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Human Remains in the Central Area of a Bronze Age Multi-layered Settlement at Boconád-Alatka-puszta

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Abstract
In 2014, we had the opportunity to study a Bronze Age multi-layered settlement at Boconád-Alatka-puszta within the framework of a KEOP project. The site is located in the southern part of Heves County, northeast of Boconád. On the basis of archaeological research, the examined settlement layers can be connected to the Hatvan culture. In the central part of the settlement, surrounded by a ditch, human bones, i.e. fragments of skeletal bones and skulls of a child and an adult were recovered, concentrated in the same area, at the lower part of the plowed layer and the gray layer below it. Shell jewellery and a bone tool observed at the level of the bones were presumably the remnants of grave goods. It is certain that, taking advantage of the features of the place, the burials might take place after the abandonment of the settlement. Due to the extent of the disturbance, the results of scientific research may give the answer to who buried here and when.

Introduction

In 2014, on behalf of the Bükk National Park Directorate, we had a chance to conduct a multilateral study of a Bronze Age settlement (Boconád-Alatka-puszta) within the framework of a KEOP.[1] The site is located in the southern part of Heves County, in the area of the Alluvial Fan Complex of the Northern Great Hungarian Plain, north-east from the village of Boconád, near a former oil well *(Fig. 1)*. The central part of the settlement markedly emerges from its environment, though only by 1 or 2 metres and it is surrounded by a ditch that is visible on the surface. There is intensive farming in its area.

The site was first identified on aerial photographs of the GIS Laboratory of the Institute of Archaeological Sciences of Eötvös Loránd University in 1992.[2]

1 Environment and Energy Operational Programme, ID: KEOP-3.1.2./2F/09-11-2013-0041 *"Rehabilitation of Tumuli and Hill Forts in the Bükk National Park Directorate in Heves and Borsod-Abaúj-Zemplén County".*

2 The photographs were taken by Otto Braasch in 1992. István Dobó Castle Museum (DIV) Archaeological Database: 516.

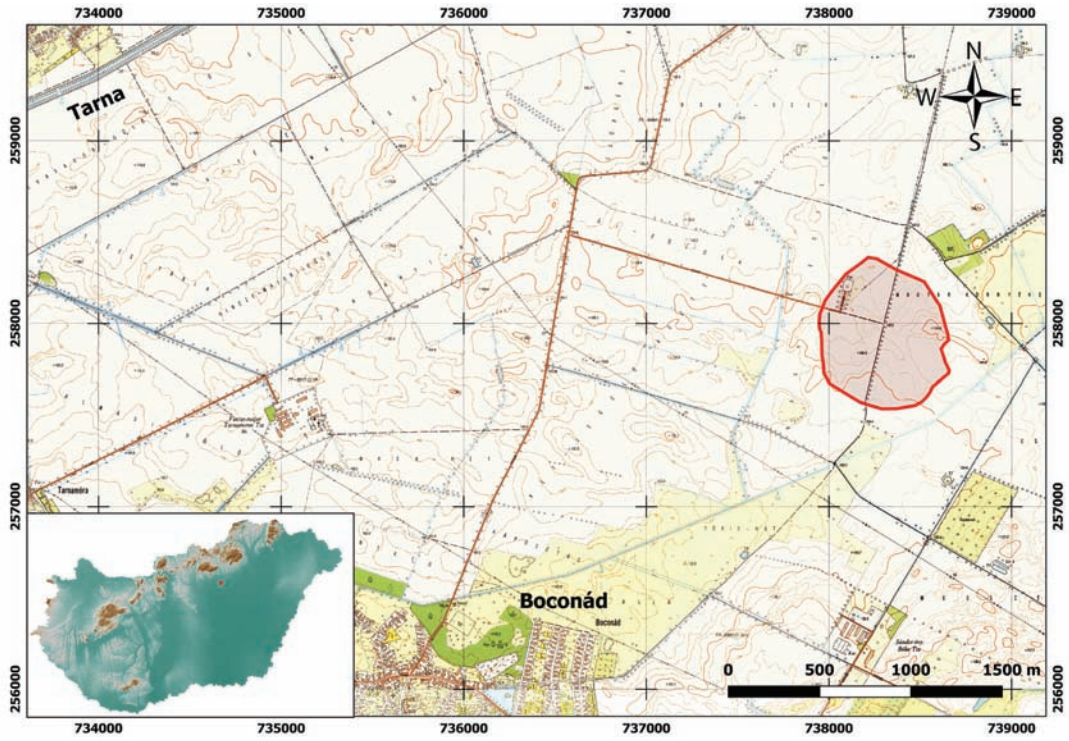

Fig. 1. Location of the site.
1. kép. A boconádi lelőhely elhelyezkedése.

Research methods and results

A variety of testing methods were performed at the site (fieldwalking, soil sampling, geophysical, geodetic and LIDAR survey, excavation). The purpose of the research was to delineate the external, so-called satellite site, to determine the intensity of the site, the thickness of the cultural layers, and to clarify the environmental conditions of the one-time settlement.

More than 90 hectares of land were surveyed. The extent of the site was determined and the distribution of the finds was observed by systematic fieldwalking. In the area there is an early Bronze Age settlement of ca. 25 to 30 hectares, with a central part of 1.5–1.8 hectares surrounded by a ditch. Based on the finds, the central part is completely surrounded by the plain settlement, though the finds were concentrated mostly in the south, southeast.

