district of the Mangistau region of Kazakhstan. Two burials were studied here, one of them was discovered under the outer wall of a room located in the western part, where an incomplete male skeleton was cleared. The second burial was discovered under the masonry wall of the central room; only the bones of the lower limb, part of the pelvic bone and fragments of the skull were found there (Loshakova 2022: 76—77). Based on the location of the burial at the base of the walls of the room and the lack of integrity of the skeleton, the authors who studied this complex interpret such an extraordinary funeral ritual as a construction sacrifice (Loshakova 2022: 80).

Funeral complexes on the territory of settlement have been recorded in the Southern Trans-Urals; for example, two burials have been identified on the territory of the Stepnoe settlement. The

settlement is multi-layered; the site where the burials were discovered belonged to the periphery in the late Sintashta time (Batanina, Kupriyanova 2023: 101—111). These data are very similar to materials from fortified settlements of the Southern Trans-Urals, such as Arkaim, Kamenny Ambar, Ustye I, Kuisak, Stepnoye (Epimakhov, Petrov 2021; Kupriyanova 2018: 185).

A child's burial with a vessel from the Petrov archaeological culture, recorded in the early building horizon of the settlement of Shagalaly II and outside dwelling no. 6, as well as the burial of 4 teenagers, identified at the entrance to the dwelling, are interpreted by the authors as normative burial practice for this period.

According to the results of archaeobiological research, the buried individuals from the Stepnoe settlement originate from another region. This is also confirmed by the presence of foreign cultural ceramics, not typical for this area, which suggests the mobility of people and integration into a new society (Epimakhov et al. 2024: 57—58). Based on these facts, it can be assumed that the migration flow came from the forest-steppe region of Northern Kazakhstan to the west.

The wide distribution of burial complexes on the territory of settlements was known in Eastern Europe even during the period of the classical and late development of the Baden archaeological culture. In the monuments of this culture there are burials classified as intramural burials, which involved numerous secondary burials or human sacrifices (Sachße 2011: 127—134; Berseneva 2023). Thanks to anthropological analysis of funerary finds from the Baden settlement in Santana, rite and ritual were reconstructed. Anthropologists have identified traces of blows inflicted by a blunt object on the frontal bone. Based on these facts, researchers hypothesized that a teenager aged 10—11 years could have been sacrificed (Sava et al. 2014: 63).

In the case of the finds on the territory of the Shagalaly II settlement (burial 4), the skeleton of a juvenile buried outside the wall at the entrance to dwelling no. 7 can be interpreted as a construction victim. Such examples of human sacrifices performed in a settlement were recorded at another Bronze Age settlement — Ikpen II, located on the right bank of the Nura River in Central Kazakhstan. In the middle part of dwelling no. 1, under the clay coating of the floor, a grave pit was discovered and examined. When clearing it, the skeleton of a baby was discovered. His unusual position is documented — the baby was laid face down on his stomach (Tkachev 1999: 24). Two other buried infants were found outside the premises, near the walls of dwelling no. 1. These burials were carried out within the framework of the traditional funeral rites of the early Alakul time. The presence of construction victims is traditionally interpreted by many researchers as a ritual performed with the aim of ensuring well-being, fertility and prosperity for the inhabitants of the settlements (Zelenin 2004: 157—159). The construction sacrifice was made at the beginning of the process of developing the territory of a new settlement or during the construction of a dwelling. In the case of choosing a person as a victim, the ritual meant ensuring the protection of a specific home or the entire settlement (Tkachev 2013).

In addition to human sacrifices at the settlement of Shagalaly II, the authors draw attention to another interesting burial - this is a skull with traces of trepanation, which was subsequently thrown out of the burial chamber in another historical period. Burial 1, individual no. 2: traces of trephination found on the skull, fusion sites tell us that the person lived for some time after the operation, and after death was buried on the territory of the settlement. Most likely, such a non-standard burial is associated with the personal characteristics of the buried individual. In this case, traces of a complex operation on the skull and manipulation of the body after death indicate that this person played a certain social and religious role in society during his lifetime. The special social status of the deceased (healer, shaman, medium, etc.) became the reason for an extraordinary burial on the territory of the settlement. We can classify this category of burials as special. At this level of development of archaeological science (in particular, when studying settlement complexes of the Bronze Age), such intramural burials are recorded in many archaeological cultures of the Chalcolithic era of Eurasia.

The reasons for extraordinary (intramural) burials could be very different: the special social status of the deceased, sacrifices, special circumstances of death (Novikova 2011: 262). The interpretation of the settlement burial complexes is still far from complete, but it is already obvious that the burial practices of Bronze Age people were diverse and were not limited to burying the dead in burial grounds. Some of the rituals were carried out in settlements, the living were in close contact with the dead, and this was probably an epoch-making feature of the Bronze Age, despite significant regional and cultural differences (Berseneva et al. 2019: 137). As studies of the Tesiktas burial ground have shown, members of all age categories of the seven and relatives took part in the preparatory stage and in the burial process itself (Varfolomeev 2024: 124).

In the Late Bronze Age, another trend was observed in settlements — the use of ready-made grave structures (soil pits, stone boxes) for reuse. These materials in most cases date from the transition period from the Bronze Age to the Iron Age. The materials from the settlement of Shagalaly II were no exception, in which the burial structures located on its territory were reused by other representatives of the ancient society (burial 1, individual no. 1; burial 3, individual no. 1).

