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EARLY MEDIEVAL BURIAL FROM THE CULMINATION OF THE OLD TOWN HILL IN SANDOMIERZ

ABSTRACT

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The subject of this article is a grave dated to the end of the 10th century AD discovered in 2016 at the culmination of the so-called Old Town Hill in Sandomierz (Sandomierz Site no 45). The grave, just like a burial found in 2006 – located a dozen or so metres from the discussed feature – was unusually oriented – approximately along the N-S axis. Specialist analyses and examination of the burial goods found in the grave – a knife, a firesteel, a flint strike-a-light and a vessel fragment – indicate that the buried man probably lived in Sandomierz or its surroundings. The graves discovered in 2006 and 2016 are not part of a vast cemetery that occupied the middle and upper part of the Old Town Hill in the 11th century, but they are separate burials. It is possible that they attest to an abandoned attempt to establish a cemetery by an unspecified group inhabiting Sandomierz at the end of the 11th century, desiring to stress their distinctiveness from the rest of the population not only by having their own necropolis, but also by digging graves that were oriented in a different direction.

Keywords: Sandomierz, Early Middle Ages, grave, cemetery

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INTRODUCTION

The term 'Old Town Hill' refers to a vast hummock in Sandomierz, located at a certain distance from the chartered town – within the marginal zone of the Sandomierz Upland – gently descending to the Vistula valley (Fig. 1). The name derives from the Old Town – *civitas antiqua*, a designation used already in the Middle Ages, as opposed to the city located on the Town Hill by prince Leszek the Black in 1286 (*cf.*, Buko 1993, 43-47; Kiryk 1994, 120; Florek 2019, 37). The elevation is also called St Jacob's or St Paul's Hill. Both names derive from the dedications of the medieval churches standing there. Today, the Old Town Hill is split by a deep loess gully called Queen Jadwiga's Ravine, which starts near St Paul's Church and ends at the foot of the hill, in the Vistula valley.

In 1928, a vast inhumation cemetery from the 11th century and remains of an early medieval settlement from a somewhat later time were discovered in the central part of the Old Town Hill during earthworks related to the construction of the so-called House of Retired Priests at Staromiejska Street and the building of the Catholic School located on the opposite side of the Queen Jadwiga's Ravine. The rescue research then commenced under the supervision of Józef Żurowski – which continued the next year – encompassed only part of the cemetery, near the building complexes of St Jacob's Church and the monastery of the Dominican Order, between the Staromiejska Street and Queen Jadwiga's Ravine. The area of the cemetery located on the other side of the ravine was not researched and its greater part was destroyed (*cf.*, Gardawski 1955, 96). The excavations led by Żurowski led to the discovery of about 200 (from 177 to 228) graves considered to be early medieval. Three funerary features were dated to the Neolithic, and another two graves – to late medieval times or even the Modern Period (*cf.*, Żurowski 1929, 26-38; 1930, 15-17; Sarama 1957, 444-457; Gąssowski 1969, 399-434; Rysiewscy 1991, 193-231; Florek 2012, 49; 2019, 40).

In later years, building work and earthworks resulted several times in finding early and late medieval graves in different parts of the Old Town Hill. Nevertheless, archaeological excavations in the places of their discoveries – which led to unearthing new burials (Fig. 2) – were conducted only at a few occasions (*cf.*, for example, Bajka 2011, 60, 61; 2016, 62-64; Bajka and Florek 2011, 169-180; Florek 2006a, 65, 66; 2006b, 410-412; 2011, 24-32; 2012, 49, 50; 2019, 43, 44; Florek and Zakościelna 2005, 132, 133; Grabowska and Grabowski 2017, 50-53). It is not certain whether all these graves were part of one vast necropolis, which covered the greater part of the Old Town Hill, or they attest to the existence of two or more medieval cemeteries that were located one near the other and coexisted at least for some time (*cf.*, Florek 2012, 51, 52). We will tackle this question at the end of the article.

Besides the cemetery – or cemeteries – located on the Old Town Hill, similar non-churchyard cemeteries from early medieval Sandomierz were located on the Town Hill and Reformackie Hill (Florek 2011, 24-32; 2012, 46, 47; 2021a, 22-27; 2021b, 79, 80; 2023).

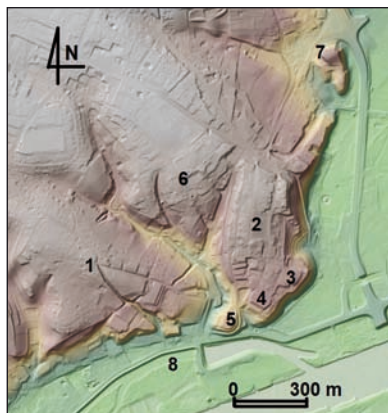


Fig. 1. Topography of medieval Sandomierz.

Key: 1–Town Hill; 2 –Gostomianum Hill; 3 – Collegiate Hill; 4 – Castle Hill; 5 – Old Town Hill; 6 – Reformackie Hill; 7 – Żmigród Hill; 8 – Vistula Valley. Prepared by M. Florek



Fig. 2. Sandomierz – Old Town Hill. Early medieval cemetery and graves known from archaeological research and serendipitous discoveries. Key: 1 – part of the cemetery researched by J. Żurowski in 1928-1929; 2 – part of the cemetery destroyed during the construction of the Catholic School at the end of the 1920s; 3 – part of the cemetery destroyed at the end of the 19th and beginning of the 20th century; 4 – graves discovered in 2006 and 2016; 5 – other graves known from archaeological research and serendipitous discoveries after 1945. Prepared by M. Florek

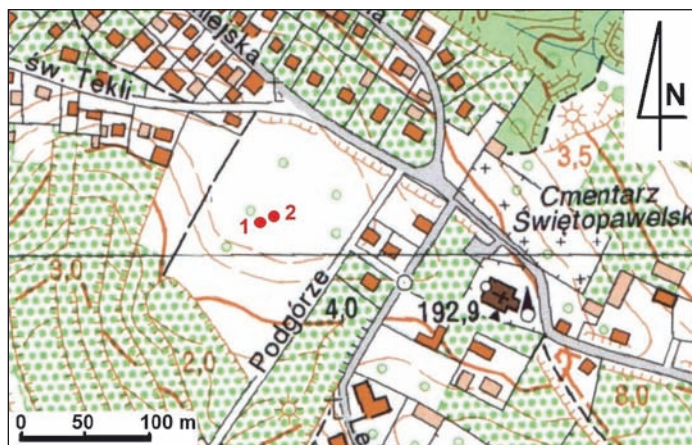


Fig. 3. Sandomierz, Site 45. Locations of the graves discovered in 2006 and 2016. Prepared by M. Florek

We will focus on an early medieval grave (Fig. 3) discovered on the culmination of the Old Town Hill – to the west of St Paul’s Church – during a rescue research conducted in 2016 by Monika Bajka (Bajka 2016, 62-64). Earlier, in 2006, a considerably damaged early medieval burial was found a dozen or so metres from this funerary feature. Only the bones of the lower limbs and burial goods (a knife and iron hoops of a small wooden bucket) preserved in this grave (Florek 2006a; 2006b). Monument preservation records refer to the area of both discoveries as Site 45 (*cf.*, Florek 1995, 171, 172; 2018, 79).