Finds were collected in the central, ditch-surrounded, universally farmed part of the site, based on a 10×10 m grid. According to the first results, logically, the distribution of the finds were higher on the elevated parts and lower in the area of the ditch.

Geological samples were collected from 20 drillings in the central area of the settlement, with their average depth being 4 m.[3] The thickest soil or cultural layer observed in the samples was 0.9 m. The examination of the samples revealed that the site was formed on an Ice Age alluvial fan. The high clay content of the soil allows the assumption that the area used to feature brown forest soil. The morphology of the area was affected by the movement of shifting sands after the decrease of the local groundwater, which resulted in the forma-

3 Soil drilling was performed by FÁCIES Cultural Service Bt., led by Pál Sümegi (Department of Geology and Paleology, University of Szeged).

tion of 1–2 meter high wind-blown dunes. The central area of the settlement was probably formed on such a smaller elevation.[4]

A geophysical and geodetic survey was conducted on a 175×152 m area of the central, ditch-surrounded part.[5] Based on the survey, it can be assumed that the wide recess surrounding the central part of the settlement is a double ditch, which had a gateway to the south, where the relief is slightly elevated. There was also a third ditch. Anomalies signalling other features are concentrated on the hilltop and outside the ditches.[6]

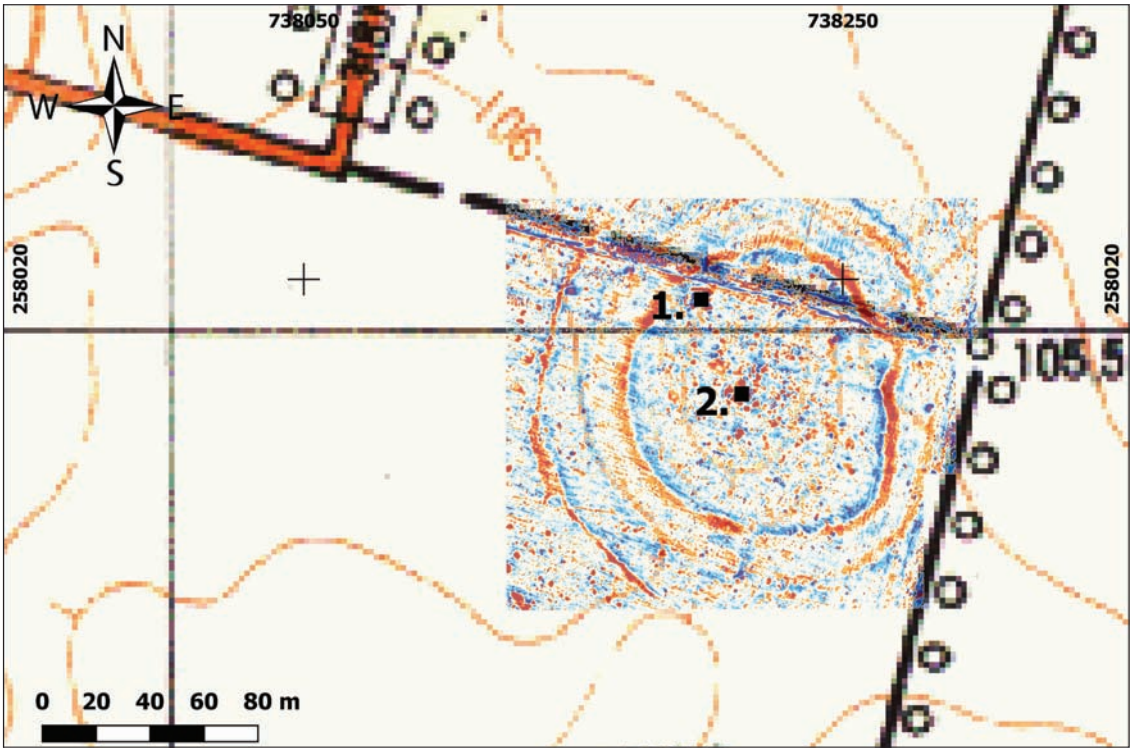

Fig. 2. Position of the research trenches.
2. kép. A kutató szelvények helyzete.

To clarify the stratigraphic conditions of the settlement, two 5×5 m trenches were opened in the central part *(Fig. 2)*. The first trench was dug near the inner ditch in the northwestern part of the hill. The humus and subhumus layers had a total thickness of 50–55 cm here, and it was clearly visible in the section wall that the humus was plowed to a depth of 35–40 cm. Under the humus, a loess subsoil was observed. Humus had a relatively high number of stray finds, including a small bronze dagger. However, hardly any findings were recovered from the lowest part of the humus or from the subhumus. We were not able to observe any settlement features in the trench at all.

Trench 2 was opened in the central, highest part of the hill. Plowing disturbed the soil to the depth of 35–40 cm here, too. Under the plowed layer, fragments of human remains were unearthed at the same depth *(Fig. 3)*. *Dentalium* beads and pierced shells of the genus *Anadara*

4 Sümegi 2015.
5 The survey was conducted by the Archaeological Cultural Foundation (Miskolc). Gábor András Szörényi, leading archaeologist, Krisztián Tóth, archaeologist, Szabolcs Honti and Zoltán Nagy archaeological field technicians.
6 Tóth et al. 2014.

