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THE FUNERAL RITE OF THE MIERZANOWICE CULTURE IN THE VISTULA AND SAN RIVER BASINS – GRAVES FROM ROZBÓRZ, PRZEWORSK DISTRICT

ABSTRACT

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The article describes a small cemetery of the Mierzanowice culture discovered at site 42 in Rozbórz, Przeworsk district, Podkarpackie Voivodship. The necropolis analysed is an example of the diversity of funeral rituals in the area between the Vistula and San rivers in the early Bronze Age. The analysis of the graves' inventories enabled them to be connected with at least two phases of the cemetery's utilisation. They can be synchronized with the early (features 668, 1891, 1978, 3141) and classical or late (1834, 2003, 2005) phases of the Mierzanowice culture. The strontium isotopes analyses performed on two individuals indicate that they spent their childhood in the area of the Rzeszów Foothills.

Keywords: Early Bronze Age, funeral ritual, strontium isotopes analyses, Rzeszów Foothills

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1. INTRODUCTION

Thanks to the latest excavations in the large area of the Vistula and San rivers basin, the settlement of the Mierzanowice culture is relatively well known (*e.g.*, Przybyła and Blajer 2008, map 1, 2; Machnik 2011; Górski and Jarosz 2015; Jarosz *et al.* 2018; Jarosz and Mazurek 2020; Madej and Valde-Nowak 2020). However, it should be noted that the significant number of settlement sites known contrasts with the small number of graves. Until the beginning of the current century, only the burial located in the mound of the Corded Ware culture in Jawczyce, Wieliczka district (Zoll-Adamikowa and Niżnik 1963; Jarosz 2021) and a grave from Orliśka Sokolnickie, Tarnobrzeg district (Czopek *et al.* 1993) were known. In the following years, single graves were recorded in Średnia, Przemysław district (Jarosz 2002; 2021) and Lipnik, Przeworsk district (Kaflińska 2001). The next discoveries come from excavations that preceded the construction of the A-4 motorway in several places in Małopolska and Podkarpackie Voivodeships which increased the number of known graves associated with the Mierzanowice culture (Czerniak *et al.* 2006; Józwiak and Rosen 2006; Jarosz 2017; Rybicka *et al.* 2017). One such site is a small cluster of sepulchral features discovered at site 42 in Rozbórz, Przeworsk district, in the Podkarpackie Voivodship (Jarosz *et al.* 2013).

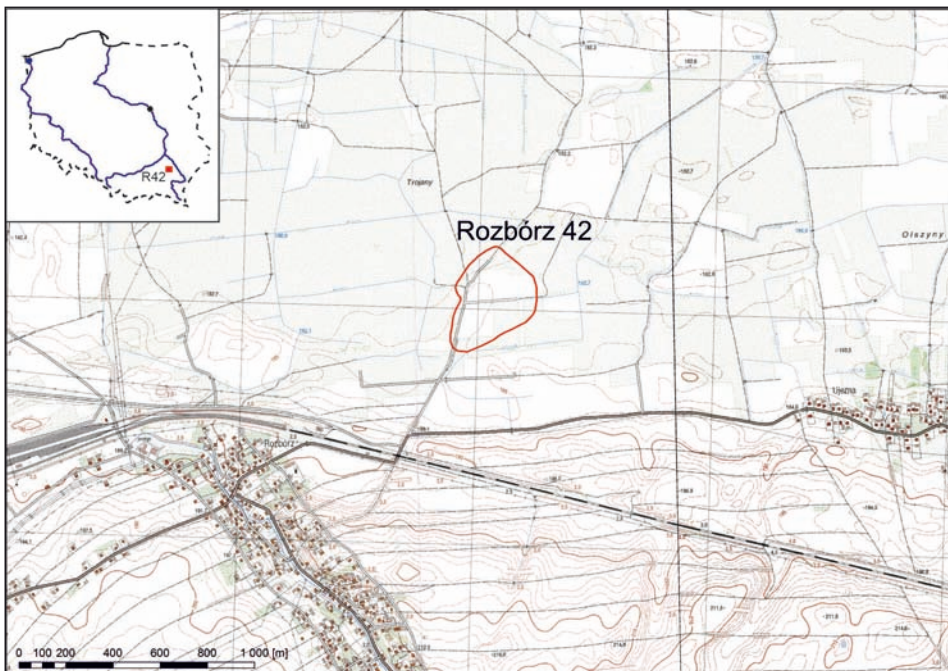


Fig. 1. Location of site 42 in Rozbórz, Przeworsk district. Prepared by M. Mazurek

The site is located on the southern edge of the Sub-Carpathian Ice Marginal Valley, at the junction with the loess of the Rzeszów Foothills (Fig. 1; Solon *et al.* 2018). It was discovered in 2008 during surface survey along the corridor of the planned A4 highway (Sznajdrowska 2013). In 2010, excavations were carried out over an area of 626.19 ares. As a consequence, settlements of the Linear Pottery, Malice, Trzciniec and Lusatian cultures

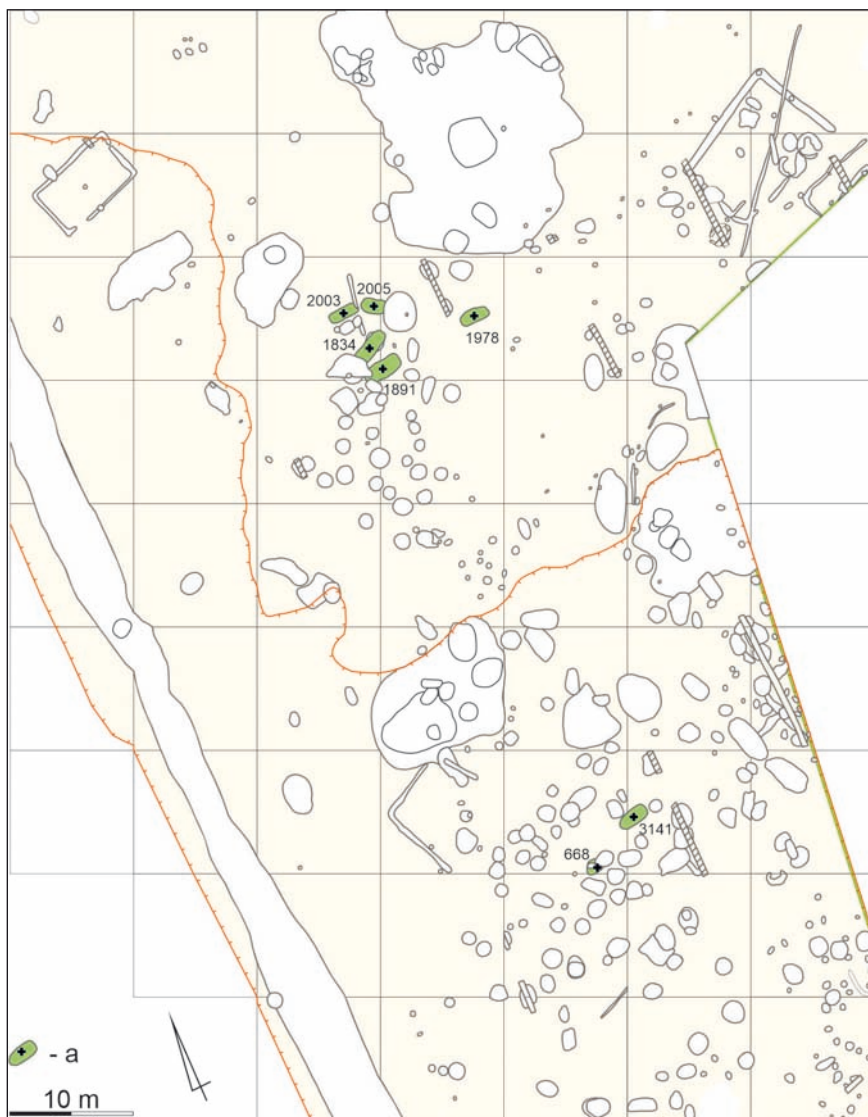


Fig. 2. Rozbórz, Przeworsk district, site 42. Spatial distribution of graves of the Mierzanowice culture. a – grave. Prepared by P. Jarosz and M. Mazurek

were discovered, as well as graves of the Malice, Globular Amphora, Corded Ware and Mierzanowice cultures (Mazurek and Okoński 2013). The excavated area is 182-184 m above sea level. This area is mainly covered with clay and loam soils. Only in the southern part, at the highest point of the site (about 184 m above sea level), there is a small patch of sand, probably a relic of a blown dune. On the west and north-west sides, the area slopes gently toward a vast, marshy valley with peat layers, which are cut by small watercourses with a southerly course, flowing into the Wisłok River.