There are interesting examples of the exploitation of the territory of a settlement after the cessation of its existence. A striking example is the burials made on the ruins of a dwelling with stone walls at the settlement of Shagalaly II of the Alekseev-Sargara period. This settlement, after destruction and after a certain time, was used for the burial of a person, which took place on the floor of a ruined house. The skeleton is laid on its back, arms are straightened, and its head is oriented to the north-west (Sakenov 2018: 147). According to radiocarbon dating, the burial dates back to the 8th century BC.

In the region, there are known facts of the use of Bronze Age stone boxes on the territory of the burial ground, that is, by representatives of society of a different historical time. As an example, we can cite the Ondyrys II burial ground, which is located on the right bank of the Ishim River in the Akmola region. Fence no. 1 of the Ondyrys II burial ground was reused by representatives of Iron Age tribes. A burial was cleared in a stone box located in the center of the fence; the skeleton is laid on its back, its head is oriented to the east with a deviation to the south (Sakenov 2019: 296). Such a funeral rite is not typical for the Bronze Age. When clearing a stone box, one triangular bronze arrowhead was found in the filling. The funeral rite and the arrowhead indicate the use of a ready-made funeral structure by representatives of Iron Age tribes. The nearby burial chamber (cyst) was also studied; when it was cleared, the remains of a cremated person were discovered at the bottom. This method of treating the dead was widespread in the Bronze Age.

Thus, the materials studied on the territory of the settlement of Shagalaly II demonstrate a variety of funeral and memorial rituals practiced by the ancient society of the studied region. Here intramural burials are recorded, associated and interpreted as traditional burials (burials of infants under the walls of dwellings in the early Alakul period), special burials (skull with traces of trepanation), sacrifices (burial of a teenager), and secondary use of burial structures (burial of the transition period from the Late Bronze Age to the Iron Age century).

Conclusion

Anthropological analysis made it possible to determine the sex and age category of buried individuals through the analysis of the morphological features of the pelvic bones, skull and proportions of long bones, and to record traces of diseases and injuries on the bones. These data are critical for reconstructing the social structure of the societies under study. Observed changes, including signs of degenerative joint disease, traumatic injuries and signs of malnutrition, allow conclusions to be drawn about the living conditions, health and well-being of individuals at that time.

According to the data presented in the work, we can definitely talk about the existence of a ritual among the residents of the Shagalaly II settlement associated with the construction of separate burials in the settlement area. Thus, burials at settlements are a special type of one-time cultic actions and, apparently, belong to the category of several funeral customs.

Early burial complexes (burial 1, individual no. 2; burial 3, individual no. 2) appeared on the outskirts of the settlement, when the border of the settlement did not reach the central site, and the dwellings were located along the shoreline of the Shagalaly River. Of interest here is the previously buried individual no. 2 from burial structure 1, who was subsequently thrown out by representatives of another tribe, who buried their relative, individual no. 1, in their place. Natural scientific analyzes showed that the discarded skull belonged to a woman, and traces of trepanation performed by scraping were found in the skull, as well as the results of fusion indicate that after the injuries received and the operation performed, the person continued to live.

Burial 4 on the territory of the settlement should be considered a sacrificial complex of the ancient population, this is evidenced by several factors. The archaeological factor is the stratigraphy and planography of burial 4; during the planning of dwellings no. 6, 7, most likely, a construction sacrifice was made. The grave pit does not disturb the cultural layer and the structure of dwelling no. 7; on the contrary, it is clearly planned. The burial is located outside the wall, at the long tambour-shaped entrance to dwelling no. 7, on the right side. The human skeleton is covered with a flat slab. Anthropological analysis showed with a high degree of probability that the individual is female; the bones reflect traces that occur during excessive physical labor; As a result of eating hard and/or abrasive foods, a torus is formed in the dental system. The recording of such materials on the territory of the settlement speaks not only about the existence of human construction victims, but also about the existence and practice of using slave labor in this society.

The secondary use of burial structures includes the use of ready-made grave chambers: burial 1, individual no. 1; burial 3, individual no. 1. These burials appeared when the settlement ceased to function. They are different from each other. For example, burial 2, individual no. 1: the skeleton is not complete, the lower limbs are missing, only the upper part is buried; In place of the lower limbs, an anthropomorphic stone stele was placed in the grave pit. Anthropological analysis showed multiple traces of wounds on the skull. The filling of the grave pit is filled with small and torn stones. Burial 3, individual no. 1: the deceased was also buried in a ready-made grave pit, as already described above. The skull of the previously buried person and some bones were swept into the corner of the grave chamber, the remaining parts of the skeleton were thrown away. Individual no. 1, buried in burial 3, also lacked the pelvic and tibia bones. On the right side, the shoulders and back are supported by flat stones, and wooden blocks have been cleared in the area of the lumbar and tibia bones. All these facts indicate a multitude of injuries received that are incompatible with life. The grave pit, as in the case of burial 1, was filled with small and torn stones.

Burials at settlements give us the opportunity to reconstruct the religious and world views of the population of the Bronze Age. The collected data was subjected to statistical processing to identify general trends and features, which will enrich archaeological collections and contribute to a deeper understanding of the dynamics of ancient societies.