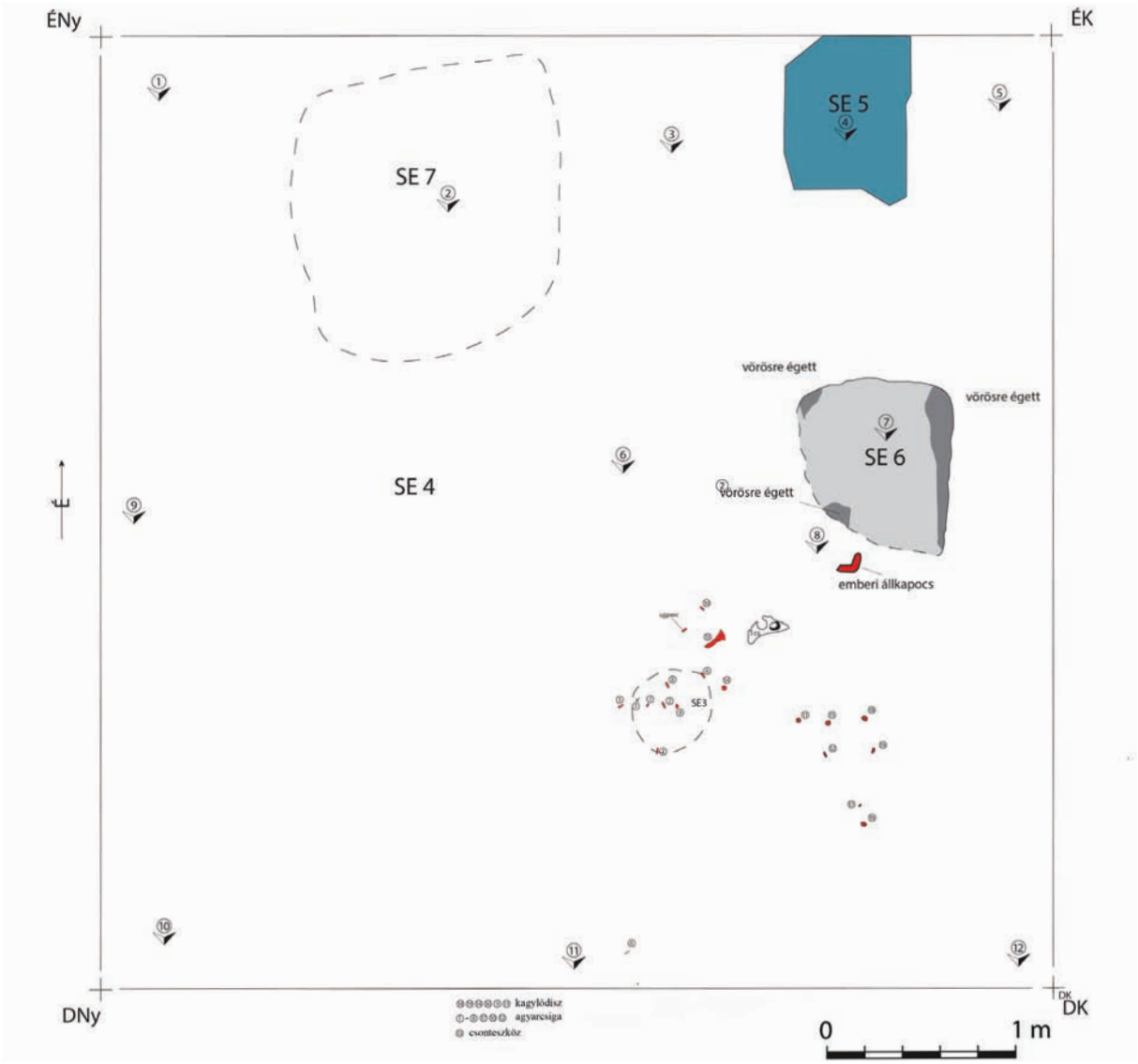

Fig. 3. Human remains and mollusc shells in Trench 2 (SE 3).
3. kép. Az emberi maradványok és a mollusca héjak a 2. szelvényben (SE 3).

(Fig. 4) that may have been part of a jewel or garment ornament were found at around the bones, though disturbed by plowing, concentrated in one place, which confirms the assumption that the remains of a burial were found. Due to the erosion and the plowing, it was impossible to precisely observe the stratigraphical position of the grave (if it was a grave).

The first features appeared approx. at 40 cm depth, after the removal of the disturbed top soil. The thickness of the successive culture layers was approx. 50–60 cm, under which we got to an undisturbed layer. Its thickness is further 30–40 cm in the deeper pits, followed by the loess subsoil only under then. Research stopped at this seemingly undisturbed layer, but the level of yellow subsoil was not reached. The examination of the layers were finished at an average depth of 90 cm. During the excavation, 82 features were documented.