The article deals with graves that can date to the early Bronze Age and associated with the settlement of the Mierzanowice culture population. Seven features (nos 668, 1834, 1891, 1978, 2003, 2005 and 3141) are located on the highest part of the alluvial cone formed within the wide bottom of the river valley (Figs 1, 2). In the context of the funeral rituals of this culture, it is a significant and small necropolis, which is an example of the diversity of sepulchral rite in the area between the Vistula and San rivers in the early Bronze Age. It should be recalled that during investigations carried out before the construction of the highway, burials had been discovered in settlement features in the area of Rzeszów Foothills (*e.g.*, Dobkowice, Jarosław district, sites 35 and 37; Jarosz *et al.* 2018).

2. DESCRIPTION OF GRAVES AND THEIR EQUIPMENT

Feature 668

Only the western part of the grave was preserved, the rest was destroyed by a Lusatian Culture pit (feature 411). Based on the preserved part of the grave, it can be stated that it was oriented along the W-E axis (Fig. 3: 1). Its recorded length was about 160 cm and a width of 125 cm. The depth of the feature was approximately 20 cm from the level of discovery (*i.e.*, after removal of the topsoil by the excavators) and the bottom was flat (Fig. 3: 2). The skeleton was not preserved. The grave equipment consisted of a cup and a re-touched flake.

Inventory of the grave:

1. A cup with an S-shaped profile, decorated in the upper part with four bands of double impressions of a Z-twisted cord (Fig. 3: 3). Below are vertical stamp impressions, grouped in fours. The handle of the vessel is undecorated, wide and tapered where its upper part joins the vessel body. The exterior colour of the vessel ranges from grey to black and the interior is grey. Both surfaces are damaged, rough, and uneven. There is a fine sand and gravel admixture in the clay. The dimensions of the vessel: height – 76 mm, spout diameter – 88 mm, belly diameter – 91 mm, bottom diameter – 41 mm, handle width – 14 mm, wall thickness – 4 mm, cord imprint thickness – 1.5 mm

2. A cortex flake of Volhynian flint with almost circumferential marginal retouch on the upper side – sidescraper (Fig. 3: 4). Dimensions: 40 × 26 × 6 mm.

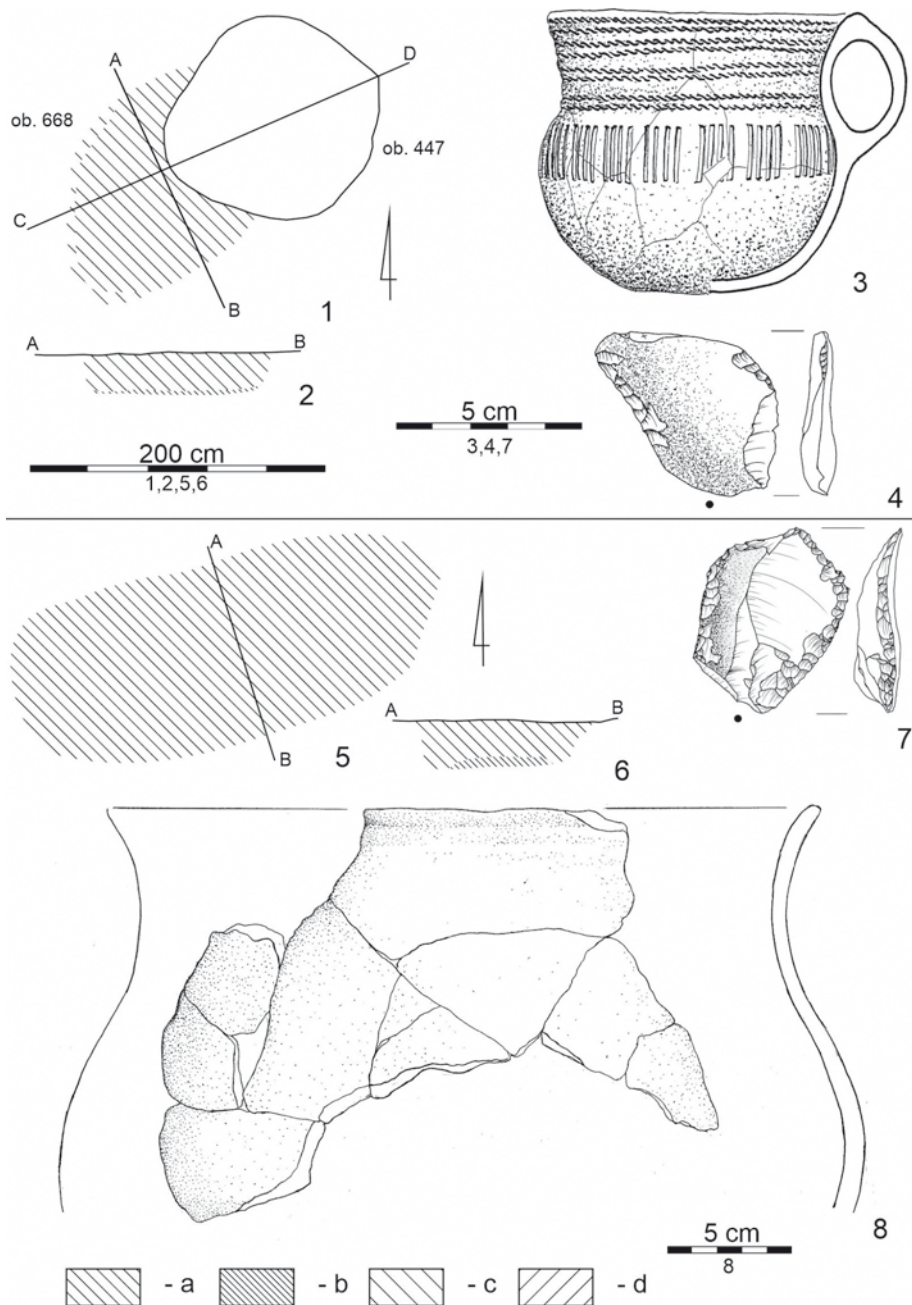


Fig. 3. Rozbórz, Przeworsk district, site 42. Feature 668: horizontal view (1) and vertical section (2); 3, 4 – grave goods. Feature 1891: horizontal view (5) and vertical section (6); 7, 8 – grave goods. a – dark brown; b – black; c – light brown; d – brown. Drawn by P. Jarosz, A. Nowak, J. Ożóg, J. Tarchała

Feature 1834

At the discovery level, the grave pit had an oval shape with the preserved dimensions of 300 × 120 cm, its longer axis was oriented SW – NE (Fig. 3: 5). The flat bottom of the feature was about 30 cm from the level of the discovery (Fig. 3: 6). The skeleton has not survived. The equipment of the deceased consisted of a pot of which only the upper part was preserved and a retouched flake. The feature crossed a deeper grave no. 2006, in which an individual of the Corded Ware culture was buried.

Inventory of the grave:

1. The upper part of the pot with a sigma-shaped profile (Fig. 3: 8). The exterior colour of the vessel ranges from dark brown to black and the interior is dark grey. Both surfaces rough and even. There is a fine admixture of crushed stone, sand and mica in the clay. The dimensions of the vessel: spout diameter – 290 mm, belly diameter – 330 mm, wall thickness – 6 mm.

2. Partly cortical flake of Volhynian flint, with almost circumferential marginal retouching on the upper side – sidescraper (Fig. 3: 7). Dimensions: 40 × 30 × 9 mm.

