Roman Period Metal Half-moon Shaped Pendants with Knobs in Eastern Baltic Region

ANDRA SIMNIŠKYTĖ

Metal crescent-shaped pendants are common in various cultures of different epochs. Only stylistics of their decoration changed over ages. Silvering, enameling, inlaying with glass, openworking and other technologies were spread widely and put into practice of different countries jewelry.

There are a lot of the Roman period half-moon pendants of various modification in the Eastern coast of the Baltic Sea (Gaerte 1929: Fig. 185: i, j; 186: a, 187: a; Kulikauskas 1941: 43–45, Fig. 1: 1, 2; 4, 5; pl. X; LLM 1958: Fig. 100, 131, 142, 177; Majewski 1910: pl. XVII; Michelbertas 1968: Fig. 27; Moora 1938: 247–253; Nowalkowski 1988: Fig. 28: 84; Valitkuskienė 1999: Fig. 183: 2; Vasks et al 1997: Fig. 55). Metalwork decoration with little knobs was spread in the eastern Baltic region in the second half of the Roman period (Eestl 1982: Fig. 155: 5, 8; Gaerte 1929: Fig. 139: e, 140: c, i, k; LA 1974: Fig. 54: 4, 11, pl. 34: 7; LLM 1958: Fig. 164). There is especially a large number of half-moon pendants. The main parts of such pendants are: a lunulae-shaped body (sometimes not very regular), different shaped knobs (from 2 to 6) on each horn of a body and an ear for hanging. As a rule the pendants are 1.9–2.7 cm wide and 2–2.8 cm height, but there are also very small ones, e. g. 1.4x1.8 cm size and quite large – 2.8x3 cm. We managed to reveal 409 pendants from 70 find spots in the eastern Baltic region from the lower Nemunas in the south up to south-western coasts of Finland in the North. Most of the pendants were from Lithuania (34 find spots) and Latvia (20 find spots); quite a few were found in Estonia (10 find spots) and some in Finland (4 find spots). Two more neck-rings with such pendants were found in Byelorussia (1 find spot) and Poland (1 find spot) (Map 1).

Except some pendants obtained from hill forts, most of the pendants were found in burial monuments. They are characteristic finds in women graves, although sometimes they used to be ornaments of children (Marvelė; Meldėriški Rūtė) or men (Muožikiai).

Pendants were not self-dependent ornaments. Necklaces consisting of pendants and spirals, rarely of glass and metal beads, were most popular in the Culture of Barrow with stone circles of northern Lithuania and southern Latvia (Michelbertas 1968: Fig. 7: 2; Valitkuskienė 1999: Fig. 102). Neck-rings with lunulae-shaped pendants were quite frequent in western part of Lithuania (Fig. 3). Sometimes pendants were found to be attached to pins, fibulas or different ornaments of the breast (LLM 1958: Fig. 189; LAB 1961: Fig. 137), especially rarely with temple ornaments (Fig. 2: 1). They are rather simple in artistic aspect. The main means of decoration
Map 1. Spread of the half-moon pendants with knobs in the Eastern Baltic region. F i n d s spots:

Fig. 1. The necklaces from Pakalniškiai, LNM 39:164 (a) and Pūduvėnas, LNM 37:1718 (b).
was openworking, as well as decor-
ation of the ear or, especially rarely, the body with a different kind of inquist.
So far nobody has paid an
exceptional attention to this kind of
pendants. H. Mora has discussed
them most comprehensively (Moo-
ra 1938: 247–252). In literature they
are ascribed unanimously to the
circle of the Baltic metalworks and
are dated from 3–4 c.C. A.D. (Moo-
a 1938: 250–251; Michelbertas 1966:
103–104; Hackmann 1905: 206;
Klaidis 1973: 35, Fig. 139–140; LA
1974: 113–114, Fig. 51, pl. 30: 13,
32: 9; Eesti 1982: 224, 230).
A wide-range of geography inci-
tes search for regional identities while
a wealth of the finds activates tracing of
differences and common characteris-
tics. The aim of the article is to
survey the lunulae-shaped pendants
with knobs in the Eastern Baltic re-

gion, classify them, describe some
aspects of their production, correct
their spread and chronology, and try
to explain the origin of pendants.