Parts of two structures their floor levels were observed that were renewed at least 4–5 times, with an average of 8–12 cm thick filling layer between each layers. On the floor in the southwestern side of the trench, remnants of a multi-refurbished stove were recovered. We were

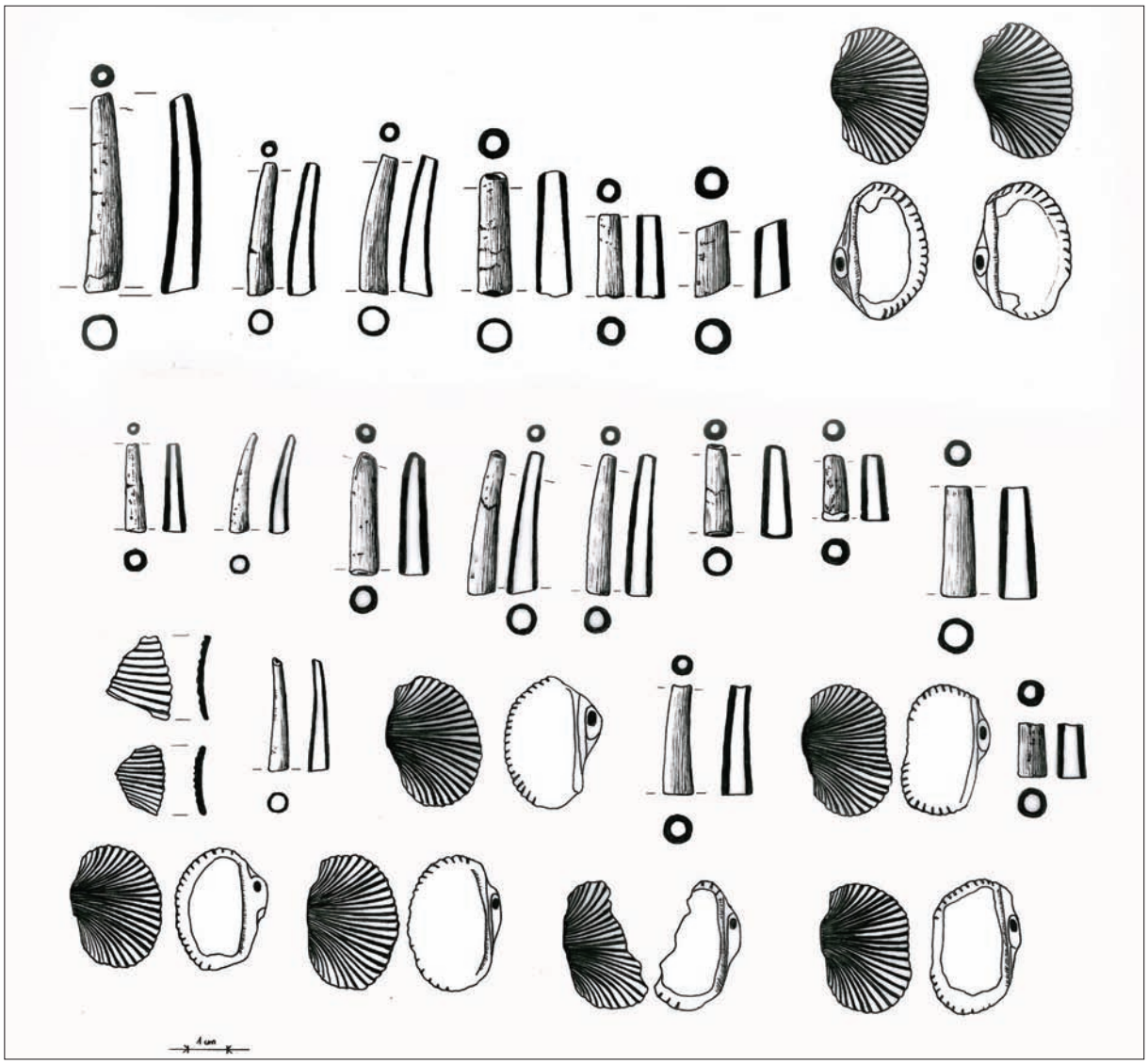

Fig. 4. Dentalium beads and *Anadara* shells.
4. kép. Dentálium gyöngyök és *Anadara* héjak.

able to observe the external trodden surfaces belonging to the buildings. Post holes and beehive pits were also discovered. The starting layer of the post holes could be observed accurately only in a few cases. Their structural role is questionable.

After the analysis of the assemblage composition, it is clear that the studied settlement layers can be linked to the period of the Hatvan culture. However, the features observed under the Early Bronze Age layers and in the lowest layer, disturbed the features of earlier ages.

Relation between the human remains and the settlement

In the middle of the hill, from the bottom of the plowed layer and the gray layer observed underneath it, concentrated in one area, fragments of human bones, skeletons and skulls of a child and an adult were recovered. The skeletons were very fragmented; the right humerus, a fragment of the jawbone (*mandibula*), a piece of the skull of a child aged 6–7, and the fragment of the skull and the right side part of the jawbone (*mandibula*) of an adult man were found.

In the vicinity of the bones, remnants of jewelry or garment ornament, composed from shellfish and *Dentalium* shells, were found in a roughly 1.5 m diameter circle. A total of 8 intact and 2 fragmented shell ornaments, with their umbo sanded, thus pierced, so they could be strung, or sewn on. The shellfish shells belong to the genus *Anadara*. All specimens derive from fossil, Miocene sea sediments. The 17 *Dentalium* (tusk) shells found next to the shellfish shells could also form part of the set. *Dentalia* belong to *Scaphopods*.

There was also a bone tool in the environment of the human remains, and fragments of two miniature pots, but their relation to the other finds is uncertain *(Fig. 5)*.