GRAVE DESCRIPTION AND BURIAL GOODS

Grave

The outline of the burial pit discovered in 2016 was recorded c. 40 cm below the present ground level, at the depth of the top of the loess subsoil. The depth of the pit bottom was c. 70 cm. In its upper part, the pit was nearly rectangular, with the dimensions of c. 250 × 70-100 cm. Its long axis was oriented NNE-SSW. At the level of the bottom, its layout (plan) was irregular and its dimensions were more modest (c. 200 × 40-60 cm). The fill of the pit was composed of grey, mixed soil. At the bottom, there was the skeleton of a male – who had died at the age of 35-45 – buried in the supine position, with arms oriented along the body and head pointing S (Figs 4 and 5). The skull was located at some distance from the rest of the skeleton and turned by 180 degrees from its natural position. There were no remains of a coffin or wooden box, in which the man might have been buried. Nevertheless, the darker colour of the pit bottom under the skeleton may suggest that he was placed

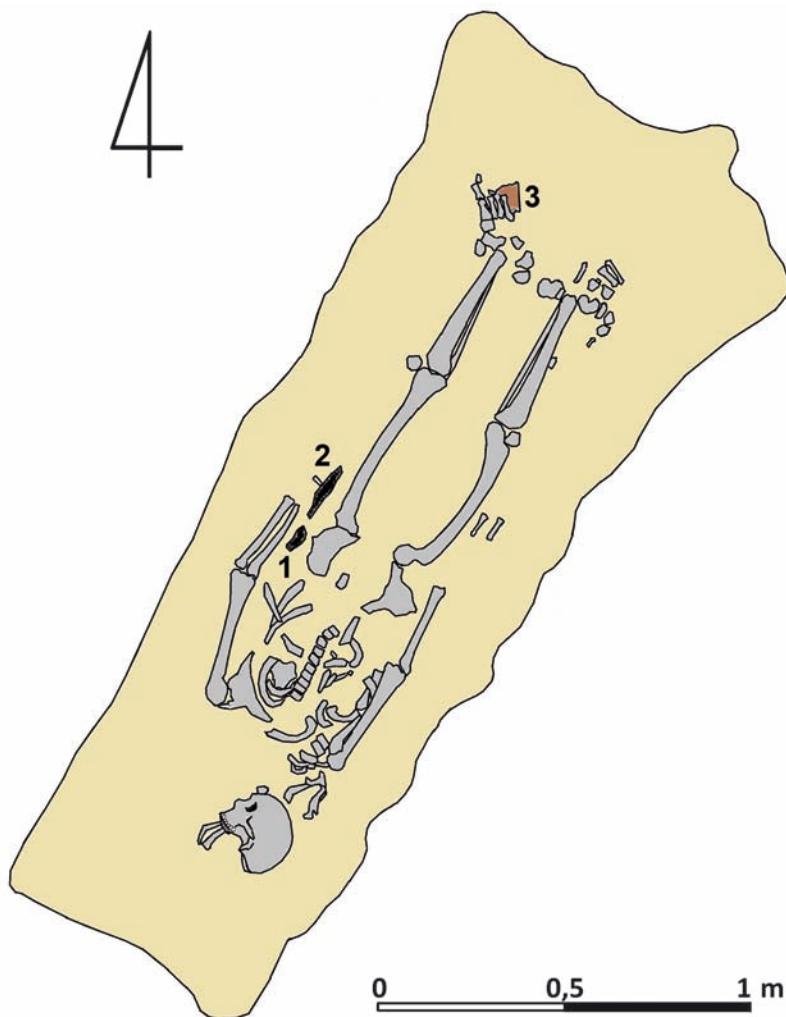


Fig. 4. Sandomierz, Site 45. Layout of the grave discovered in 2016 at the depth of 70 cm. Markings: 1 – fire-striking set; 2 – knife; 3 – vessel fragments. Prepared by M. Bajka

on wooden boards, or that his body was wrapped in a shroud. An iron knife, two fragments of a flint strike-a-light and a bow-shaped firesteel were discovered next to the left hand, which was not preserved except a single phalanx. The strike-a-light and the firesteel were found in a single lump (Fig. 6), which indicates that they had been deposited together in some small container, possibly in a pouch. By the left foot of the man, there were fragments of a small clay vessel. Four small fragments of early medieval pottery and tiny chunks of limestone were discovered in the fill of the burial pit. They come from later times.



Fig. 5. Sandomierz, Site 45. Grave discovered in 2016. Photograph by M. Bajka



Fig. 6. Sandomierz, Site 45. Grave discovered in 2016 – firesteel and strike-a-light directly after discovery. Photograph by M. Bajka

Burial goods

1. Set for starting a fire, composed of the iron firesteel and the flint strike-a-light.

1.1. The firesteel (Fig. 7: 1) represents the so-called double-bow type. The frame was made of a narrow, flat iron bar – profiled in the middle part and having the form of two joined bows with sides bent upwards. The ends of the sides – coiled to form eyelets – meet at the symmetry axis of the tool, although one of them is located slightly higher than the other. Dimensions: length – 5 cm; height – 4.2 cm; maximum thickness – 0.5 cm.