Classification of Pendants

There could be 2 subtypes (A
and B) and 7 variants of pendants.
The main criterion of the subtypes
was a body of the pendants. The
shapes of the knobs were basic in the
variant division (pl. 1).

Subtype A. Openwork
pendants (65 specimens from 16
find spots). Most of the artifacts are
from western and central Lithuania
(Map 1). Just 2 pendants have been
found north of the river Daugava. Because of different openwork pattern subtype A
could be divided into some clusters.

The most numerous is the first cluster. There are more than 30 finds from 7 find
spots. They have a distinguishing feature, i.e. partitions. The body of the pendants is
rounded triangle-shaped with a low base. They were spread in the strip of littoral
Lithuania, especially in the area of Klaipėda and Šilutė. Only 1 pendant was found
in Latvia, in Mūkusalns hillfort.

SUBTYPE, VARIANT

<table>
<thead>
<tr>
<th>FIND SPOT</th>
<th>Quantity of pendants</th>
<th>Quantity of knobs</th>
</tr>
</thead>
</table>

| A, 1      | 1a (2) Aukštakiai, gr. 330 | 3 |
| A, 1      | 1b (2) Aukštakiai, gr. 330 | 4 |
| A, 1      | 2. (5) Dauglaukis, gr. 110, Baltu, cover |
| A, 1      | 3. (18) Klaipėdos surr, LNM 180: 2 |
| A, 1      | 4a. (53) Stragali, LNM 38: 942 |
| A, 1      | 4b. (53) Stragali, LNM 38: 1709 |
| A, 1      | 4c. (53) Stragali, LNM 1958, Fig. 145 |
| A, 1      | 4d. (53) Stragali, LNM 1958, Fig. 189 |
| A, 2      | 1. (5) Dauglaukis, gr. 39, VDKM 1522:52 |
| A, 2      | 2. (21) Kurmaičiai, gr. 8, VDKM 1522:52 |
| A, 2      | 3a. (53) Stragali, LNM 1958, Fig. 189 |
| A, 2      | 3b. (53) Stragali, LNM 1958, Fig. 99 |
| A, 2      | 4. (68) Žiūriai, gr. 297, LNM |
| A, 3      | 1. (43) Pryšmantai, KKM |
| A, 3      | 2. (65) Verdvai, gr. 197, VDKM 1590: 1559 |
| A, 5      | 1. (22) Lavija (Kurzeme), Katalog, 1896, Taf. 16: 2. |
| A, 6      | 1. (37) Pajuostis, b. m. 13, gr. 3, LNM 554: 133 |
| A, 6      | 2. (64) Vaitiekūnai, gr. 4, LNM 631: 4, 8, 7 |
| A, 7      | 1. (31) Mūkusalns, LNM 16194: 380 |
| A, 7      | 2. (66) Virunuika, AI 4161: 569 |
| A, ?      | 1. (9) Dokšlas, VDKM 750: 82 |
| A, ?      | 2. (61) Užpilė, gr. 7, VDKM |

Fig. 2. The necklaces from Vaineikiai, barrow 2, grave
1 (3) and grave 5 (2), the temple ornaments from Zadavarinas, LI RS Fig. 2860 (1).