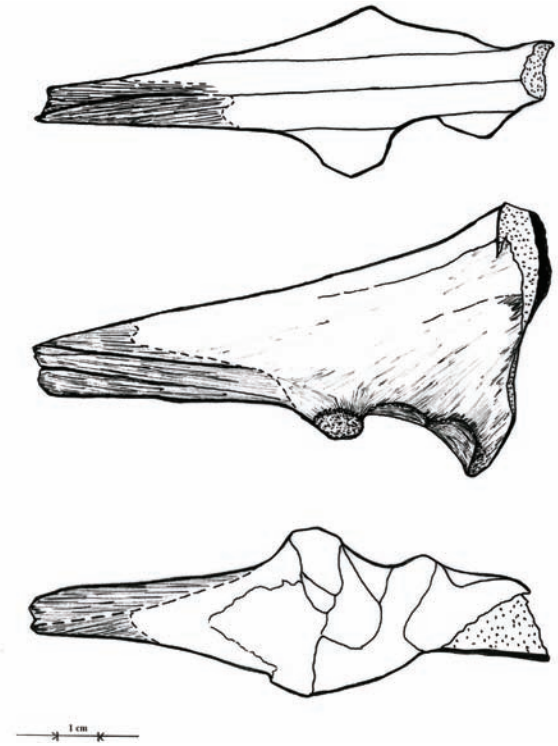

Fig. 5. Bone tool.
5. kép. Csonteszköz.

Due to the small size of the research area and the disturbed position of the bones, it is not possible to draw far-reaching conclusions, as it is not certain whether it is a burial, a kind of sacred act or they are simply scattered human bones. However, the fact that the human remains were found in the middle of the ditch-surrounded central area of the Early Bronze Age settlement, and the jewelry characteristics of the mollusc shells from their surroundings, and the analysis of the ^{14}C results, raises some further thoughts.

Members of Hatvan culture communities cremated their deceased and buried their remains either in scattered or in urn graves. Their cemeteries, with few graves, are located around the settlements, geographically well separated, taking advantage of the natural boundaries.[7]

Settlement hills outstanding from their surroundings, and so in advantageous geographical positions served as sacred places in the subsequent millennia, providing special conditions for the communities living there. There are several later skeletal burials known at multi-layered (tell) settlements of similar age. Early Iron Age graves were found in Novaj-Földvár,[8] Füzesabony-Öregdomb,[9] Tarnaörs-Anna kápolna site.[10] In Tiszakeszi-Szódadomb, besides the Early Iron Age graves, Early Bronze Age burials were also discovered.[11] At Ároktő-Dongó-halom, 11th century burials were discovered in the area of the settlement beside the Iron Age graves.[12] In our case, however, radiocarbon data refuted the initial assumption that the burial in the area of Boconád belonged to later ages.

7 Kalicz 1968, 143–149; Tárnoki 1992, 88–91.
8 Excavation of Ágnes Somogyvári, 1982.
9 Tompa 1937, 96, Taf. 40.
10 Szabó 1965, 21; Patek 1990, 67.
11 K. Végh – Kemenczei 1965, 452; Dani 2001, 32–34.
12 P. Fischl 2006, 11.

Results of radiocarbon measurements

In the laboratory of ATOMKI Isotoptech Zrt. in Debrecen, AMS radiocarbon analysis was performed using four bone samples *(Tab. 1)*. The results illustrate well the relation between the human remains and the settlement layers. Sample 1 was taken from the top undisturbed (not unaffected by plowing or erosion) layer of the settlement, containing of almost contiguous ceramic and animal bone material at -40 cm from today's surface. Sample 2 was taken from the humus-like filling layer above the lowest floor level, -70–80 cm from present-day surface level. Sample 3 was taken from a mixed, hard gray-brown layer below the bottom floor layer, from approx. 90 cm from present-day surface. The very few and abraded finds found here refer to an earlier period. Early Bronze Age material was found in the research units from the layers of sample 1 and sample 2. Sample 4 is derived from human remains from the lower part of the plowed, turned over soil layer (about -35 cm from today's surface).

HEKAL Lab. code	*AMS ^{14}C code*	*Site/feature/sample type*	*Radiocarbon date (év BP) (±1σ)*	*Calibrated date (cal BC) (±1σ)*
DeA-7419	I/1187/1	Boconád-Alatka-puszta SE 12, animal bone	3690±22	2130–2030
DeA-7420	I/1187/2	Boconád-Alatka-puszta SE 52, animal bone	3688±24	2130–2030
DeA-7421	I/1187/3	Boconád-Alatka-puszta SE 61, animal bone	4948±28	3760–3670
DeA-7425	I/1187/4	Boconád-Alatka-puszta SE 3–4, human *mandibula*	3692±23	2130–2030

Table 1. Radiocarbon measurements and dates from the site.
1. táblázat. Radiokarbon mérési eredmények a lelőhelyről.

Based on the similarity of the age of the samples from the settlement (cal BC, ±1σ 2130–2030), it can be assumed that we are not dealing with a long-lived settlement, but the observed series of layers is a multi-renovation of the same building, which can mean only a period of a few generations. The time for the human remains to get buried is also the same as the age of the settlement.