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Table 1.**AMS ^{14}C dates of analyzed samples from the Shagalaly II settlement**

Sample no.	**Sample description**	**Material**	***^{14}C* BP**	**Calibration (1 σ 68.3)**	**Calibration (2 σ, 95.4)**
IGAN 4249	Sample no. 5. Settlement of Shagalaly, square A-3, depth 70 cm	charcoal	3370±70	cal BC 1745—1605 (0.836) cal BC 1576—1536 (0.164)	cal BP 3485—3525 (0.164) cal BP 3554—3694 (0.836)
IGAN 4250	Sample no. 4. Settlement of Shagalaly, square G-4, depth 90—100 cm	charcoal	3230±80	cal BC 1607—1570 (0.203) cal BC 1561—1546 (0.070) cal BC 1541—1430 (0.727)	cal BP 3379—3490 (0.727) cal BP 3495—3510 (0.070) cal BP 3519—3556 (0.203)
IGAN 4251	Sample no. 3. Settlement of Shagalaly, square Б-3, package no. 251, depth 60 cm	charcoal	3150±80	cal BC 1510—1370 (0.845) cal BC 1351—1316 (0.155)	cal BP 3265—3300 (0.155) cal BP 3319—3459 (0.845)

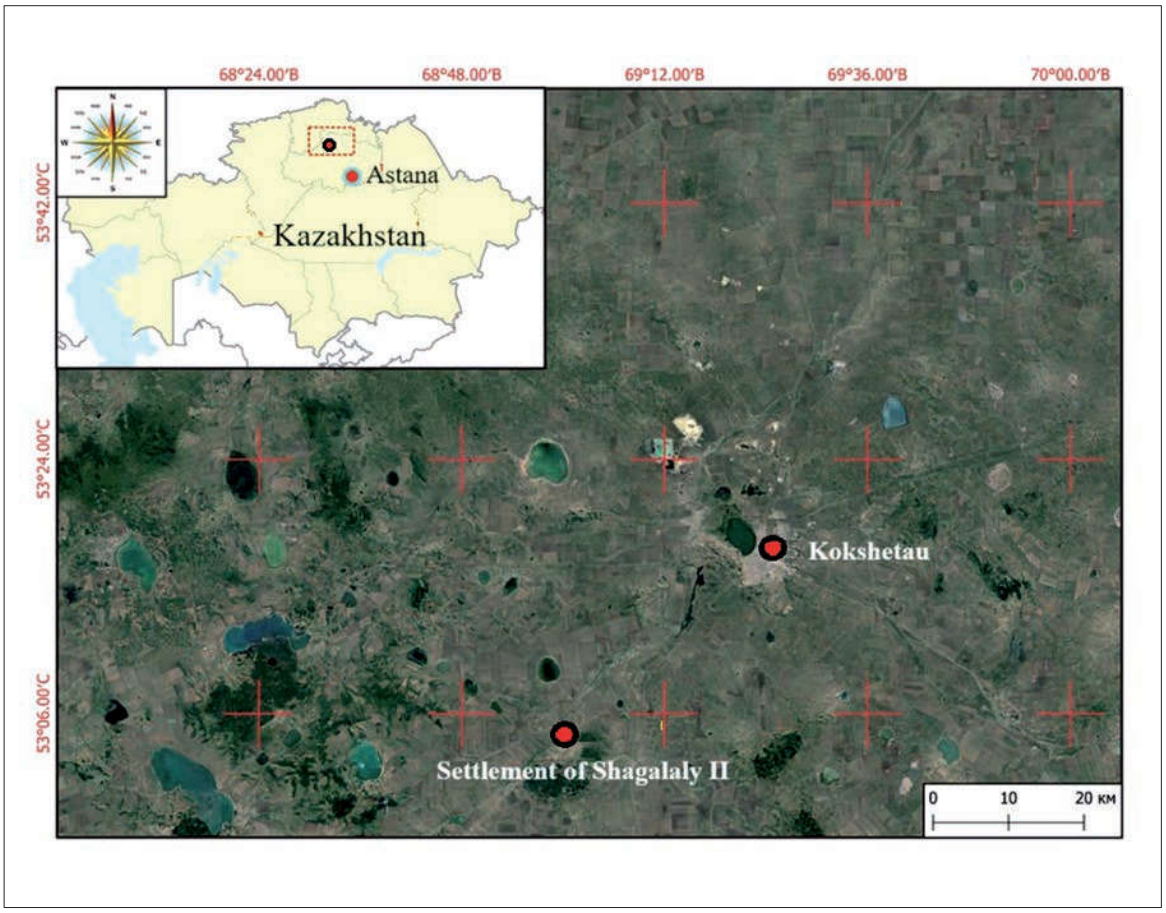

Fig. 1. Location of the Shagalaly II settlement (Author of the drawing is S. Sakenov)