Feature 1891

The burial pit at the discovery level had an oval shape measuring 330 × 120 cm, the filling was homogeneous, and the longer axis was oriented along the W-E line (Fig. 4: 1). The feature was about 40 cm deep and the bottom was flat (Fig. 4: 2). The skeleton, very poorly preserved, belonged to a man aged 25 to 35. The burial equipment was located in the central part of the pit and consisted of a wrist guard made of marl, two retouched flakes, and a copper bracelet. In the filling of the feature, fragments of Globular Amphora culture vessels and a burned flint chip were also found.

Inventory of the grave:

1. Chip flake made of Volhynian flint (Fig. 4: 5) with one retouched edge on the upper side (inset). Dimensions: 66 × 32 × 5 mm, weight – 10.77 g.

2. A flake of Volhynian flint with partially preserved cortex (Fig. 4: 6) with retouching of the longer edge (inset). Dimensions: 72 × 45 × 14 mm, weight – 34.3 g.

3. Wrist guard made of silica marl (Fig. 4: 3, 3a). Rectangular shape with curved longer edges and four holes, located close to the corners of the artefact. Holes drilled from both sides. Dimensions: length – 59 mm, width – 20-27 mm, thickness – 7 mm, hole diameter – 3 mm, weight – 12.58 g.

4. Open bracelet made of copper wire with a circular cross section (Figs. 4: 4, 4a). The ends are thin and sharp. Dimensions: diameter approx. 60 mm, wire diameter 3-5 mm, weight 13.19 g.

Anthropological analysis

Only fragments of the skeleton have been preserved: crowns of poorly worn permanent molars of the maxilla: right M1 and left M2, single bones of the wrist, and fragments of massive diaphyses and epiphyses of long bones.

Age: *Adultus* (25-35 years), sex: male

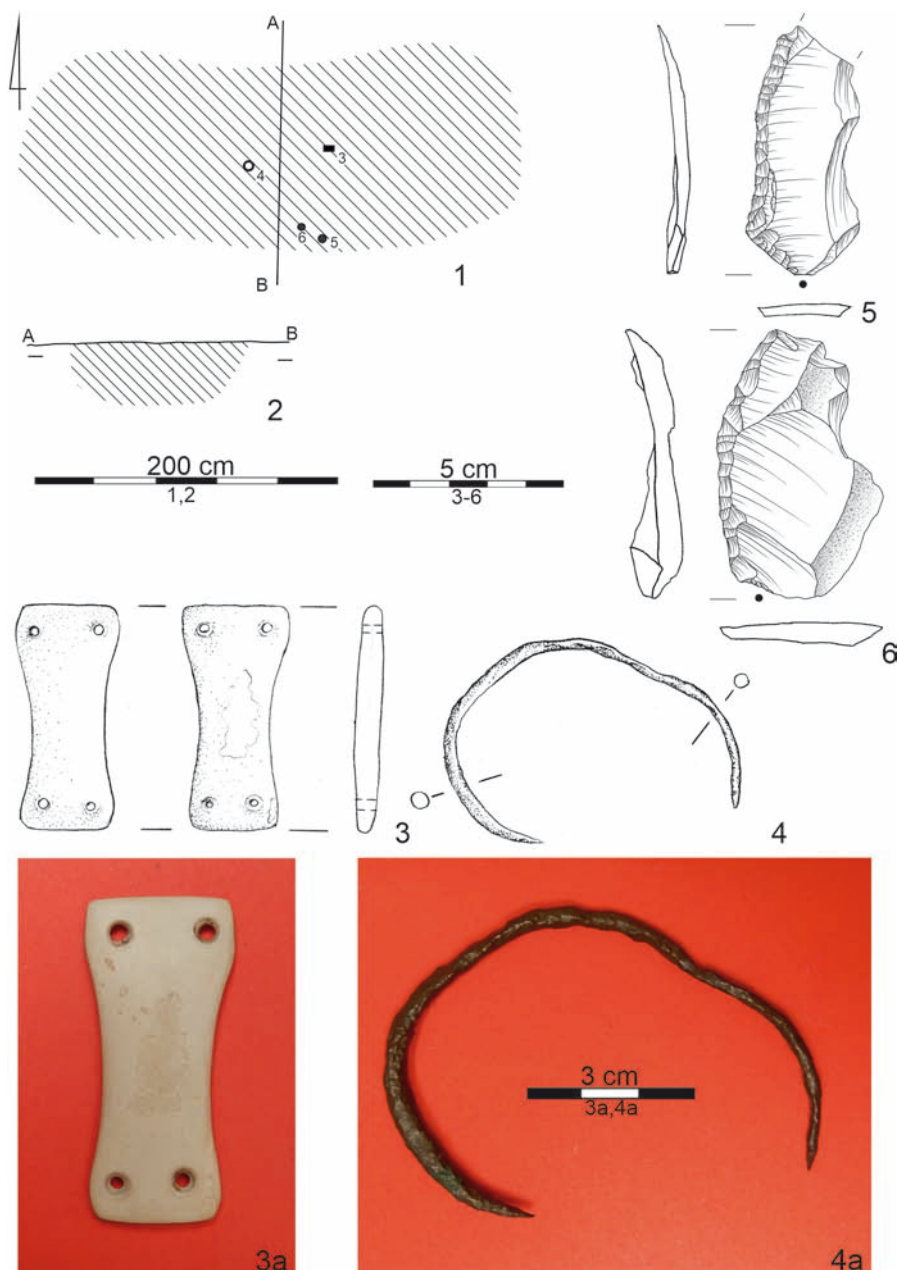


Fig. 4. Rozbórz, Przeworsk district, site 42.

Feature 1891: horizontal view (1) and vertical section (2); 3-6 – grave goods.
 Drawn by P. Jarosz, A. Nowak, J. Ozóg. Photo by P. Jarosz