Thus, according to a recent summary of chronological research of the era, the settlement and human remains may belong to Reinecke BA1, or to Phase 3 of the Hungarian Early Bronze Age.[13]

Jewelry made from mollusc shells in Early Bronze Age burials

In the present case, the pieces of *Mollusca* shells, which were clearly used as jewelry or garment ornaments, were only presumed to belong to the burial due to their distressed situation. These types of ornaments were widely used in the surrounding cultures in the era, but remained primarily only in uncremated burials or as stray finds.

13 P. Fischl et al. 2015, Fig. 1b; P. Fischl et al. 2017.

Nándor Kalicz mentions some pieces of *Dentalium* from the area of the Hatvan culture, eg. Galgamácsa, Tibolddaróc, Tószeg, Szihalom.[14] In his synoptic work, István Bóna collected the occurrence of *Dentalium* jewelry in the Early and Middle Bronze Age. This type is popular in the Gáta-Wieselburg and Aunjetitz cultures, and in the Maros-Körös Region in the graves of Perjámos-Maros culture, from one or two to tens, alone or in combination with other shellfish or snail shells or bronze spiral beads.[15] I. Bóna, in connection with the Hatvan culture shell jewelry from the Oroszvár graves, dealt with the parallelism and reconstruction of the jewelry.[16]

Recently, similar jewelry attachments observed in Gáta-Wieselburg and neighboring cultures were studied and collected by Marcella Nagy and András Figler in connection with the cemeteries of Hegyeshalom and Szeleste. They emphasize that they are predominantly found in female graves, around the skull, and are typical in the burials of higher-ranked people with a rich supply grave goods.[17] The Aunjetitz culture (Nitra-Aunjetitz transitional and the classical phase), in the Unterwölbling culture, in the cemeteries of the Straubing culture[18] they were more numerous. Among the northern neighbours of the Hatvan culture, in the cemeteries of the Nitra and Košťany cultures, shells are also common, with the largest amount being *Dentalium* species, in addition to *Cardium*, *Culumbella rustica*, *Anadara* and other unspecified shellfish.[19]

Jewelry made of *Dentalium* shells also appear in the burials of the Perjámos culture, along with other shells, e.g. *Cardium*, *Columbella*, *Pectenculus* (e.g. Perjámos, Deszk A, Deszk F, Ószentiván, Szőreg, Mokrin, Beba Veche).[20] At the site of Battonya-Vörös október Tsz sand mine, in the Middle Bronze Age part of the cemetery, *Dentalium* beads were found in the skeletal graves.[21] *Dentalium* was found in large quantities in Grave 2 of Hódmezővásárhely-Kopáncs, suggesting the possibility of several garment reconstruction.[22]

The shells of the genus *Anadara* occure in way fewer places. This may be partly due to the lack of determination of the shells, and partly to the reduced number of fossils as well as the lower number of their occurrence. Shells of the genus *Anadara* were found in the area of the Aunjetitz culture, eg. Bajč Tomb 56,[23] but they are more common in Nitra culture.[24] This type of ornament is rarer in the area of the Perjámos culture. In the Grave 105 of the Battonya cemetery, besides the *Dentalium* beads, *Cerythium* and *Columbella rustica* shells were found, as well as a shell belonging to the genus *Anadara*, but it does not appear in the description, only in the drawing, so its classification is uncertain.[25]

Bátora, in reference to the *Anadara* shell found in Grave 412 of the Jelšovce cemetery,[26] notes that, similarly to *Dentalium* shells, *Anadara* shells are collected from the shallow sea sedi-

14 Kalicz 1968, 164, Taf. 63/16, 80/12.
15 Bóna 1975, 268.
16 Bóna 1960, 198–203.
17 Nagy – Figler 2009, 257.
18 Bátora 2000, 369–370; Nagy – Figler 2009, 257.
19 Vladár 1973a, 261; Pástor 1978, 93; Bátora 2000, 368–370; Olexa – Nováček 2013, 47.
20 Banner 1931, 21; Bóna 1975, 104; Chicideanu – Şandor-Chicideanu 1989.
21 Szabó 1986, 119–120.
22 V. Szabó 1997, 68–69.
23 Točík 1979, Taf. 98/5.
24 Vladár 1973a, Taf. 14/10, 19/17, 21/18; Vladár 1973b, Abb. 1; Olexa–Nováček 2013, Tab. 108.
25 Szabó 1986, 69–70, 38.
26 Bátora 2000, 368.

ments (Oligocene and mainly Miocene) of the Carpathian or Vienna Basin.[27] This finding is confirmed by the results of Marcella Nagy and András Figler.[28]

Without further investigation,[29] it is not possible to to determine the origin of the *Mollusca* shells, but probably from a nearby site. The mutual occurrence of *Dentalium* and *Anadara* shells within 100 kilometers is currently known in e.g. Wind's brick factory, Eger or Malom-kert, Szob.[30]

In the Early and Middle Bronze Age, similar shell ornaments are recovered from the uncremated burials of surrounding cultures. It is assumed that they were widespread during this period, but they were destroyed during the cremation ceremony.

It is not possible to draw far-reaching conclusions about the relation between the human remains and the settlement in context with the Boconád site due to the disturbance, but it can be stated that in the middle of the central, ditch-surrounded part of the settlement, the burial took place probably at the end of the settlement's life or directly after its abandonment. It is also only assumed that the ritual or other activity itself can be linked to the people of the Hatvan culture.

Fig. 6. Macroscopic image of the right side of *mandibula*.
6. kép. Mandibula jobb oldalának makroszkópos felvétele.