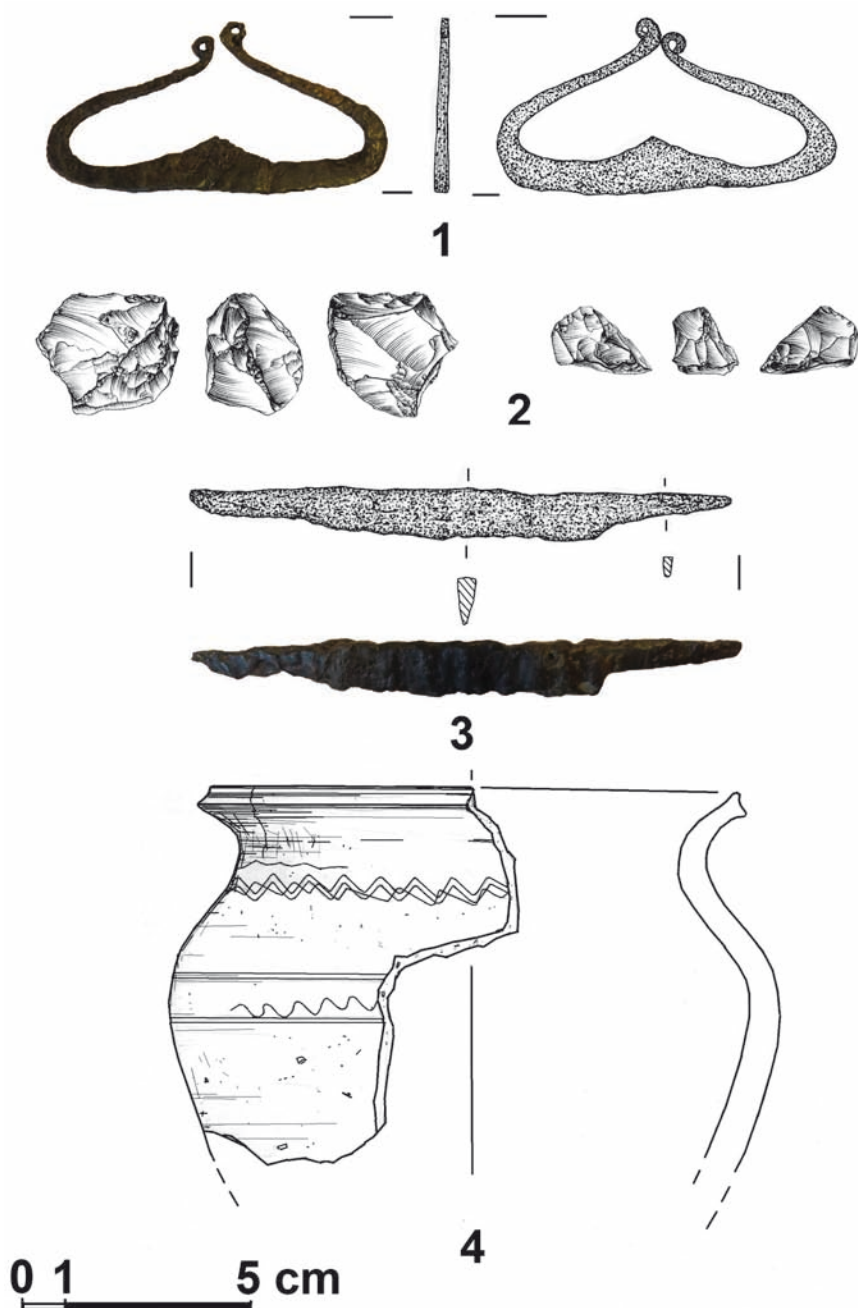


Fig. 7. Sandomierz, Site 45. Burial goods from the grave discovered in 2016. Key: 1 – iron firesteel; 2 – flint strike-a-light; 3 – iron knife; 4 – vessel fragment. Prepared by M. Bajka and M. Florek

1.2. Strike-a-light (Fig. 7: 2), preserved in two pieces, made of a large fragment of so-called Świeciechów flint. Dimensions: $4.4 \times 2.0 \times 2.0$ cm. It is impossible to determine whether the strike-a-light was already broken into two parts when deposited or it was damaged as a result of post-deposition processes. Still, the latter option appears to be more probable.

2. Knife (Fig. 7: 3). A small knife made of iron, with a narrow blade (triangular in cross section) and a relatively short, visibly distinct tang (rectangular in cross section) for mounting the handle. Dimensions: total length – 13.5 cm; length of the blade – 10.3 cm; maximum width of the blade – 1.2 cm; maximum thickness of the blade – 0.4 cm; dimensions of the tang cross section in the widest place – $0.65 \times 0.4 \times$ cm.

3. Pottery sherds (Fig. 7: 4) comprising about a quarter of a small vessel. They are made of clay, having a grey-cream colour after firing and having an admixture of quartz grains (less than 1 mm in diameter, only sporadically larger). The vessel was made of clay bands moulded on a potter's wheel and wheel-thrown. Its profile is nearly S-shaped. It has no distinguished neck, and its rim is bent to the outside. The rim edge is diagonally truncated and only slightly profiled. On the belly, there is a shallow, irregular ornament (made with a stylus) in the form of single wavy lines that partially overlap. Dimensions: reconstructed rim diameter – 12 cm; reconstructed maximum belly diameter – 15 cm; wall thickness – 0.7-0.9 cm.

ANALYSIS

Form of the grave

Because of its form – a nearly rectangular burial pit without any additional construction elements, containing the body placed at the bottom of the pit, in the supine position, with arms arranged along the body – the discussed burial does not differ from the vast majority of graves discovered at flat non-churchyard cemeteries from the territory of Poland and dated to the Early Middle Ages. What distinguishes this funerary feature is its orientation along the NNE-SSW axis, whereas most of burials found at this type of necropolises are oriented E-W, usually with slight deviations (*cf.*, Miśkiewicz 1969, 247; Zoll-Adamikowa 1971, 49).

From among more than 200 graves of the three early medieval cemeteries discovered in Sandomierz (on the Old Town Hill, Town Hill and Reformackie Hill), only two funerary features were oriented N-S or close to it – both are located on the Old Town Hill. One of them is the previously-mentioned burial discovered on the same plot of land in 2006 (*cf.*, Florek 2006a; 2006b) and Grave No. 90 from the part of the cemetery researched in 1928-1929 by J. Żurowski. Another distinguishing feature of the latter is the fact that the body was inhumed in a prone position (Gąssowski 1969, 415). As to the rest of the graves, they

were mainly oriented E-W, with certain deviations. Still, the deviations of the graves from the oldest part of the cemetery on the Town Hill are the most considerable – although they never exceed 45 degrees (*cf.*, Bajka and Florek 2015; Florek 2022). On the other hand, among six researched cemeteries from the nearest vicinities of Sandomierz – in Gnieszowice, Sandomierz-Kamień Plebański, Samborzec, Trzeźnia, Turbia and Złota (*cf.*, Florek 2004; 2021a; 2021b; further literature there), only three graves discovered in Samborzec were oriented N-S (Nos 15b, 59, 62 – *cf.*, Bartys 1936, 173, 174). Graves oriented N-S or close to it are virtually absent from other cemeteries of the historical Sandomierz Region. The only exception is Burial 13 from Złota near Pińczów that was thus oriented (Zoll-Adamikowa 1966, 133-135). The same can be said about the entire Lesser Poland region. The relatively most numerous group of graves oriented N-S or close to it were found at the cemetery in Grodowice, Kazimierza Wielka District. Three out of 35 graves were oriented this way (Kubica-Grygiel 2014, fig. 5).

Burials in grave pits oriented N-S, NE-SW, NW-SE or close to them occur more often in Greater Poland, Central Poland, Masovia and Pomerania. At certain cemeteries, such orientations are even predominant, *e.g.*, in Bodzia, Włocławek District (*cf.*, Kara 2015, 343-369) or Stare Łączyno, Mława District (Rauhut 1971, 547-563).

Several remarks on grave goods

The term ‘grave goods’ should be interpreted as items intentionally deposited in funerary features together with the buried people. We can distinguish direct equipment – adornments and elements of garments in which they were buried – and grave goods proper, often referred to as funerary offerings (*cf.*, Miśkiewicz 1969, 249). The latter category encompasses items – often also animals or even people – deliberately placed in a grave together with the buried body – no matter what the aim of these actions was (this remains unclear anyway). They might have been personal belongings of the buried people or things linked with them – so, according to the mourners, they had to be taken with them – or things that could not be used by the living. Such items, including food, and sometimes also humans and animals, were supposed to serve the buried in the netherworld or at least help them get there. This category encompasses devotional articles and amulets. Burial goods also include items deposited in graves during funeral services – supposed to remind people taking part in the ceremony about who the buried persons were and what their social position was – and gifts given to the deceased and signifying that they were respected and remembered by the mourners.