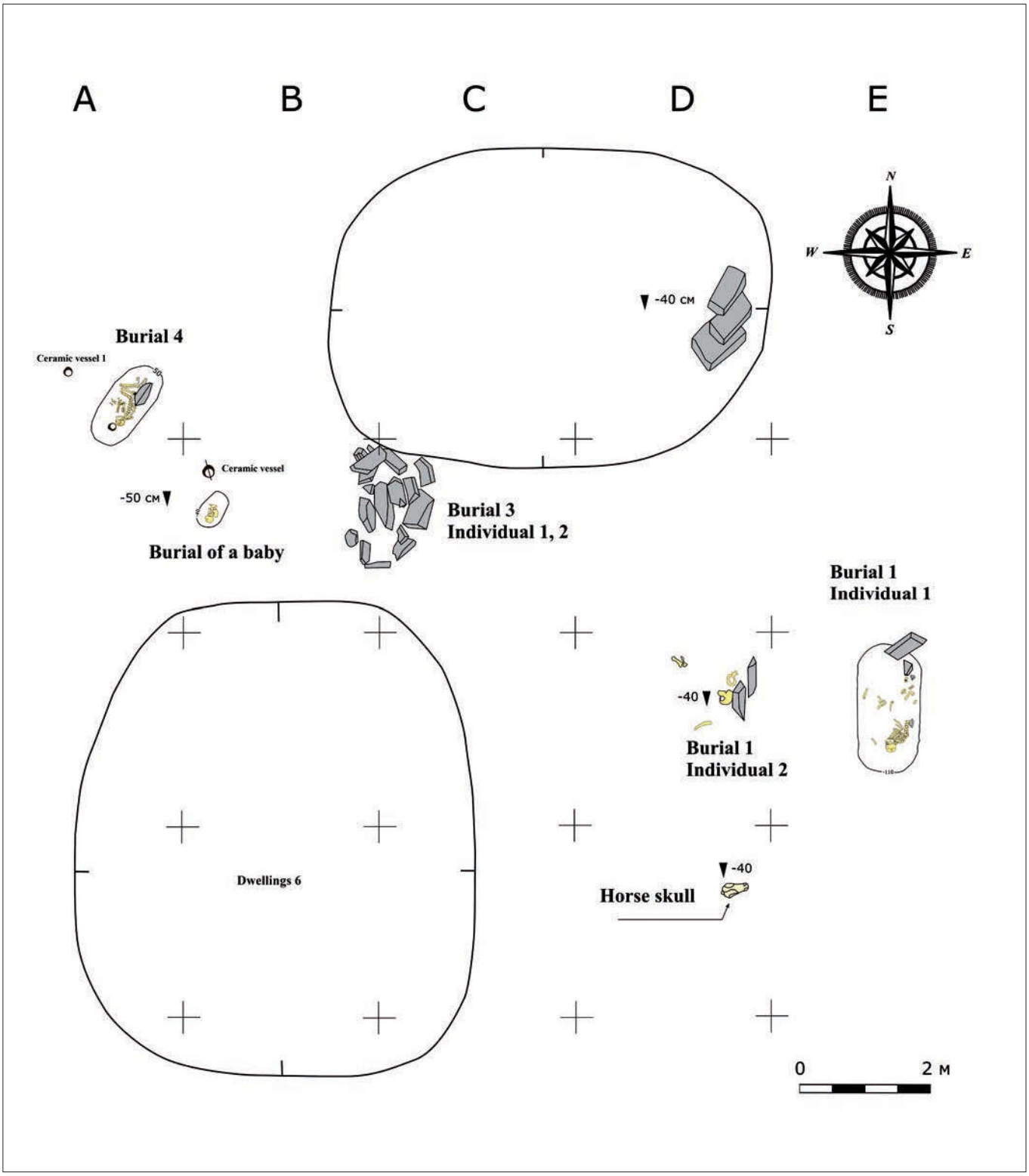

Fig. 2. Settlement of Shagalaly II. Consolidated plan of burial in inter-dwelling space
(Author of the drawing is S. Sakenov)