Fig. 7. Hyperplasia of the coronoid process.
7. kép. Processus coronoideus hyperplasia.

A morphological description of the human jaw

A fragment from the right side of a 40–50-year-old male's *mandibula* (cal BC, ±1σ 2010–2030) was found in the layer SE 3–4 at Boconád-Alatka-puszta, Hungary. The end of the coronoid process is missing *(cf. Figs 6–7)*. The surviving part of the coronoid process is wide and long, and its size suggests hypertrophy.

Hypertrophy of the *mandibula's* coronoid process was first reported by Langenbeck in 1853.[31] Since then a number of studies mentioned similar cases, where the length of the coronoid process is greater than normal, sometimes extending over the arc of the zygomatic process

27 Bátora 2000, 370.
28 Nagy – Figler 2009, 264–265.
29 Sümegi 2009, 341–343.
30 Dávid 2011, 42–47, 61–63.
31 Choi et al. 2013.

by as much as 2 cm.[32] In the case of such alteration, the length of the process increases, but its histological structure remains unchanged.[33] Even though the *mandibula's* coronoid process is not part of the temporomandibular articulation, the enlargement still affects the movement of the *mandibula*, by limiting the opening of the mouth, causing pain, which, in turn, may cause inflammation and oral hygiene problems.[34]

The unilateral or bilateral hyperplasia of the coronoid process can be triggered by various factors: trauma, endocrine stimuli, ankylosing spondylitis,[35] an increased activity of local muscles,[36] or developmental malformation.[37] The role of genetic factors has not been thoroughly clarified but cannot be excluded.[38] Malformations occur more often in men than in women,[39] and are most characteristic of younger men.[40] The bilateral occurrence of malformation is also more frequent than the unilateral.[41] The enlargement caused pain when the patient opened their mouth, and if the growth in size continued, the end of the coronoid process could break off. Bilateral fracture in case of the hyperplasia of the coronoid process, occurring for no apparent reason, has been described by Al-Khalisi et al. 2016: fracture occurred suddenly, with no prior cause. In this area isolated fractures are extremely rare, since the region behind the arcus zygomaticus is protected.[42] More serious trauma can cause injury to the arc or the face, but if these are intact, the fracture of the coronoid process is likely to be due to a strong and sudden muscle contraction. In such cases the piece that breaks off is unlikely to greatly dislocate.[43] Descriptions in the literature also mention the possible occurrence of inflammation as a result of the trauma. Enlargement of

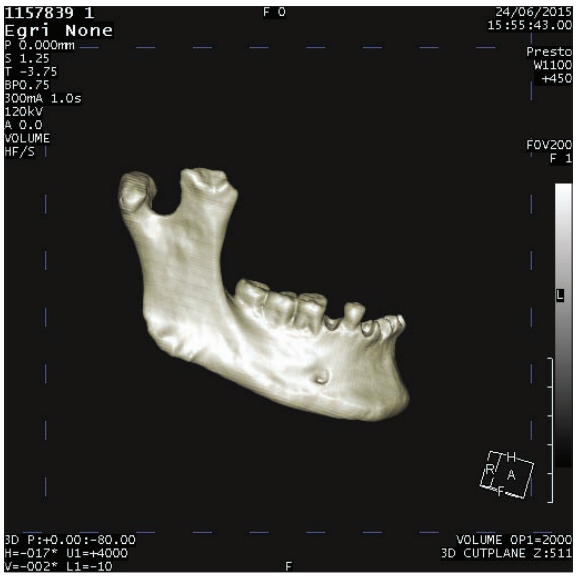

Fig. 8. CT image of right side of *mandibula*.
8. kép. Mandibula jobb oldalának CT felvétele.

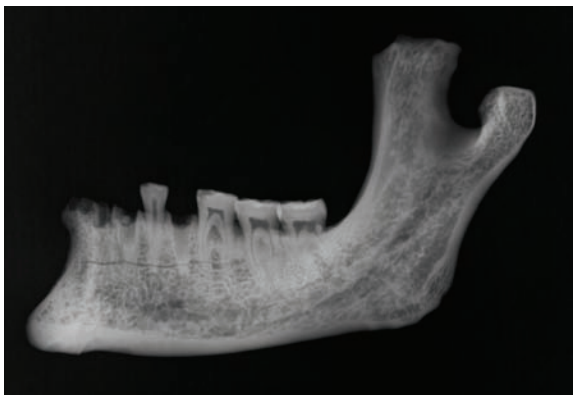

Fig. 9. Radiographic image of right side of *mandibula*.
9. kép. Mandibula jobb oldalának röntgenfelvétele.

32 Pregarz et al. 1998.
33 Mcloughlin et al. 1995.
34 Lucaya et al. 1982; Mulder et al. 2012.
35 Wenghoefer et al. 2008; Nayak et al. 2015.
36 Mulder et al. 2012; Çorumlu et al. 2016.
37 Marra 1983; Barnes 2012; Çorumlu et al. 2016.
38 Marra 1983; York – Cockerham 1983; Pregarz et al. 1998; Colquhoun et al. 2002.
39 Wenghoefer et al. 2008; Chauhan – Dixit 2011; Barnes 2012; Mulder et al. 2012.
40 Colquhoun et al. 2002.
41 Wenghoefer et al. 2008; Mulder et al. 2012.
42 Rapidis et al. 1985; Al-Khalisi et al. 2016.
43 Al-Khalisi et al. 2016.

the coronoid process can be accompanied by syndromes such as *trismus-pseudocamptodactylia.*[44] Today the malformation is treated with surgery, by removing the unnecessary piece.