The knife discovered in the grave located on the Old Town Hill in 2016 has a modest size (the length of the blade is 10.3 cm), with a tang for mounting the (probably wooden) handle. It represents the most common form of small knives found both at settlement sites and cemeteries. Taking into consideration its location in the grave, we can suspect that it might have been originally attached to the belt of the buried man, on his left (in the

preliminary information on the discovery of the grave, it was suggested that the knife was an element of a double fire-striking set – *cf.*, Bajka 2016, 62 – but this interpretation does not appear to be plausible). In the typology of the knives from the Castle Hill in Szczecin, similar specimens were included in the most common type Ia (Rogosz 1983, 264, 265).

Knives are the most numerous group of items used as funerary goods in early medieval burials. They are found both in male and female graves. In Lesser Poland, they were discovered in every third male grave and in every fifth female burial (Zoll-Adamikowa 1971, 67). Among the 200 graves of the non-churchyard cemeteries from Sandomierz, knives occurred in 30 funerary features, which comprises 15% of the total number. A knife, along with a wooden stave bucket with iron hoops, was found in the grave discovered in 2006, near the described burial (*cf.*, Florek 2006a, 65, 66; 2006b, 410-412). In one case, in Grave No. 9 from the Town Hill, dated to the turn of the 10th and 11th centuries, or the beginning of the 11th century, a knife – together with two firesteels, an iron key and strike-a-lights – was part of a fire striking set deposited on the lid of the coffin. On the other hand, at six excavated cemeteries from the vicinities of Sandomierz, knives were discovered in 51 graves, that is in nearly 40% of all the found burial features. In one of the graves, at the necropolis in Złota, a knife was accompanied by a firesteel and a flint strike-a-light, so it was probably an element of a fire striking set. We also know that knives were deposited as burial goods at the cemeteries in Ruszcza-Plaszczynna, Dwikozy and Garbów Stary, Sandomierz District (Florek 2021a, 24).

Firesteels, including bow-shaped specimens, are not frequent burial goods found in early medieval graves, at least in Lesser Poland. Except for the grave discussed in this paper, they were not found in any of the burial features of the cemetery on the Old Town Hill. On the other hand, as many as two firesteels of this type were discovered in the above-mentioned Grave No. 9, in the northern, oldest part of the cemetery on the Town Hill (Bajka and Florek 2015, 70-74). By contrast, from among over 130 graves grouped in eleven early medieval necropoli from the nearest vicinities of Sandomierz, a firesteel was discovered only in one burial feature – Grave No. 17 at the cemetery in Złota, Sandomierz District (Gąssowski 1953, 80-92). They were also found at two other necropoli representing the historical Sandomierz Region: in Goryślawice, Busko District – in one out of 54 researched burial features (Grave No. 31) – and in Złota, Pińczów District – also in a single burial feature (No. 7), out of 130 discovered (Miśkiewicz 1969, 276, 285). Firesteels are also seldom discovered at other cemeteries located across Lesser Poland: one specimen was discovered only at the necropolises in Kraków-Zakrzówek (Morawski and Zaitz 1977, 136) and Modlnica, Kraków District (Szyber 2015, 343). An iron firesteel, together with an axe, a knife and a clay vessel, were burial goods found in a grave dated to the turn of the 10th and 11th centuries discovered near Św. Tomasza Street in Kraków. Nevertheless, it appears that it did not belong to any of the contemporary cemeteries in Kraków, but was a single, isolated burial (Myszka and Myszka 2000, 363, 364).

A relatively great number of firesteels were found at a cemetery in Końskie, Końskie District – located at the borderland between the Sandomierz Region and Masovia. Fires-

teels were found in eight graves, out of 171 discovered burial features. Five of them were double-bow firesteels, two others were lens-shaped. The type represented by one specimen remains unknown (Gaśowski 1952, 99-157). A rather considerable number of such artefacts – four specimens – was recorded at the cemetery in Strzemieszyce – previously in Będzin District, presently part of Dąbrowa Górnicza – located at the borderland between Silesia and Lesser Poland (Marciniak 1960, 168). More often than in Lesser Poland, firesteels deposited as burial goods were discovered at cemeteries located across Greater Poland, Pomerania, Central Poland and Masovia (*cf.*, Miśkiewicz 1969, 275-285). Nevertheless, we should pay attention to the fact that there are considerable differences in the quantities of such artefacts discovered at particular cemeteries. For example, in Lutomiernsk, Pabianice District, firesteels were discovered in six out of 135 researched graves (Nadolski *et al.* 1959, 93). In Kałdus, Chełmno District, they were found only in three out of the total number of 466 graves discovered to this day (Chudziak *et al.* 2010, 85). At most of such cemeteries, no artefacts of this type were discovered.

Besides the firesteel, the fire striking set deposited in the grave discovered at the Old Town Hill in 2016 included a strike-a-light – preserved in two pieces and made of a large chunk of spotted siliceous material, so called Świeciechów flint. As mentioned above, it is impossible to determine whether the strike-a-light was deposited in the grave in two pieces, or it split as a result of post-deposition processes. Strike-a-lights made of siliceous rocks and used for striking fire – found individually or in sets together with firesteels or with other iron items that could have substituted firesteels (*e.g.*, knives, keys *etc.*) are known from many early medieval cemeteries (*cf.*, Libera and Florek 2018, 243-245). In the case of the firesteel found on the Old Town Hill, it is worth mentioning that it was made of Świeciechów flint, whose physicochemical properties made it difficult to strike a spark. Thus, the artefact might have been a symbol rather than a tool destined for being used by the buried man in the afterlife.

A large fragment (about a quarter) of a clay vessel – composed of several sherds discovered near the feet of the buried man – should also be considered as a burial good. Although finding a whole vessel clearly indicates that it was intentionally deposited in a grave – either as a container for food supplied to the buried people for their journey to the afterlife or simply as gifts – pottery sherds are more difficult to interpret. It is often not easy to determine whether vessel fragments got to a burial pit by accident – *e.g.*, with soil during filling it, or as a result of using cemetery sites in later times – or maybe such sherds were intentionally deposited as grave goods. If the latter interpretation is valid, it is necessary to answer whether only the pottery sherd (or sherds) was deposited in the grave – maybe as a substitute for the whole vessel (which would indicate that it was a gift in itself and not only a container for beverages and food), or the whole vessel was placed in the grave, but it was later partially damaged – *e.g.*, as a result of digging into the ground, ploughing, or natural factors *etc.* – which resulted in the preservation of sherds only. The pottery fragments found in the discussed grave certainly did not get there by accident. They were located

near the feet of the buried man, and it is the most common place of depositing vessels in early medieval graves (another popular spot is located near the head – *cf.*, Miśkiewicz 1969, 249). As to the stylistic and technological properties of the sherds, they are clearly different from those of vessels discovered in the cultural layer above the grave and archaeological features linked with a settlement dated to a later time. Still, it is difficult to establish whether it was only a single fragment of a large vessel deposited in the grave together with the buried man – and later it broke into several smaller sherds as a result of post-deposition processes – or it was the whole vessel, which was later partially destroyed. Still, the latter possibility – that the whole vessel was placed by the feet of the body during the funeral, and only fragment of it preserved until this day – appears to be more plausible. The vessel might have been partially destroyed as a result of the intense agricultural exploitation of the culmination of the Old Town Hill, which took place between the Late Middle Ages and the end of the 20th century Ploughing might have not only partially destroyed the vessel deposited in the grave, but also dislocated the skull and damaged the bones of the hands.