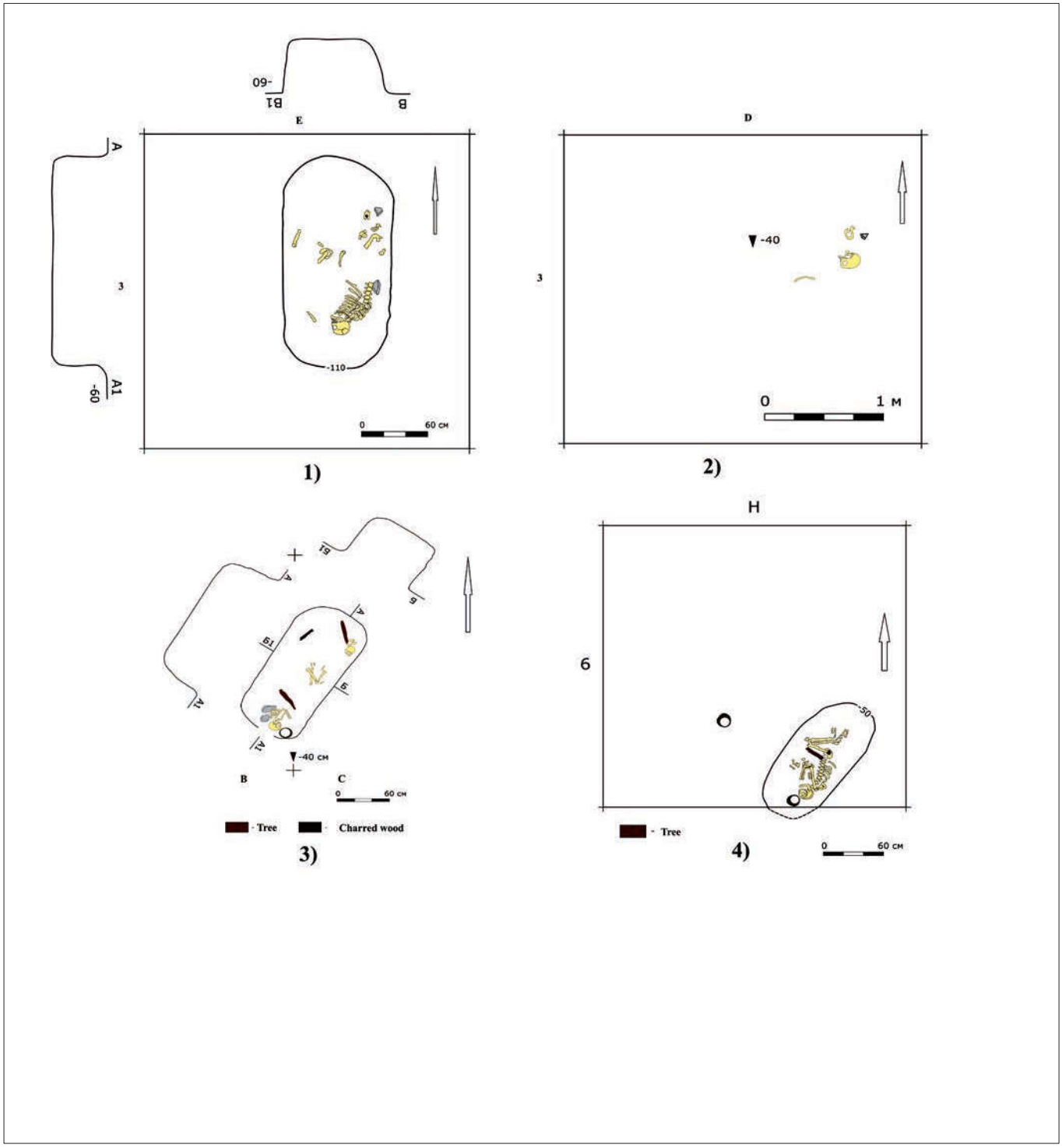

Fig. 3. Burial on the territory of the Shagalaly II settlement: *1* — burial 1, individual 1; *2* — burial 1, individual 2; *3* — burial 3, individuals 1,2; *4* — burial 4
(Author of the drawing is S. Sakenov)