The coronoid process of the *mandibula* uncovered from the SE 3–4 layers at the Boconád-Alatka-puszta, may have been much larger than usual, its peak likely broken off. The fracture (indicated by the sclerosis found at the end of the coronoid process) *(Fig. 8)* was accompanied by inflammation (the edge of the surface is uneven) *(Fig. 7)*, and the fractured piece likely did not reconnect ('non-unit fracture').[45] The X-ray image *(Fig. 9)* indicates no structural alteration.

The etiology of the hyperplasia of the coronoid process is, in our case, naturally, unclear. It may have been the result of primary development (such as developmental malformation, or as a result of trauma or increased muscle activity). But it may have been, instead, the result of secondary development caused by illness (spondylitis ankylopoetica, endocrine malformation).

Since the hyperplasia of the *mandibula's* coronoid process is an extremely rare malformation,[46] we considered it important to report our case despite the fact that the other side of the *mandibula*, the rest of the skull, and the postcranial bones are missing post mortem.

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44 Fukumori et al. 1993; Colquhoun et al. 2002.
45 The piece that broke off must have been lost over the years.
46 Barnes 2012.

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Emberi maradványok egy bronzkori többrétegű település, Boconád-Alatka-puszta központi területén

2014-ben egy KEOP pályázat keretében lehetőségünk nyílt egy bronzkori tell, Boconád-Alatka-puszta többoldalú vizsgálatára. A lelőhely Heves megye déli részén, Boconád község határában, a településtől északkeletre található.

A lelőhelyen többféle vizsgálati módszert alkalmaztunk (terepbejárás, talajmintavétel, geofizikai és geodéziai felmérés, LIDAR felvétel, ásatás). A kutatások célja a lelőhely külső, ún. szatelit telepének körülhatárolása, a lelőhely intenzitásának, a kultúrrétegek vastagságának megállapítása, az egykori település környezeti viszonyainak tisztázása.

A település központi része a felszínen is megfigyelhető árokkal volt körülvéve, környezetéből határozottan, de csak alig 1-2 méterre emelkedik ki. A területen intenzív földművelés folyik, ami jelentősen koptatja a felszínt.

A domb középső részén, a szántott réteg alsó részéből és az alatta megfigyelt szürke rétegből (-35–40 cm) egy területen koncentrálódva, de bolygatott helyzetben embercsontok – egy gyermek és egy felnőtt vázának, koponyájának töredékei kerültek elő. A csontok környezetében egy nagyjából 1,5 m átmérőjű területen, bolygatott helyzetben *Dentálium* gyöngyöket és átfúrt kagylókat *(Anadara)* figyeltünk meg.

Az előkerült vázak igen töredékesek: koponya-, borda-, hosszúcsontok néhány darabja. Egy 6–7 év körüli gyermek jobb felkarja (*humerus*), állkapcsának (*mandibula*) töredéke, és koponyadarabok, valamint egy felnőtt férfi koponyatöredéke és állkapcsának (*mandibula*) jobb oldali része került elő. Feltűnő, hogy az állkapocs elülső kampónyúlványa (*processus coronoideus*) erőteljesen megvastagodott. Valószínűleg egy fejlődési rendellenességről lehet szó. A csontról röntgen- és CT-felvétel készült (Dr. Puhl Mária, Budai Egészségközpont, Radiológiai Osztály).

Valószínűleg a sír, vagy sírok valamelyikének melléklete lehetett a *Dentálium* gyöngyökből (17) és az *Anadara* nemzetséghez tartozó átfúrt kagylókból (8+2 töredék) álló lánc (meghatározás: Dr. Sümegi Pál, Szegedi Tudományegyetem). A kagylóteknő búbját lecsiszolták, ami így átlyukadt; felfűzhették, vagy fel is varrhatták. A kora és középső bronzkor időszakában a környező kultúrák korhasztásos temetkezéseiből kerülnek elő hasonló kagylódíszek.

A sírok eredeti mélységét nem lehet megállapítani a bolygatottság miatt, az azonban leszögezhető, hogy a sírok szintje nem éri el a tell település felső rétegeit. Kihasználva a hely adottságait, a temetkezések a Hatvan-kultúrához tartozó település felhagyása után történhettek.

A debreceni ATOMKI Isotoptech Zrt. laborjában négy csontminta felhasználásával végeztek AMS radiokarbon vizsgálatot. A települési rétegekből származó minták alapján (cal BC, ±1σ 2130–2030) feltehető, hogy nem egy hosszú életű településről van szó. A település és az emberi maradványok is a Reinecke BA1 időszakba, illetve a „magyarországi" kora bronzkor 3 fázisába tartozhatnak.

A boconádi lelőhely esetében az emberi maradványok és a település viszonyáról annyit megállapíthatunk, hogy az árokkal körülvett központi településrész közepén, valószínűleg a telep életének végén, vagy annak közvetlen elhagyása után történt a temetkezés. Az is csak feltételezhető, hogy maga a rítus a Hatvan-kultúra népességéhez kapcsolható.