In Sandomierz, entire vessels were discovered in three graves linked with the earliest phase of the cemetery on the Town Hill (Bajka and Florek 2015, 70-74) and in three burial features located in the part of the cemetery on the Old Town Hill researched by Żurowski (Gąssowski 1969, 430). As to the excavated cemeteries located in the vicinities of Sandomierz, whole vessels were found in five funerary features (c. 3.8% of the entire number of the researched graves), with as many as four discovered at the cemetery in Złota and one in a grave from the cemetery in Samborzec. Three clay vessels discovered – as we may suspect – in three different graves, were also found at the serendipitously discovered cemetery in Garbów Stary (Florek 2021a, 25, 26, further literature there). Certain vessels were probably grave goods deposited in graves (destroyed in the first half of the 19th century) from the cemetery in Ruszcza-Plaszczyzna, Sandomierz District (Leleweł 1855, 77, 78).

Pottery sherds were discovered somewhat more often in graves from Sandomierz and at cemeteries located in its nearest vicinities, although it is not certain whether they had been deliberately deposited as grave goods or they got to the burial pits by accident, together with soil, during the process of filling them or somewhat later. At other cemeteries from Lesser Poland, clay vessels – as well as stave buckets – are even less frequent. The only example is the above-mentioned cemetery in Strzemieszyce. Entire clay vessels were discovered in 13 graves (in one of them, two vessels were found), whereas pottery sherds were discovered in five other graves – from among over 100 excavated burial features (Marciniak 1960, 160). Vessels – as well as other types of burial pits – are found much more often in graves at early medieval cemeteries from Central Poland, Greater Poland and Masovia (Zoll-Adamikowa 1971, 109-114; Kufel-Dzierzgowska 1975, 379).

The vessel, a fragment of which constituted the grave equipment was made of clay having a grey-cream colour after baking, corresponding to type II of raw materials used in the production of Sandomierz pottery defined by Andrzej Buko (1981, 72). This material was obtained by adding different tempers to boulder clay, which can be also found in the vicinity

of Sandomierz (Buko 1981, 78). In this case – if the macroscopic observation is a reliable source here – the temper is composed of powdered (ground) limestone, which gave the sherd its floury texture. The vessel was modelled on a potter's wheel from bands of clay and wheel-thrown, with the use of the ring-band kneading technique according to Buko's (1981, 87) terminology. Traces of wheel-throwing are visible only on the external surface. From the inside, they are present only near the rim. The vessel is covered with an indistinct ornament composed of shallow, irregular wavy lines that partly overlap. They were made with a stylus. This ornament corresponds to group VI of decorative motifs present on Sandomierz pottery according to Buko's classification (1981, 113) and group "f" of ornamental patterns defined by U. Maj for the pottery from Stradów (1990, fig. 7). Because of its form, the vessel can be classified as representing Family I of Vessel Forms of Sandomierz pottery as defined by A. Buko (1981, 145-147).

ANTHROPOLOGICAL ANALYSIS AND RESULTS OF SPECIALISED EXAMINATIONS

Anthropological analysis

The anthropological analysis of the skeleton was conducted in accordance with the classical research methodology. The age at death was determined based on anatomical and morphological criteria that are commonly accepted in anthropology (Ubelaker 1989; White and Folkens 2005). Mainly, the degrees of cranial suture obliteration and teeth attrition were taken into consideration. The sex was determined by analysing the degrees of development of diagnostic skeletal elements, especially those of the skull and pelvis (Phenice 1969; White and Folkens 2005). The body height in life was determined based on measuring the long bones, with the use of regression equations according to V. Formicolla and M. Franceschi (1996).

The skeleton is virtually complete. The skull is partially damaged in the facial part. Above the right orbit, on the squamous part of the frontal bone, there is a trauma (35 × 7 mm) caused by a blow with a sharp-edged object (Fig. 9). The calotte is long (cephalic index: 70.5; Table 1) and moderately massive; the forehead is of medium width; wide nose; low orbits; development of dimorphic features typical of the male sex. The preserved sections of the sutures are in the process of obliteration. Section S2-S3 of the sagittal suture is fused. The right lateral part of the occipital bone is damaged. The mandibular and maxillary permanent teeth are severely attrited:

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



Fig. 8. Sandomierz, Site 45, Grave 5, skull and cervical vertebrae: a – skull, *norma frontalis*, b – right and left maxilla, c – mandible, d-i – cervical vertebrae, j – skull, *norma lateralis*, left side, k – skull, *norma lateralis*, right side, l – damage on the squama of the frontal bone. Prepared by A. Szczepanek