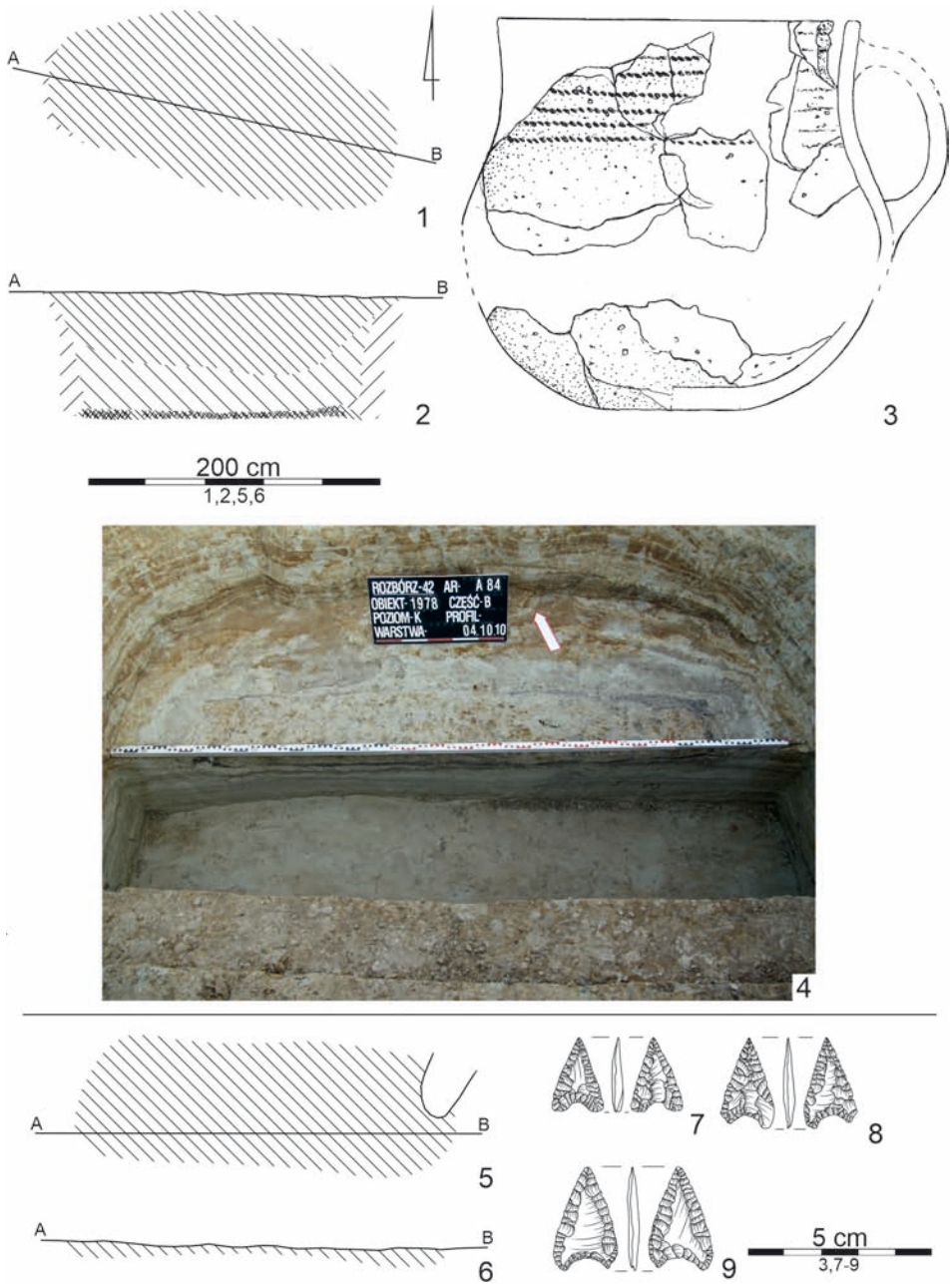


Fig. 5. Rozbórz, Przeworsk district, site 42. Feature 1978: horizontal view (1, 4) and vertical section (2); 3 – grave goods. Feature 2003: horizontal view (5) and vertical section (6); 7-9 – grave goods.

Drawn by P. Jarosz, A. Nowak, A. Mazurek. Photo by M. Mazurek

Feature 1978

At the discovery level, the feature had an oval shape with preserved dimensions of 250 × 115 cm; the longer axis was oriented along the W-E line (Fig. 5: 1). In its vertical cross-section, the pit resembled a rectangle with a flat bottom approximately 90 cm deep (Fig. 5: 2). The skeleton was not preserved. In the bottom part, traces of an internal wooden structure were recorded (Fig. 5: 4). The burial equipment consisted of a cup and was located at the bottom of the grave.

Inventory of the grave:

1. A damaged cup with an S-shaped profile decorated on the neck with seven imprints of a Z-twisted cord (Fig. 5: 3). The handle of the vessel is undecorated, wide, and tapered with the upper part placed below the spout and the lower in the upper part of the body. The outer colour of the vessel is brown and dark brown, and inside and at the edge it is grey. Both surfaces are rough and uneven. In the clay, there is an admixture of white and pink crushed stone. The bottom is not separated; it is flat. Dimensions of the vessel: reconstructed height – 110 mm, spout diameter – 96 mm, belly diameter – 116 mm, bottom diameter – 47 mm, handle width – 22 mm, wall thickness – 4.5 mm, cord imprint thickness – 1.5 mm

Feature 2003

At the discovery level, the feature had an oval shape with preserved dimensions of 260 × 90 cm, and its longer axis was oriented along the W-E line (Fig. 5: 5). The pit is shallow, about 15 cm thick, with an uneven bottom (Fig. 5: 6). The skeleton was not preserved. The burial equipment was placed in the central part of the pit and consisted of three flint arrowheads. In the filling of the feature, a small fragment of a retouched blade and a chip of Świeciechów flint were also found, these can be associated with the Neolithic settlement at the site, there were also fragments of vessels from the Globular Amphora culture, and the mouth of the vessel in the technology of the late phase of the Mierzanowice culture.

Inventory of the grave:

1. A symmetrical arrowhead made of Volhynian flint with a contour similar to an isosceles triangle. Straight side edges, wide wings, trapezoidal notch (Fig. 5: 7). Formed by a flat-surface retouch on a flake. Dimensions: length – 21 mm, width – 14 mm, thickness – 3 mm; weight – 0.7 g.

2. A slender symmetrical arrowhead made of Volhynian flint, with an outline resembling an isosceles triangle, with straight side edges, and the base slightly concave with pointed wings (Fig. 5: 8). Formed by a flat-surface retouch on a flake. Dimensions: length – 26 mm, width – 15 mm, thickness – 3 mm; weight – 0.8 g.

3. A slender, symmetrical arrowhead made of Volhynian flint, with an outline similar to an isosceles triangle, with slightly convex side edges ending with subtly arched wings. The base with a sharply arched notch (Fig. 5: 9). Formed by a flat-surface retouch on a flake. Dimensions: length – 29 mm, width – 18 mm, thickness – 2 mm; weight – 1.15 g.

Feature 2005

At the discovery level, the feature had an oval shape with preserved dimensions of 240 × 110 cm, the longer axis was oriented along the NW – SE line (Fig. 6: 1). The pit was shallow with a thickness of about 25 cm, and the bottom was uneven (Fig. 6: 2). The skeleton of an individual aged 25 to 35 years, of indeterminate sex, was in very bad condition. The deceased was folded in a slightly contracted position on the right side with his head on the SE, his face turned to N. The right arm was straightened along the body, most probably slightly directed toward the pelvis, the left arm was folded over the pelvis, and the legs slightly contracted (Fig. 6: 1, 3). No equipment was found in the grave. In the filling of the pit, a ceramic sherd was found, made with a technology typical for the late phase of the Mierzanowice culture. The surface of the vessel fragment is uneven and rough; the outer part is orange and the inner part black. The clay contains a mineral admixture of sand, fine pink and white crushed stone and mica.

Anthropological analysis

The skeletal bones are poorly preserved; permanent teeth and small fragments of long bone diaphyses and epiphyses.

M3			P1			P1	M1	M3
M3	M2	M1		I2				M3

Age: *Adultus* (25-35 years), sex: undetermined.

Feature 3141

At the discovery level, the feature had a rectangular shape with rounded corners measuring 240 × 120 cm, the longer axis was oriented along the W – E line (Fig. 6: 4). In the vertical section, the pit resembled a rectangular with a flat bottom located at a depth of about 110 cm (Figs 6: 5; 7: 1). In the bottom part, traces of an internal wooden structure were recorded. A male aged 20 to 30 years lay at the bottom, which was approximately 110 cm below the top of the pit (Figs 6: 6; 7: 2). The skeleton was poorly preserved, but its layout was readable. The deceased was folded on his right side with his head facing west. The upper limbs are very bent at the elbow and hands to the head. The right upper limb of the deceased was bent at the elbow joint and his hand was at the face, while the left arm, also bent at the elbow, was at the level of the deceased's chest. The lower extremities were bent at the hip joint at the right angle and at the knee joint strongly bent, forming an acute angle. The burial equipment consisted of six beads made of bone discovered in the area of the ribs.

Inventory of the grave:

1. Six animal bone beads with a circular outline (Fig. 6: 7). Flat, biconical, or boat-shaped in cross-section. Dimensions: the diameter of the monument – 10-14 mm, the diameter of the hole – 4-5 mm, height – 3-8 mm.