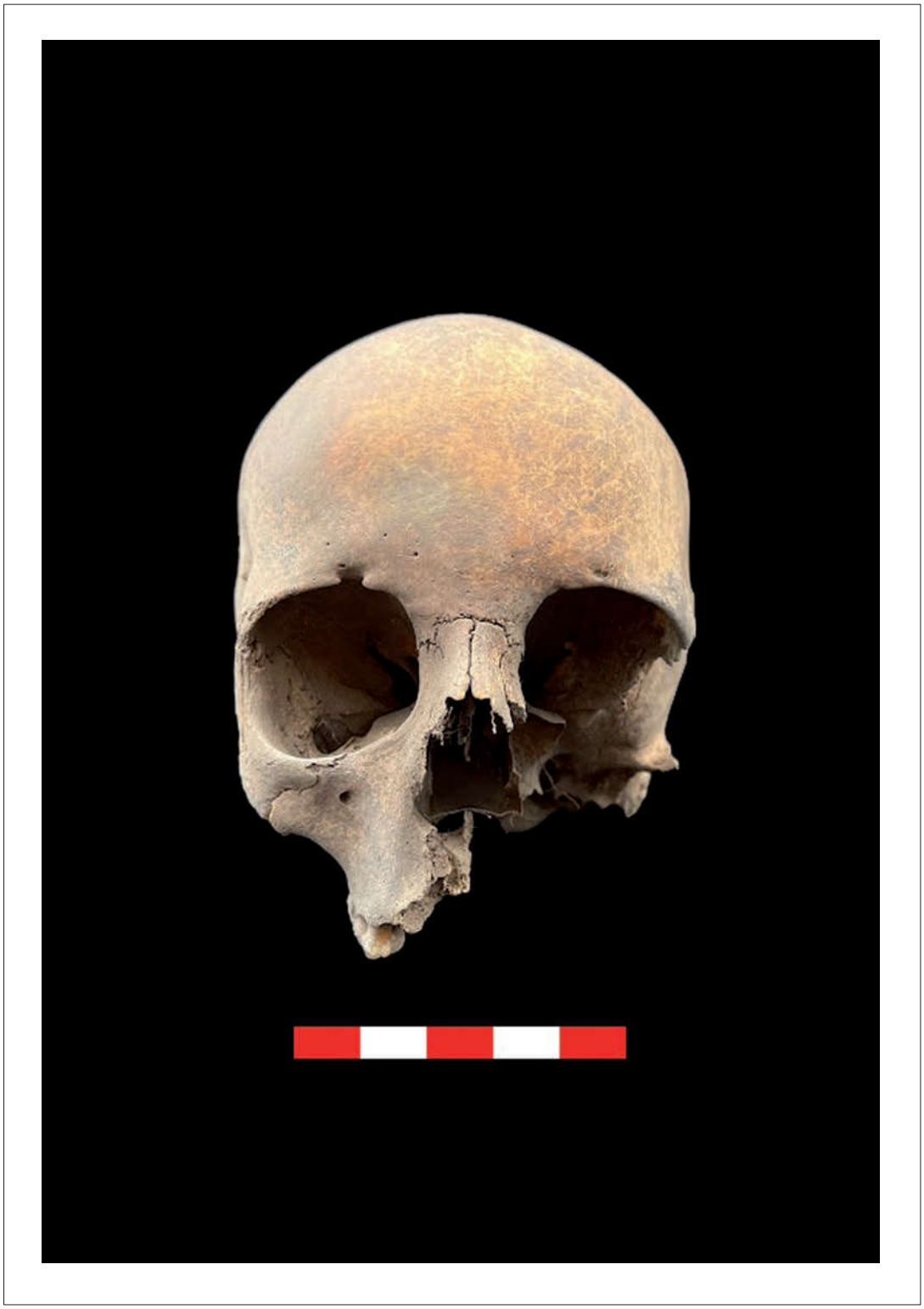

Fig. 4. Burial 1, skull of individual 1 (Photo by A. Raissova)

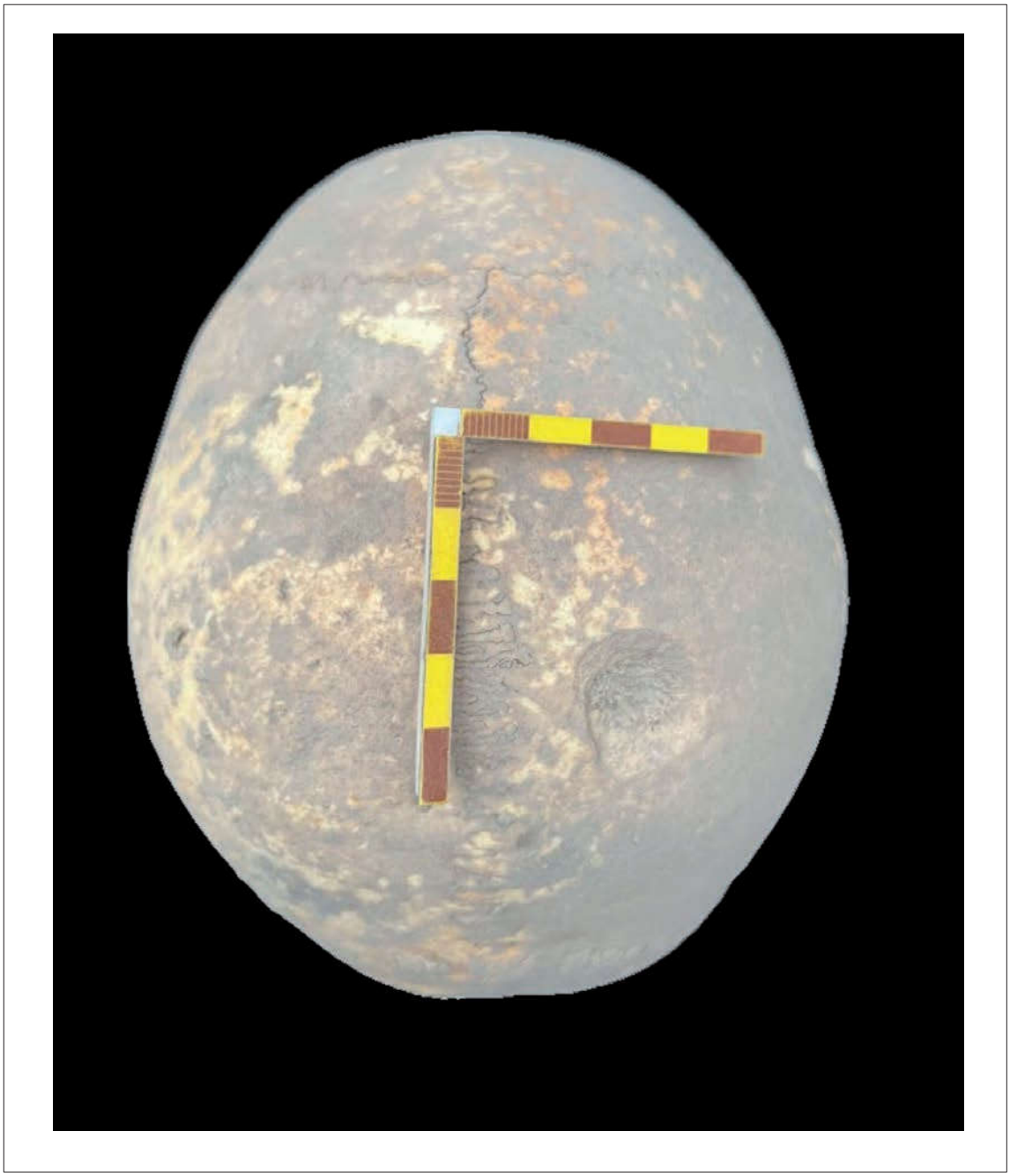

Fig. 5. Burial 1, skull of individual 2 (Photo by A. Raissova)