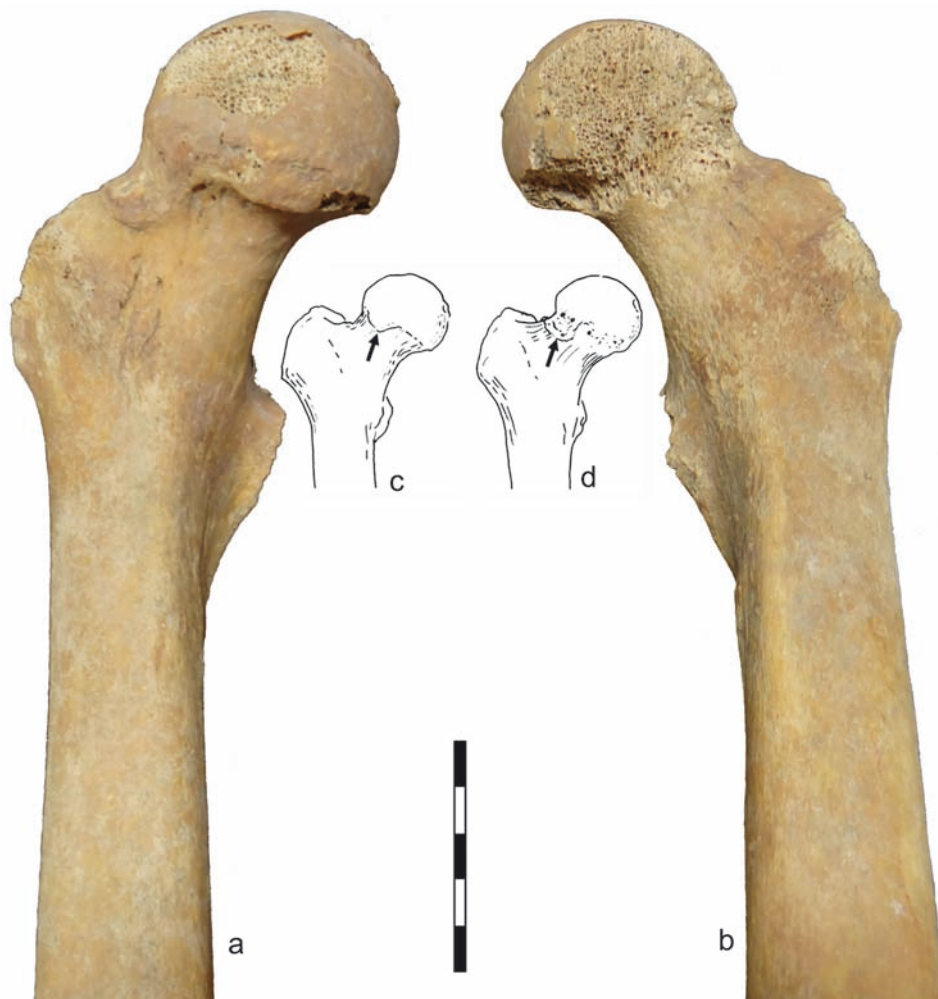


Fig. 9. Sandomierz, Site 45, Grave 5: a, b – proximal epiphyses of the femurs; c, d – schematic figures illustrating Poirier's Facet (c) and plaque formation on the anterior femoral head-neck junction (d) according to Zurmühle *et al.* (2017). Prepared by A. Szczepanek

The maxillary left medial incisor (I1) was lost *post mortem*, whereas the maxillary left lateral incisor (I2) is reduced (peg shaped). Between I2 and C of the left maxilla, there is a tooth socket, probably of the milk canine (c). On the right head of the mandible, there are degenerative changes. The mandibular and maxillary teeth are covered with plaque. The tooth necks were partially exposed due to paradontosis. The maxillary right M1 and left M3 were lost in life and the tooth sockets were in the process of obliteration. The mandibular right M1 and M3 were taken for the analysis of strontium isotopes.

Table 1. Sandomierz, site 45, grave 5, skull measurements and indices

Measurement	[mm]	indices	
<i>g-op</i>	200	<i>eu-eu/g-op</i> x 100	70.5
<i>eu-eu</i>	141	<i>ft-ft/eu-eu</i> x 100	68.8
<i>ft-ft</i>	97	<i>apt-apt/n-ns</i> x 100	63
<i>mf-ek</i>	37	<i>sbk-spa/mf-ek</i> x 100	72.9
<i>sbk-spa</i>	27		
<i>apt-apt</i>	29		
<i>n-ns</i>	46		
<i>n-pr</i>	62		

Postcranial skeleton: cervical vertebrae (C1-C6), with damaged right arches and transverse processes. The grave also contained fragments of 10 thoracic vertebrae, the manubrium and part of the body of the sternum as well as fragments of left and right ribs. The right and left clavicle and muscle attachments are preserved. Especially the impression of the costoclavicular ligament is more distinctly articulated on the right side. The subspinal parts of the right and left scapula are damaged. The right (349 mm) and left humerus (347 mm) are completely preserved. The right and left radius have damaged distal epiphyses; complete right ulna (280 mm) and left ulna with the damaged distal epiphysis. The burial contained the pisiform, two metacarpal bones and five proximal phalanges. The deltoid tuberosity is better developed on the right humerus. Muscle attachments on the proximal epiphyses of both ulnae are strongly developed. The preserved bones of the lower limb are the right and left pelvis with damaged pubic bones, right (484 mm) and left femur (485 mm), right and left patella, right (377 mm) and left tibia (380 mm), fibular bones with damaged proximal epiphyses, bones of the left and right foot (complete set of tarsal and metatarsal bones, proximal and middle phalanges of the foot and the distal phalanx of the big toe). On the anterior surface of the right femur neck, there is plaque formation on the anterior femoral head-neck junction (Fig. 9). Morphological features of this region like Poirier's facet, cervical fossa of Allen and plaque have been considered in relation to some behaviours and specific activities (*e.g.*, squatting, horseback riding, *etc.*). These ideas were verified by analyses applied to a sample of 225 adult individuals of both sexes coming from an identified modern skeletal collection. The variability of the femoral neck region show that plaque, almost always bilateral, appears to be a normal condition of the femur, being present in approximately 90% of the individuals. Therefore these results suggest caution in considering these features as markers related to specific activities but only non-metric variations of the femur's neck (Radi *et al.* 2013). Degenerative changes were observed on the posterior surface of the right patella, calcaneal tuberosities and distal phalanx of the hallux.

Based on the preserved skeletal elements, it was established that the remains belonged to a male in the *Maturus* age category (*c.* 35-45 years old), who was *c.* 175 cm tall in life.

The trauma above the right orbit – caused by a blow with a sharp-edged object (weapon) occurred *perimortem*. It might have been the cause of the man's death or damage inflicted to the body short after placing it in the grave, *e.g.*, by robbers plundering the burial feature. The possibility that the skull was damaged during the exploration of the grave should be ruled out, because it was lying on the right side. It is difficult to interpret the damage of the right side of the skull base and right parts of the cervical vertebrae – the position of the skull in the grave, reverse in regard to the skeleton – suggests that the head might have been chopped off, although the dislocation might have been caused by digging into the grave soon after the burial. This possibility is indicated by the natural, anatomical position of the mandible and the dislocation of bones in the rib cage.

Analysis of strontium isotope composition ($^{87}\text{Sr}/^{86}\text{Sr}$) in tooth enamel

Currently, strontium isotope composition analyses ($^{87}\text{Sr}/^{86}\text{Sr}$) are ones of the most popular methods used to determine the origin and mobility of individuals belonging to a given society (Price *et al.* 2002; Montgomery 2010). Samples from the enamel of molars M1 and M3 were taken in order to determine the mobility of the person buried in the grave. Also three samples were taken from the enamel of animals representing different species: ovicaprid, cattle and pig. The analytical research and measurements of the strontium isotope composition were conducted with the use of a Finnigan MAT 261 mass spectrometer at the Isotope Laboratory of the Adam Mickiewicz University in Poznań. The procedure included chemical separation of Sr and measurements of Sr isotope ratios according to methods developed in this laboratory (Belka *et al.* 2018). The obtained isotopic signatures are presented in Table 2.