Anthropological analysis

The skeleton is almost complete, but significantly damaged. The cranial vault of the long skull of medium structure was reconstructed (g-op: 180 mm; eu-eu: approximately 130 mm), and all preserved sections of the sutures are open. The mastoid processes of the temporal bones are wide and long, the superciliary arches at the frontal bone are marked, and the squama of the occipital bone is sculpted. The right mastoid process and the petrous

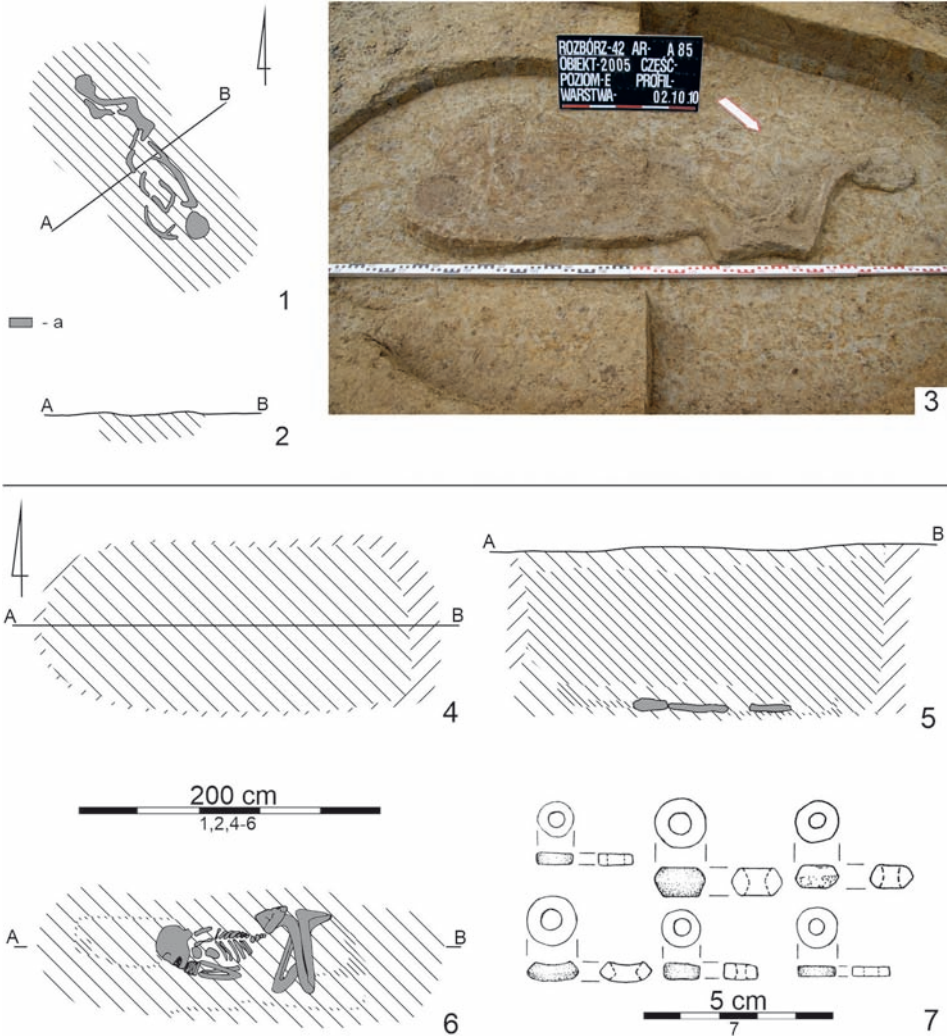


Fig. 6. Rozbórz, Przeworsk district, site 42.

Feature 2005: horizontal view (1, 3) and vertical section (2). Feature 3141: horizontal view (4, 6) and vertical section (5); 7 – grave goods. a – human bones. Drawn by P. Jarosz, M. Mazurek, J. Ożóg

part of the temporal bone show significant bone tissue overgrowth in the form of inflammatory lesions related to the pathology of the middle ear. Permanent teeth are poorly worn:

M3	M2		P2		C	I2	I1	I1	I2	C	P1	P2	M1	M2	M3
M3	M2	M1	P2	P1	C	I2	I1	I1	I2	C	P1		M1	M2	M3

The bones of the postcranial skeleton are very massive. There are fragments of vertebrae and ribs, as well as damaged bone fragments from the upper and lower limbs.

Age: *Adultus* (20-30 years), sex: male



Fig. 7. Rozbórz, Przeworsk district, site 42. Feature 3141: vertical section (1) and horizontal view (2). Photo by M. Mazurek

3. ANALYSIS

The graves discovered at the site occupied the highest part of the area and were gathered into two groups (Fig. 2). The first cluster consisted of five graves – 1834, 1891, 1978, 2003, 2005; they were located in an area of 15 × 7 m. The other two graves, 668 and 3141, were located approximately 40 m south of the first group. Two of the discovered graves had a stratigraphic relationship with other features. Grave 688, was intersected by feature 411 dated to the Lusatian culture (Figs 2; 3: 1), which destroyed its eastern part, while feature 1834 cut a grave of the Corded Ware culture no. 2006 (Fig. 2).

3.1. Chronology of graves

The relative chronology of the graves was determined on the basis of their inventories. Due to the poor preservation of the bones, which caused a low collagen content, it was not possible to obtain radiocarbon dating for the burials. Funerary equipment was found in six features – graves 668, 1834, 1891, 1978, 2003, 3141, only one did not contain any gifts – 2005, and its dating can be indirectly based on the material found in its filling. Three burial inventories included vessels (688, 1834, 1978), four of them flint artefacts (668, 1834, 1891, 2003), and in one case, a copper ornament, a stone wrist guard (1891), and bone beads (3141) were found.

The small cup found in feature 668 was decorated at the neck with four double Z-twisted cord imprints, below which, on the belly, four vertical stamp impressions were located (Fig. 3: 1). The form of the vessel refers to type B2 according to S. Kadrow and J. Machnik (1997, fig. 72). Neck ornamentation in the form of horizontal Z-twisted cord impressions is common at the vessels of the early phase of the Mierzanowice culture (Kadrow and Machnik 1997, fig. 4, 8, 10; Jarosz and Mazurek 2020) and less frequently in the proto-Mierzanowice phase (Kadrow and Machnik 1997, 18, fig. 3: 7). Vertical ornamentation on the belly of the vessel also appears in the early stages of this unit's development. However, the arrangement in the form of grouped impressions of the stamp should be considered as very rare. A similar decoration consisting of three to five imprints was found on the jug from the settlement pit 112 in Dobkowice, site 37 (Jarosz *et al.* 2018, 81, tab. 10: 2) and on the amphora (?) from Sietesz, Przeworsk district (Madej 1999, 52, fig. 8: k). Grouped three imprints, but made of cord, are visible on the belly of a cup from grave 89 in Mierzanowice (Bąbel 2013, 124, fig. 159: 1), and on a cup from grave 6 in Torczyn in the Łuck region where four long, vertical incisions were grouped (Fitzke 1975, 56, fig. 5: b). The decoration of vessels consisting of horizontal and vertical elements, usually made with the use of double impressions of a cord, occurs on the ceramic of the early phase of the Mierzanowice culture (Kadrow and Machnik 1997, figs 4, 5) and consequently the cup decorated with a slightly different technique should be dated to this phase.

A cup, similar to Kadrow and Machnik's (1997) type A4 or C (Fig. 5: 3) was discovered in feature 1978. The vessel is decorated around the neck with seven loosely placed horizontal imprints of a Z-twisted cord. Such ornamentation appears on cups in the early phase of the Mierzanowice culture (Kadrow and Machnik 1997, 38). Along with the vertical impressions, such decoration is visible, for example, on a vessel from grave 79 in Żerniki Górne, Busko-Zdrój district (Kempisty 1978, 142, fig. 186: 1) and in the cemetery in Veselé, Piešťany district, grave 5 and 17 (Budinský-Krička 1965, 101, 102, Taf. V: 4, VI: 11) and Ulwówek, Sokal district (Kadrow and Machnik 1997, fig. 142, 59: 10).

Grave no. 1981 can also be associated with the early phase of the Mierzanowice culture (Fig. 4). The burial equipment included a wrist guard made of silica marl (Figs 4: 3; 3a). The long sides of the item are concave, and the corners have four holes drilled from the top and bottom. Its shape can be assigned to type E according to the classification of E. Sangmeister (1974, abb. 8). Similar finds are known from south-east Poland in the graves of the Mierzanowice culture, at Kraków-Nowa Huta-Mogila, site 53, grave 11/63 (Hachulska-Ledwos 1967, 91), Święcice, Miechów district, grave 3 (Prokopowicz 1964, 404, 405, fig. 5-8) and Kietrz, Głubczyce district, site D, grave 102 (Łęczycki 1983, 69, fig. 2: 4). The artefacts from these sites were made of slate, and have a rectangular outline with slightly curved edges and four holes at the corners. These wrist guards can be classified as type C according to E. Sangmeister. Similar finds were found in the Małopolska Upland in the grave of the Bell Beaker culture in Samborzec, grave III and Beradz, grave 5 both Sandomierz district (Budziszewski and Włodarczak 2010, fig. VI: 7). In the latter case, the radiocarbon chronology is 3790 ± 35 BP (Poz-101084), after calibration referring to 2286-2146 BC (1 σ ; Jarosz *et al.* 2020, fig. 3: B) and can be associated with the beginnings of the Mierzanowice culture. Type C is typical for the Bell Beaker culture in the Moravian area (Budziszewski and Włodarczak 2010). The artefact of grave 11/63 from Kraków-Nowa Huta-Mogila, site 53 (Hachulska-Ledwos 1967), is rectangular in shape with two openings at opposite corners. Graves containing wrist guards associated with the Mierzanowice culture and the Bell Beaker culture were known from the areas west of the Vistula. Only the site in Rozbórz is located east of the Vistula river, and the item discovered there is at the same time the easternmost find of this type in the Mierzanowice culture.