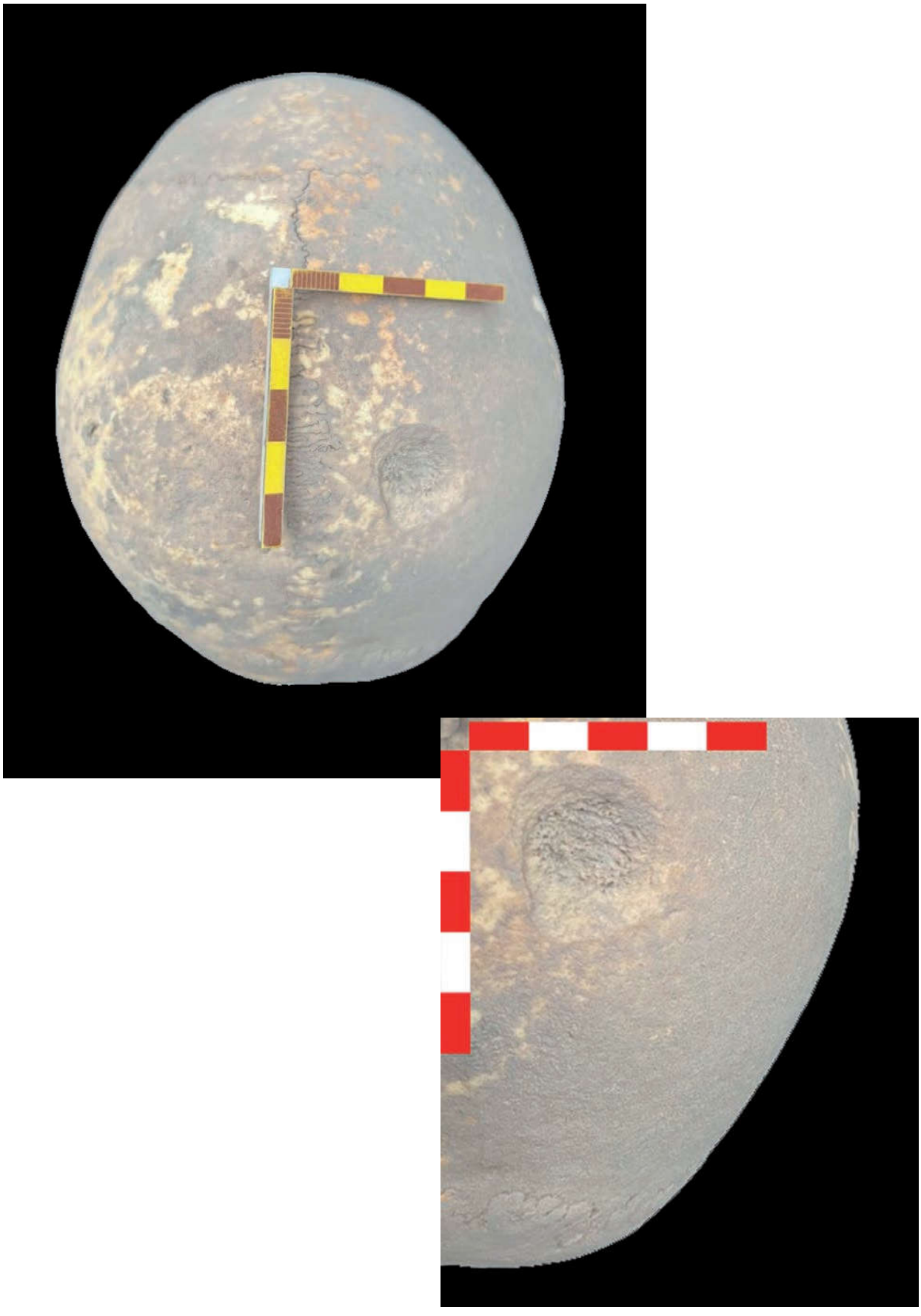

Fig. 6. Burial 1, skull of individual 2. Traces of trepanation (Photo by A. Raissova)