Comparative analyses (Fig. 11) used previous results of strontium isotope composition examinations obtained from Sandomierz burials dated to the Early Middle Ages (Błaszczuk *et al.* 2018). This research presented a somewhat wide range of bioavailable strontium, which encompassed signatures $^{87}\text{Sr}/^{86}\text{Sr}$ obtained from the tooth enamel of a female buried in Grave 8 (0.7104) and a male from Grave 9 (0.7135). This range also includes signatures obtained from the tooth enamel of the above-mentioned animals (Table 2). This fact made it possible to state that the male buried in Grave 5 might have spent his childhood in the

Table 2. Strontium isotope composition ($^{87}\text{Sr}/^{86}\text{Sr}$) in samples taken from tooth enamel in Sandomierz

Site	feature	$^{87}\text{Sr}/^{86}\text{Sr}$	age	sex	sample
Sandomierz 45	5	0.710561± 0.000010	35-45	M	right mandibular M1
Sandomierz 45	5	0.709133± 0.000010			right mandibular M3
Sandomierz 7-2	7	0.712156± 0.000011	adult	?	ovicaprid
Sandomierz 7-2	2	0.712694± 0.000012	adult	?	cattle
Sandomierz 7-2	6	0.712700± 0.000010	adult	?	pig

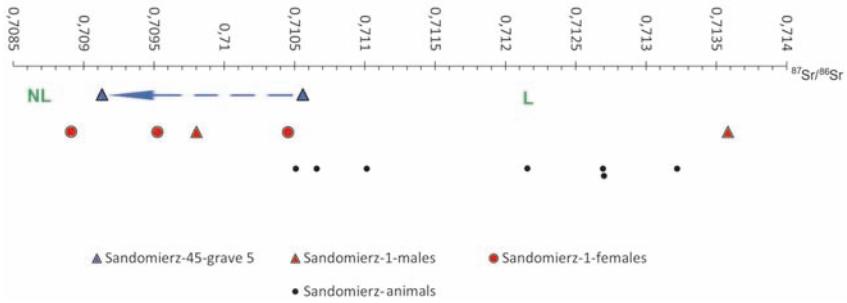


Fig. 10. Strontium isotope composition ($^{87}\text{Sr}/^{86}\text{Sr}$) in samples taken from enamel of human and animal teeth from Sandomierz: L – local, NL – non-local. Prepared by A. Szczepanek

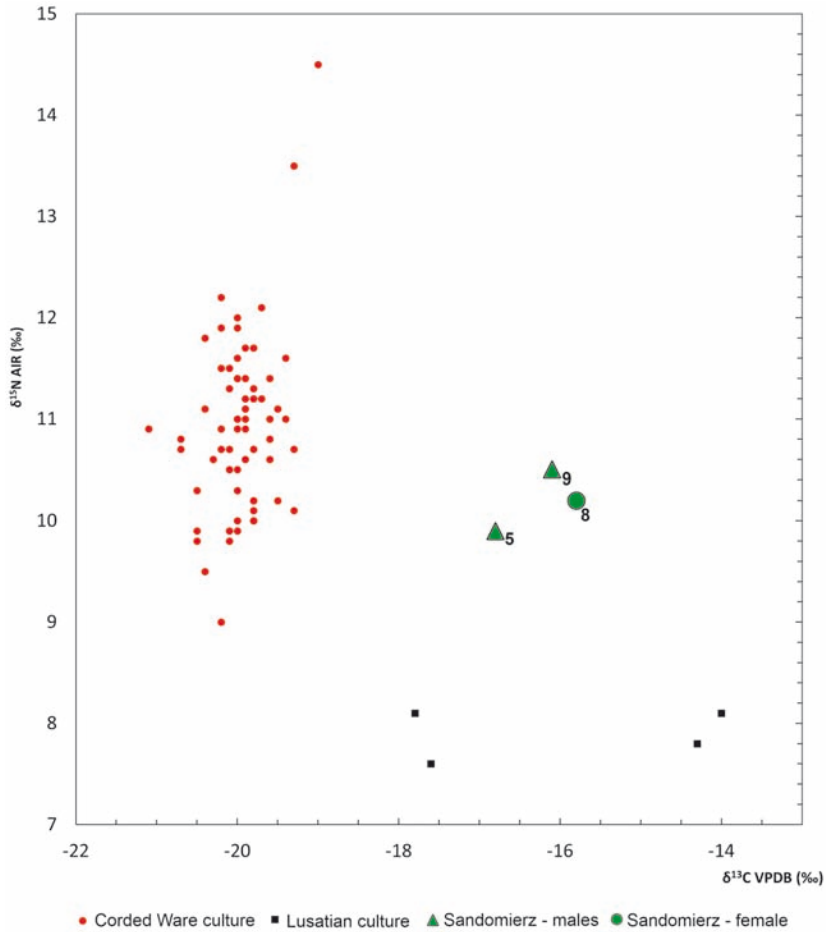


Fig. 11. Sandomierz, Site 45. Isotope values $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ in collagen samples taken from human bones. Prepared by A. Szczepanek

vicinity of Sandomierz (value obtained for M1), and next migrated to territories where strontium is less radiogenic (value obtained for M3). The nearest areas having such geological properties are the vicinities of Busko and Pińczów as well as the closest neighbourhood of Kraków (Belka *et al.* 2022). To the east of Sandomierz, such rocks are distributed in Roztocze and by the Dnister River in Ukraine, but to a much lesser extent, so it is rather not possible that they caused such low content of $^{87}\text{Sr}/^{86}\text{Sr}$ in human tissues. Analogous territories are widely distributed, *e.g.*, across northern Denmark, southern Germany, many regions of France and Spain as well as in the Hungarian Plain. In the later period of his life, the man came back to the vicinities of Sandomierz and was buried there.

Analysis of stable carbon and nitrogen isotopes

Analyses of stable carbon isotopes ($\delta^{13}\text{C}$) and nitrogen isotopes ($\delta^{15}\text{N}$) were included in the main canon of bioarchaeological research that makes it possible to reconstruct life strategies of prehistoric societies (Loftus *et al.* 2016). It allows scholars to learn about the diets of buried people, because it is believed that $\delta^{13}\text{C}$ refers to the total amount of consumed calories, whereas $\delta^{15}\text{N}$ denotes mainly the consumption of animal products (Ambrose 1993). The analyses of stable carbon and nitrogen isotopes were conducted on three samples, from which collagen was previously obtained for AMS ^{14}C dating in the Poznań Radiocarbon Laboratory (Table 3). The stable isotopic composition of collagens ($\delta^{15}\text{N}$ and $\delta^{13}\text{C}$) was analysed with IRMS, at the Goethe University in Frankfurt (Longin 1971; Piotrowska and Goslar 2002). Isotope ratios were reported as delta (δ) values and expressed relative to VPDB for $\delta^{13}\text{C}_{\text{coll}}$ and to atmospheric nitrogen for $\delta^{15}\text{N}_{\text{coll}}$. Delta values were normalized to a calibration curve based on international standards USGS 40, USGS 41, IAEA 600. All human and animal bone collagen samples had $\text{C}/\text{N}_{\text{at}}$ values within the accepted ranges of 2.9-3.6 (DeNiro 1985) and 3.1-3.5 (van Klinken 1999), indicating good collagen preservation.