A copper bracelet with thinned ends was also discovered in the feature 1891 (Fig. 4: 4, 4a). The presence of copper bracelets in the features of the early phase of the Mierzanowice culture is a rare phenomenon; known examples come from the areas of south-eastern Poland, for example, damaged bracelets from the grave 13/63 from Kraków-Nowa Huta-Mogila, site 53 (Hachulska-Ledwos 1967, 91), Mierzanowice, grave 84 (Bąbel 2013, fig. 159: 3) and Jakuszowice, Kazimierza Wielka district, site 2 (Jarosz and Szczepanek 2019, 284, fig. 4: 3). This find is not a chronological indicator.

Grave 3141, in which bone beads were discovered, can be cautiously associated with the early phase of the development of the Mierzanowice culture (Fig. 6: 7). They were usually placed in the vicinity of the deceased's chest. Ornaments of this type were found in the

above-mentioned grave 89 in Mierzanowice (Bąbel 2013, fig. 159: 3), but also in a late phase grave of the Mierzanowice culture in Świniary Stare, Sandomierz district (Krausowie 1971, Pl. 4). Therefore, it is not an item that allows for certain dating. These ornaments are much more common in early phase graves, *e.g.*, Mirocin, Przeworsk district, site 27, feature 271 (Jarosz and Mazurek 2020, Pl. 25: 1), Łubcze, Tomaszów Lubelski district, site 37, grave 1 (Machnik *et al.* 2009, 102, fig. 74: 3), Jakuszowice, site 2 (Jarosz and Szczepanek 2019, 283, fig. 2, 3). The way in which the deceased was situated with strongly contracted legs indicates its early Mierzanowice chronology.

In feature 1834, an S-profiled pot was discovered, only the upper part of which is preserved (Fig. 3: 8). This grave may be associated with the younger phase of the Mierzanowice culture. It is difficult to define its type clearly, but the composition of the admixture and the method of forming the vessel allow one to associate this pot with the late phase of the Mierzanowice culture. Undecorated pots are a rare element of grave inventories. Such examples are known mainly from the cemetery in Szarbia, Kazimierza Wielka district, including graves 2/III, 4/III, 5/V, 10/5 (Baczyńska 1994, tables II: B1; III: B3; VII: 4; IX: 2).

Another grave for which it is difficult to determine the chronology is grave 2005, in which the skeleton is contracted on the right side and knees slightly bent was discovered in a shallow pit (Fig. 6: 1, 3). The dating of this feature can only be determined indirectly, based on the fragments of potsherds found in its filling, technologically similar to the pot found in the grave in 1834. The way of placing the deceased with slightly bent legs also refers to the ritual of the classic and late phase of the Mierzanowice culture. Analogous arrangements of the deceased are known from single graves from the cemeteries of the Mierzanowice culture, *e.g.*, Krzewica, Tomaszów Lubelski district (Gurba 1960, 16, fig. 1), Pieczenięgi, Miechów district (Krauss 1968, fig. 2, 3), Iwanowice, Kraków district, site Babia Góra (Kadrow and Machnikowie 1992), dating to the later phases of this unit development.

It is hard to clearly define the chronological position of feature 2003. In this grave, three Volhynian flint arrowheads were found (Fig. 5: 7-9). The proportions of the slender artefact with a shallow, arched, or trapezoidal niche refer to type III of the Mierzanowice culture arrowhead classification (Borkowski 1987, fig. 20). Such finds are not a chronological indicator. In the materials of this culture, they are found in the early phases of development, when they appear together, for example, with cups decorated with zone ornaments – *e.g.*, Kraków-Nowa Huta, site Kopiec Wandy, grave 11/63 (Hachulska-Ledwos 1967, 90, 91, Pl. I), Starachowice-Wierzbnik, grave 16 (Sawicka 1922-1924, 296-302, figs 1-3), Żerniki Górne, grave 79 (Kempisty 1978, fig. 186). They were also found in the ensembles dated to the classical and late phases of the Mierzanowice culture – Żerniki Górne, grave 19 (Kempisty 1978, fig. 151), Mierzanowice, Opatów district, graves 9 and 11 (Bąbel 2013, figs 33, 34). Volhynian flint is a typical raw material in the production of flint tools associated with the Mierzanowice culture at sites located east of the Vistula, *e.g.*, in the graves at Sokal Ridge (Libera 2009) and in the settlements in the Rzeszów Foothills (Jarosz *et al.* 2018; Jarosz and Mazurek 2020). However, it is not often used for the

production of arrowheads at Mierzanowice culture sites located in the Małopolska Upland (Borkowski 1987, 161).

It should be emphasized that other tools from the remaining graves at the site in Rozbórz were made of cretaceous Volhynian raw material. In features 668 (Fig. 3: 4) and 1834 (Fig. 3: 7), sidescrapers were found. Such forms are typical for early Bronze Age industries (Włodarczak *et al.* 2011, 335). In feature 1891 (Fig. 4: 5, 6), knife-shaped forms made on flakes of Volhynian flint were found. Such artefacts are found both at the cemeteries of the Mierzanowice culture (Kempisty 1978, 144, fig. 190: 2), and in the Bell Beaker ones (Kopacz *et al.* 2009, Pl. 24:13; Budziszewski and Włodarczak 2010, Pl. XV: III-12).

3.2. Elements of the funeral rite

The analysis of the grave goods indicates at least two phases of the cemetery's utilisation, which can be synchronized with the early (features 668, 1891, 1978, 3141) and classical or late (1834, 2003, 2005) phases of the Mierzanowice culture. Graves that can be dated to the early phase were located in the northern (1891, 1978) and southern (668, 3141) groups. On the other hand, classical or late graves occurred only in the northern groups (1834, 2003, 2005; Fig. 2). All of them have an oval shape and rectangular vertical section with a flat bottom. The size of the burial pits varied and ranged from 320 × 130 cm – feature 1891 (Fig. 4: 1) to 240 × 110 cm – feature 1978 (Fig. 5: 1). Their depth also varied from very shallow pits with depth 20-30 cm – features: 1834 (Fig. 3: 6), 1891 (Fig. 4: 2), to a depth of about 110 cm – feature 3141 (Figs 6: 5; 7: 2). The fillings of the burial pits indicated a single event after the funeral rites had been completed. In the central part of the pit of features 1978 (Fig. 5: 4) and 3141 (Figs 6: 6; 7), associated with the early phase of the Mierzanowice culture, traces of an internal wooden structure, most probably in the form of a log, have been recognised. It is typical for the graves of the Mierzanowice culture and they were found, for example, on sites between the Vistula and San rivers in Zagórze, site 2 (Jarosz 2017), Łysokanie, site 8 – graves 5 and 6 (Józwiak and Rosen 2006, 539, figs 5, 6) and Targowisko, site 14 and 15 – feature 882 (Czerniak *et al.* 2006, fig. 19), all Wieliczka district. Similar constructions are also known from the Małopolska Upland, for example, graves from Mierzanowice (Bąbel 2013, fig. 38), Żerniki Górne (Kempisty 1978, fig. 157) and located further east in the Dniester basin, from Byków near Drohobycz (Czopek *et al.* 2016, 195-207).