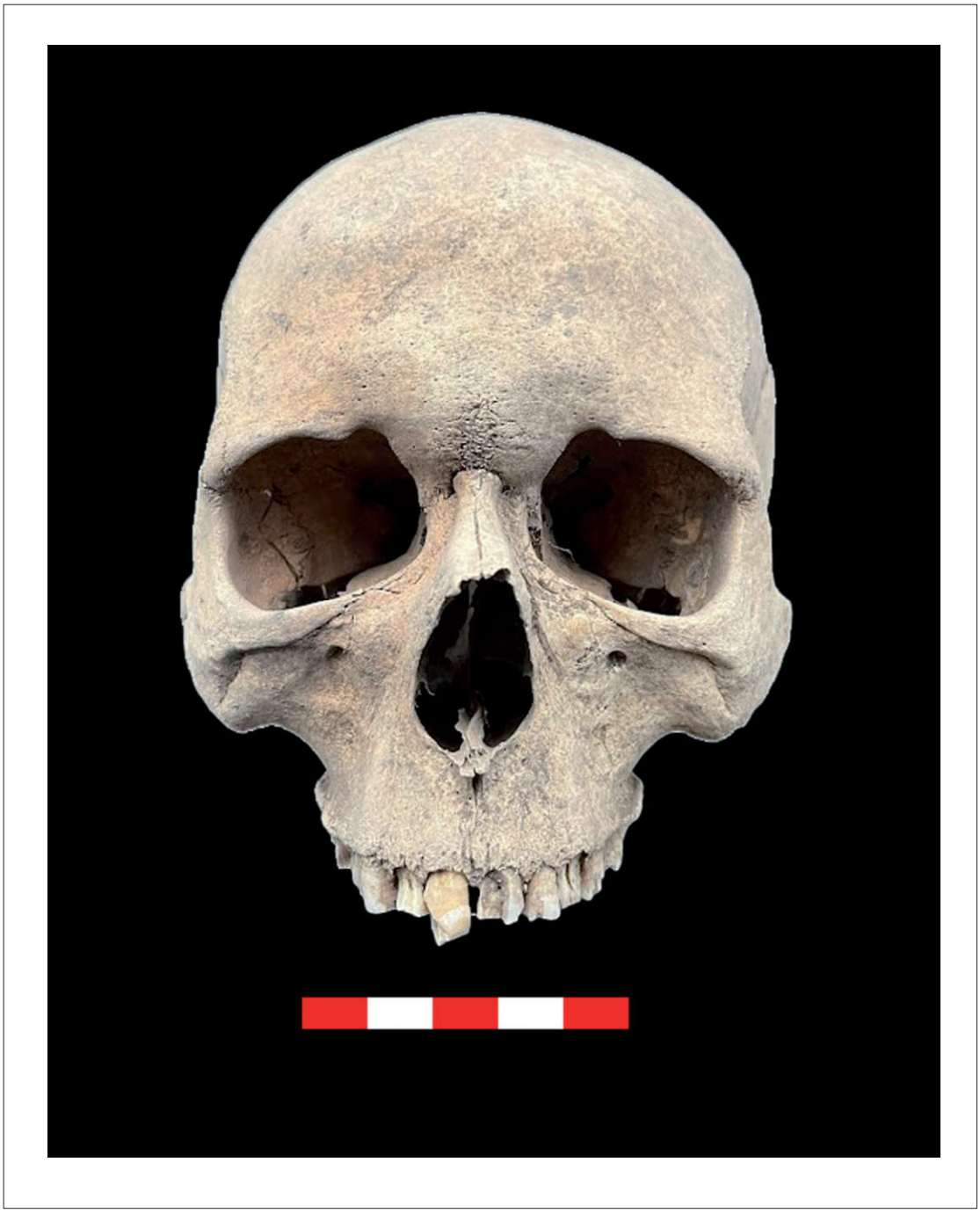

Fig. 7. Burial 3, skull of individual 2 (Photo by A. Raissova)

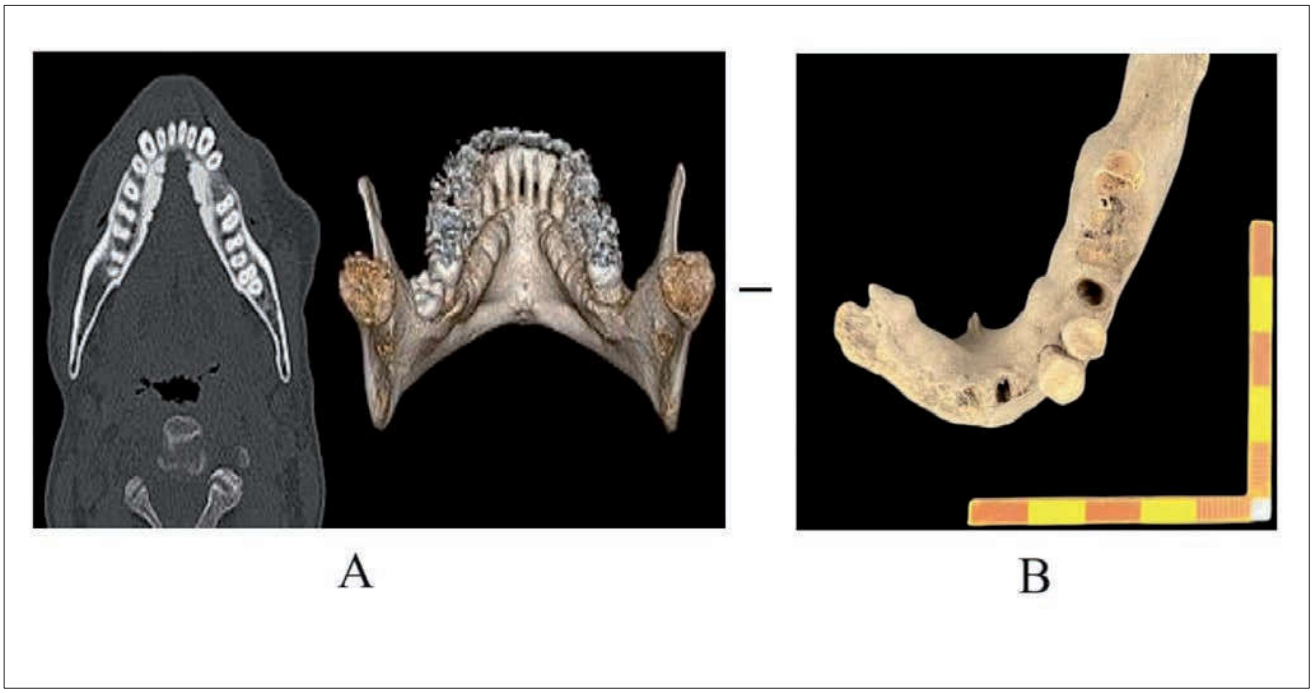

Fig. 8. A — Torus mandibularis; B — Torus mandibularis of individual 1, burial 4
(Photo by A. Raissova)