The obtained $\delta^{13}\text{C}$ results clearly indicate that millet (plant C_4) was included in the diets of the examined individuals, because they are higher than the limit value – 18‰ (Wang *et al.* 2019). Addition or prevalence of millet in consumed food results in elevating the isotopic levels of carbon above the established limit. The presence of millet in the diets of individuals from the Early Middle Ages is clearly visible compared to the societies of different subsistence strategies *e.g.*, the Corded Ware and Lusatian cultures, who consumed a different type of

Table 3. Results of the analyses of stable carbon and nitrogen isotopes for human remains from Sandomierz

grave	$\delta^{13}\text{C}_{\text{coll}}$ [‰]	$\delta^{15}\text{N}_{\text{coll}}$ [‰]	age [in years]	%C	%N	$\text{C}/\text{N}_{\text{at}}$	sex
Sandomierz 1-grave 8	-15.8	10.2	40-50	53.1	19.3	3,2	F
Sandomierz 1-grave 9	-16.1	10.5	40-50	49.7	18.1	3,2	M
Sandomierz 45-grave 5	-16.8	9.9	35-45	51.6	18,9	3,18	M

food (Fig. 11). This difference also concerns the values of $\delta^{15}\text{N}$, which are visibly higher than those obtained for the inhabitants of the Lusatian culture, but they fall within the lower limit of the variation scope obtained for the population of the Corded Ware culture. To sum up, it should be stated that the analysed individuals used local environmental resources with a somewhat considerable participation of C_4 plants – specifically millet – in their diets, which were also supplemented with animal proteins. The acquired data are consistent with other results obtained for medieval series from Poland (Reitsema 2012).

Dating of the grave

The funeral rite and form of the grave discovered in 2016 on the top of the Old Town Hill – as well as grave goods found in it – do not provide us with sufficient basis for dating it with precision.

Taking into consideration the fact that it was a non-churchyard burial, we can broadly date it from the second half of the 10th century – when first inhumation burials started being used in Poland – to (at least) the end of the 12th century – when, together with building new churches accompanied by churchyards, non-churchyard cemeteries ceased to be used (*cf.*, Florek 2015; Sikora 2015; further literature there). The earlier phase of this time frame is suggested by the orientation of the grave, because burials oriented differently than W-E are linked with the earliest periods of using non-churchyard cemeteries (Miśkiewicz 1969, 264).

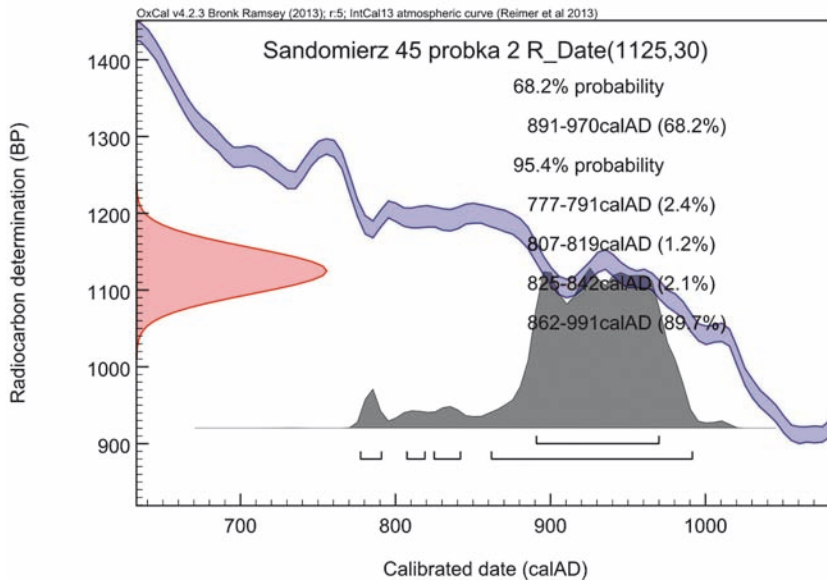


Fig. 12. Sandomierz, Site 45. ^{14}C dating – calibration of the radiocarbon date

Polish double-bow firesteels – and together with them flint strike-a-lights – are dated from the middle of the 10th to the first half of the 13th century AD (*cf.*, Bronicka-Rauhut 1998, 38, 108-114; Piotrowski and Dąbrowski 2007, 231; further literature there), although we need to remember that rural populations used them at least until the second half of the 19th century, when matches became widespread (Moszyński 1967, 254-256). The knife – because of its uncharacteristic form – can be dated only very generally to the Early Middle Ages. The partially preserved clay vessel discovered near the feet of the buried man is a more precise chronological indicator. Taking into account the raw material and the technique of its production as well as the shape of the vessel, method of forming the edge of its rim and the character of the ornament covering it, the sherds should be associated with the second stage of the development of pottery production in Sandomierz, dated from the middle of the 10th to the end of the 11th century AD (Buko 1981, 189).

The ¹⁴C dating of the sample taken from the upper limb of the buried man – carried out in the Poznań Radiocarbon Laboratory – gave an age of 1125 ±30 BP (Poz-104418). After being calibrated using the Intcall 13 curve (Reimer *et al.* 2013), the following result was obtained: 2.4% probability for 772-791 AD; 1.2% probability for 807-819 AD; 2.1% probability for 825-842 AD; 68.2% probability for 891-970 AD; 89.7% probability for 862-991 AD (Fig. 12). Together with dating of the grave based on the analysis of its form, funeral rite and burial goods, we may suspect that the most probable date of the burial is the second half of the 10th century AD, most probably the 980s, but possibly even several years earlier.

CONCLUSIONS

The grave discovered at the culmination of the Old Town Hill in 2016 is presently the oldest preserved early medieval burial from Sandomierz. It is very probable that the fragmentarily preserved burial documented in 2006 – located a dozen or so metres from the discussed feature, having a similar orientation and containing a stave bucket with iron hoops and a knife – comes from a similar time period. No other early medieval graves were discovered in their vicinity as well as in the area between them and St Paul's Church despite the fact that several pieces of archaeological research were undertaken there. The nearest graves are located c. 300 metres from the burials discovered in 2006 and 2016. They should be probably linked with the 11th century cemetery occupying the middle and top parts of the Old Town Hill that was researched by J. Żurowski. This means that both funerary features are not part of this burial ground, but they represent remains of another cemetery from a similar period or – which appears to be more probable – they are two isolated graves. They may attest to an abandoned attempt to establish a new cemetery by an unspecified community inhabiting Sandomierz at the end of the 10th century and intending to stress their distinctiveness not only by a desire to have their own necropolis, but also by the orientation of the graves.

Contrary to the people buried at the cemetery on the Town Hill – or at least some of them, whose non-local origin (from outside the vicinities of Sandomierz in a broad sense) is indicated by grave goods found in certain graves and the results of the analyses of the strontium isotope composition (*cf.*, Błaszczyk *et al.* 2018; Florek 2023) – as well as to part of the people inhumed at the cemetery on the Old Town Hill (*cf.*, Rysiewscy 1991), it appears that the remains buried in the analysed grave belonged to a man of local origin. This means that he was born and spent his early years in the vicinities of Sandomierz, and although he left this area – which is indicated by the strontium isotope analyses – he returned to Sandomierz, where he died and was buried. The local origin of this individual is also indirectly indicated by the burial goods, because they lack elements that could be considered as having foreign origin.

Translated by Piotr Moskała

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