The longer axis of the graves from the early phase of the Mierzanowice culture at the site in Rozbórz was oriented along the lines of W-E (2), SW-NE (1) and NW-SE (1). In the proto- and early phases of this culture, the orientation of the burial pits located in area between the Vistula and San rivers is varied. At the cemetery in Łysokanie, site 8, most of the features were oriented along the NE-SW axis (Józwiak and Rosen 2006, 538). In the Małopolska Upland, burials dated to the proto- and early phases in Modlnica, Kraków district, site 5, they were oriented along the N-S, NE-SW and SW-NE axes, in Żerniki

Górne mainly along the W-E axis (Kempisty 1978, 109-149; Włodarczak 1998, fig. 9; 2011). At Sokal Ridge grave 1 from Łubcze, site 37 that was dug into mound 1 was oriented along the N-S line (Machnik *et al.* 2009).

Similarly to the graves of the early phase, burials dated to the classical or late phases were oriented. Analogical differentiation was observed at site 6 in Szczytna, Jarosław district, where the graves were placed near the destroyed mound I (Hozer *et al.* 2017, 104, fig. 51). Such variation in orientation is also found at cemeteries from the Małopolska Upland, *e.g.* Iwanowice, site Babia Góra (Kadrow and Machnikowie 1992, 14-46), Szarbia, Kazimierza Wielka district (Baczyńska 1994), where location of the pit is related to the sex of the buried.

The preservation of the human remains in the graves in 2005 and 3141 allowed for reconstruction of the arrangement of the remains of the deceased (Figs 6: 1, 6; 7: 2), which in the context of the generally advanced destruction of bones in the graves of the Mierzanowice culture in this region is exceptional. Well-preserved human remains found in intentionally placed graves are known from Jawczyce, site 1, burial mound 2, grave 2 (Zoll-Adamikowa and Niżnik 1963; Jarosz 2021), Mirocin, site 27, feature 271 (Jarosz and Mazurek 2020, 51, photo 9) and Skołoszów, Jarosław district, site 7, feature 750 (Rybicka *et al.* 2017, 138, fig. 27). In other cases, the skeletons, due to the shallow depth of the burial pit or the acidic reaction of the soil, are not preserved. Such is the situation at Bochnia Submontane Region (Targowisko, Łysokanie, Zagórze). Again, the situation is similar in most of the graves in the Rzeszów Foothills (including Szczytna, site 6; Lipnik; Mirocin, site 27, grave 214) and the neighbouring areas of the Carpathian Foothills (*e.g.*, Średnia, site 3, grave 2).

The male buried in feature 3141 (Fig. 6: 2; 7), was placed along the W-E line, on the right side, in a strongly contracted position, with his head facing W and his face facing S. The hands were folded around the chest and head of the buried and the legs were bent sharply. Burials oriented this way, with skeletons resting on the right side, are typical for male graves in the early phase of the Mierzanowice culture development. Examples of such burials are known from Żerniki Górne, site 1, graves: 52, 59, 79, 96 (Kempisty 1978) and Mierzanowice, site 1, grave 89 (Bąbel 2013).

In the case of the grave of a later chronology, no. 2005, the young male lay contracted on the right side, with his head to the SE (Fig. 6: 6). The layout on the right side, as in the early phase, is reserved for male burials. However, the orientation toward the east with deviations towards the N and S is typical for female graves in the late phase (Kadrow and Machnikowie 1992, 69, fig. 34).

The location of the grave goods in relation to the skeleton could be observed in grave 2003, where the flint arrowheads were located probably in the central part of the burial, because during anthropological analysis they were found by the hip of the deceased. Bone beads were found in the chest zone of a male buried in grave 3141 (they were discovered between costae during their cleaning in laboratory). In feature 668, the equipment, a cup and a sidescraper, were found in the preserved western part of the grave. In the central

part of the pit in the burial 1891 there was a wrist guard and a copper bracelet. To the south of them were laid two flint tools (Fig. 4: 1). The skeleton was partially preserved, which does not allow for the precise location of the finds in relation to the body of the deceased. One can only assume that the copper ornament and the wrist guard were probably placed on the forearms. The flint artefacts were placed on the side of the deceased. Such an interpretation is possible due to the arrangement of find by the remains discovered in the grave from Kietrz (Łęczycki 1983, fig. 2). The wrist guard was located in the central part of the burial pit, in the place of the forearm bones. An anthropological analysis of the remains from Kietrz allowed us to determine that they belonged to a male (Miśkiewicz 1983) folded on his right side with strongly crouched legs.

In all the graves discussed, with preserved bones, there were adult individuals buried and two of them were male. However, in grave 2005, the deceased was buried on his right side, which is also typical for this sex. Burials containing the remains of males laid on the right side dominate in the early phases of the Mierzanowice culture (*e.g.*, Żerniki Górne; Kempisty 1978, tab. 47; Włodarczak 1998, 171). Only one grave containing the remains of a female deposited on the left side is known from Mirocin, site 27, feature 271 in the Rzeszów Foothills (Fig. 8: 4; Jarosz and Mazurek 2020, 51, photo 9; Szczepanek 2020, 204-207).

As in the early phases, in the classical and late stages in the San-Vistula region, the number of graves is extremely modest. Only two graves from Jawczyce and Skołoszów are known, where a male and a female were placed, respectively, on the right side and in an unidentified arrangement (Fig. 8: 5). The graves of this phase form small groups. Similar, small clusters are found near the Corded Ware culture mounds at Sokal Ridge; *e.g.*, Lubcze, site 25, mound 3 and the site 38, Mound 1 (Machnik *et al.* 2009, 80, 108-115). This contrasts with the area of the Małopolska Upland, where large cemeteries have been discovered and the rule of placing males on the right side and females on the left side is observed, *e.g.* Iwanowice, site Babia Góra (Kadrow and Machnikowie 1992), Szarbia (Baczyńska 1994), Mierzanowice (Bąbel 2013).

In addition to typical graves, the differentiation of the funeral customs of the Mierzanowice culture population between the Vistula and San rivers is manifested by the presence of burials in settlements in pits (Fig. 8: 1-3). At settlement sites associated with the early phase of the Mierzanowice culture, single skeletons were found, for example, in Mirocin, site 24, feature 16 (Fig. 8: 1). In a settlement pit, the burial of a young female lying on her right side with a skull of a *Bos taurus* was discovered (Jarosz and Mazurek 2020). Other cases are known from Dobkowice, site 39, feature 54, upper level of the pit (Jarosz *et al.* 2018, 103; table 27: 1) and Skołoszów, site 7, feature 256 (Rybicka *et al.* 2017, 119, fig. 8: B). There are also examples of more than one individual in settlement pit *e.g.*, three – Dobkowice, site 37, feature 13 (Jarosz *et al.* 2018, 73; table 5: 1). Collective burials may also be of a partial nature, *e.g.* in Dobkowice, site 39; feature 54, bottom level (Fig. 8: 3; Jarosz *et al.* 2018, 103; table 27: 2), but it is difficult to determine whether it was a deliberate intention

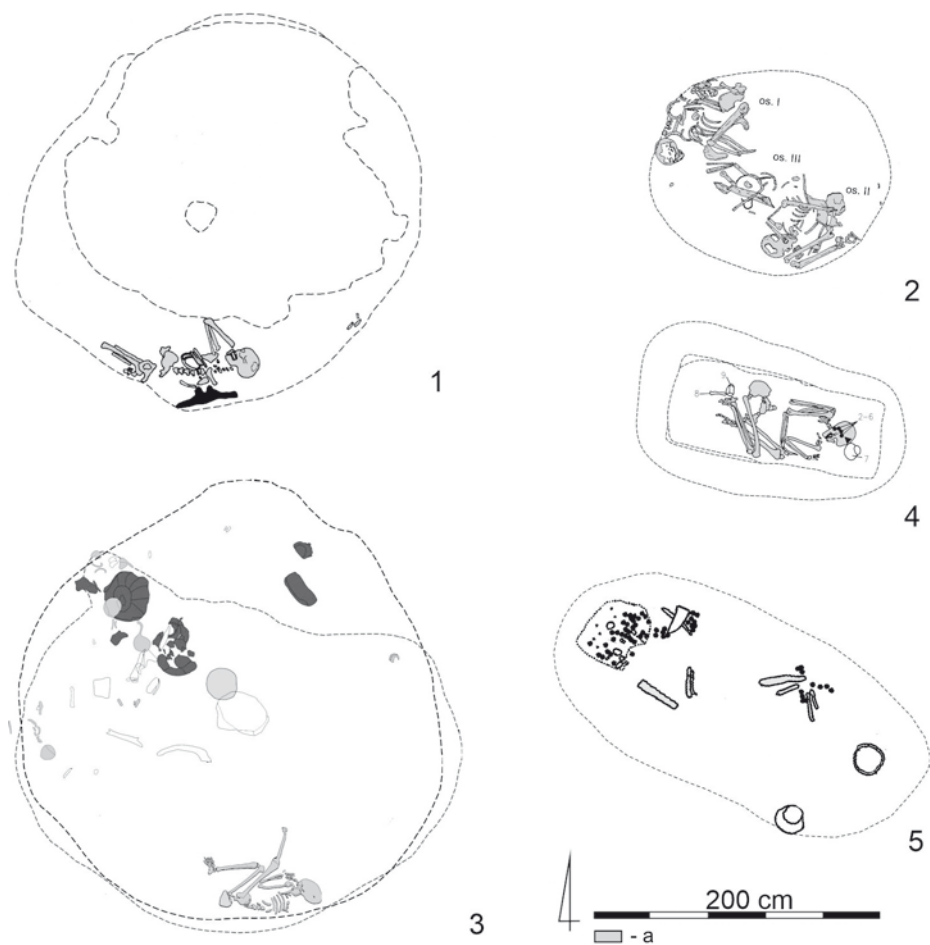


Fig. 8. Selected features with human remains in Rzeszów Foothills.

1 – Mirocin, site 24, feat. 16; 2 – Dobkowice, site 37, feat. 13; 3 – Dobkowice, site 39, feat. 54; 4 – Mirocin, site 27, feat. 271; Skołoszów, site 7, feat. 750; a – human bones. Prepared by P. Jarosz

or the result of the fragmentation of the burial related to the natural slow process of filling the feature, e.g. Dobkowice, site 37, feature 120 (Jarosz *et al.* 2018, 59-61, photo 20; 86, table 13: 2, 3; Szczepanek 2018, 124). Similarly in settlements associated with the classical and late phases, burials in pits were discovered in Skołoszów, site 7, features 355, 658 (Rybicka *et al.* 2017, 119, fig. 8: B; 128, table 2) and Ożańsk, Jarosław district, site 13 (Kardow 2013, 124).

In addition, it was observed that in settlement pits in the region between the Vistula and San rivers, during the whole development of the Mierzanowice culture, children and

females were buried as a complete body or part of it; however, partial burial may be the result of taphonomic processes. There are no clear examples of adult male burials (see Rybicka *et al.* 2017; Jarosz *et al.* 2018; Szczepanek 2018; 2020; Jarosz and Mazurek 2020). Analogous pits containing individuals of the same age categories were discovered on sites in the Małopolska Upland, for example in Wilczyce, Sandomierz district, site 10, feature 4 (Jarosz *et al.* 2020), Sandomierz-Kruków, Sandomierz district (Wróbel 1985), Iwanowice, site Babia Góra, feature 5 (Kadrow and Makowicz-Poliszot 2000, 260).

3.3. Individuals of the Mierzanowice culture in light of strontium isotope analyses

The analyses of strontium isotopes for the burials in graves 1891 and 3141 were obtained at the Isotope Laboratory of the University of Adam Mickiewicz in Poznań (Belka *et al.* 2018). The aim of the research was to establish the origin of the analysed individuals (Price *et al.* 1998; Alt *et al.* 2014). The strontium isotope signatures are presented in Table 1 and Figure 6.

The interpretation of the results obtained for the population of the Mierzanowice culture from the Rzeszów Foothills is presented in detail in the monograph which describes the sites of this culture in Dobkowice and Mirocin (Belka *et al.* 2018; Szczepanek 2020).

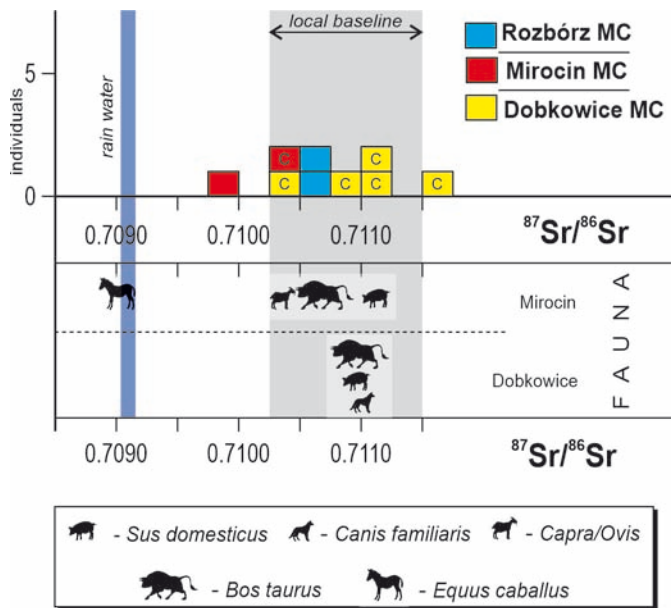


Fig. 9. Strontium isotopic signatures ($^{87}\text{Sr}/^{86}\text{Sr}$) of enamel from human and animal teeth at sites of the Mierzanowice culture from Rzeszów Foothills. Prepared by A. Szczepanek

Table 1. Results of strontium isotope analyses of human remains from Site 42 in Rozbórz, Przeworsk district

Site	Feature	Age (years)	Sex	Sample	$^{87}\text{Sr}/^{86}\text{Sr}$
Rozbórz 42	1891	25-35	M	upper right M1	0,710580±09
Rozbórz 42	3141	20-30	M	lower M2	0,710725±13
				upper left M1	0,710595±12

Subsequent analyses allowed the compilation of isotope signatures from features 1891 and 3141 with people of the Mierzanowice culture buried in graves and settlement pits located in the Rzeszów Foothills in the context of results obtained for animal teeth (according to Belka *et al.* 2018; Szczepanek 2020).

The comparison of the attained data allows us to confirm earlier conclusions concerning the settlement model of the Mierzanowice culture communities and to indicate the area of Rzeszów Foothills as a place where they spent their childhood (Fig. 9).

5. CONCLUSIONS

The discovery of graves of individuals of the Mierzanowice culture in Rozbórz has enriched the small number of such features known in the region between the Vistula and San rivers. Due to their small number, it is difficult to present a synthetic description of funeral customs. There are, however, some tendencies visible, especially in the choice of a place to lay the dead. It was found that typical graves containing individual burials were located outside of settlements at different distances from them. This situation was recorded, for example, at site 27 in Mirocin, where the graves associated with the early phase of the culture were located far from the settlement features of this phase (Jarosz and Mazurek 2020, 74, fig. 48). Similar remarks were made in the case of graves and settlement pits in the late phase of the Mierzanowice culture located at the same elevation at site 6 in Szczytna (Hozer *et al.* 2017). Sometimes the graves, as in Rozbórz, form small groups, *e.g.*, Łysokanie and Targowisko. The second possibility for placing the dead was settlement pits, with a trapezoidal vertical cross-section, which do not differ from typical settlement features. Such structures are known from the above mentioned Dobkowice, Mirocin (early phase), Skołoszów and Ożańsk (late phase).

The described diversity of the interment rite, especially in the early phase, reflects the complexity of funeral phenomena known in the other areas of the upper Vistula, Bug, and Dniester basins, as well as the wider Central European context. The customs of placing the dead (children and females) or parts of their bodies in settlement pits are visible in the Únětice culture (Gralak 2009; Knipper *et al.* 2016). The demonstrated diversity of the funeral rite requires further investigation, especially a genetic study, allowing for the iden-

tification of interregional connections of these culture communities. In this context, the analysed graves from Rozbórz create an important study of cultural phenomena present in the early Bronze Age.

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