Fig. 3. The fragment of the neck-ring from the surroun-
dings of Klaipėda, LNM 180: 2.
### Table 1: SUBTYPE, VARIANT

<table>
<thead>
<tr>
<th>SUBTYPE, VARIANT</th>
<th>FIND SPOT</th>
<th>Quantity of pendants</th>
<th>Quantity of knobs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>B, 1</strong>&lt;br&gt;(the numbers in the brackets correspond to the numbers on the map)</td>
<td>1. (48) Rádačí, VDKM 1702: 5&lt;br&gt;2. (53) Stragani, LIT RS, neg. 909, LNM 38: 1706</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>3</td>
<td>in all 3</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>4</td>
<td>in all 55</td>
</tr>
<tr>
<td><strong>B, 3</strong>&lt;br&gt;(the numbers in the brackets correspond to the numbers on the map)</td>
<td>1. (23) Lazdininkau dist., LIT RS, Fig. 1615&lt;br&gt;2. (28) Marvėle, gr. 103, VDKM&lt;br&gt;3. (32) Muňšík, b. m. 3, BKM 5029: 1–4, A 481&lt;br&gt;4. (42) Polkowice, Kohne, Fig. 138&lt;br&gt;5. (47) Rádačí, LIT RS, 382</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>5</td>
<td>in all 39</td>
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### Table 2: SUBTYPE, VARIANT

<table>
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<tr>
<th>SUBTYPE, VARIANT</th>
<th>FIND SPOT</th>
<th>Quantity of pendants</th>
<th>Quantity of knobs</th>
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<tr>
<td><strong>B, 4</strong>&lt;br&gt;(the numbers in the brackets correspond to the numbers on the map)</td>
<td>1. (4) Bojí, b. m. 8, LVM 11777: 654, 680, 958&lt;br&gt;2. (16) Karščik, PAM – IV – 422: 9&lt;br&gt;3a. (24) Lejník, b. m. 1, gr. 3, LVM 12577: 2&lt;br&gt;3b. (24) Lejník, MNM 19880: 2&lt;br&gt;4. (47) Rádačí, LVM 8543: 2, 8544: 2&lt;br&gt;5. (51) Sausněří, b. m. 1, LVM 1640 – 1643&lt;br&gt;6. (53) Stragani, LNM 38: 488, 1705</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>3</td>
<td>in all 27</td>
</tr>
<tr>
<td><strong>B, 5</strong>&lt;br&gt;(the numbers in the brackets correspond to the numbers on the map)</td>
<td>1. (3) Bandužal, LITM 48.233, 48.234&lt;br&gt;2a. (4) Bojí, gr. M, LVM (VVM) 2114&lt;br&gt;2b. (4) Bojí, b. m. 8, gr. 19, LVM 11777: 430&lt;br&gt;2c. (4) Bojí, b. m. 8, LVM 11777: 666, 679, 698&lt;br&gt;3. (6) Daugmalle, LVM 6964: 1403&lt;br&gt;4. (11) Ekeberg, HNM 8055: 1, 2, 6201: 1, 13060: 44&lt;br&gt;5a. (13) Gašťš, b. m. 1, gr. F, LVM 8335: 5–9&lt;br&gt;5b. (13) Gašťš, LVM 12565, V 8333: 7&lt;br&gt;6. (22) Lavor, B, Taf. 16: 2&lt;br&gt;7. (22a) Legasbolden, Čerňov E, H&lt;br&gt;et al. Taf. 53: 30 (65)&lt;br&gt;8. (24b) Lejas, Čerňov E, H&lt;br&gt;et al. Taf. 53: 29 (103)&lt;br&gt;9. (29) Medořiš, b. m. 2, gr. 1, LVM 8241: 1&lt;br&gt;10a. (32) Muňšík, b. m. 1, BKM 7888: 1–2, A 540&lt;br&gt;10b. (32) Muňšík, b. m. 2, BKM 5022, A 473&lt;br&gt;10c. (32) Muňšík, b. m. 3, BKM 5029, A 481&lt;br&gt;10d. (32) Muňšík, b. m. 4, gr. 4, BKM 7888, A 542&lt;br&gt;11a. (35) Pašči, b. m. 1, LVM</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>3</td>
<td>in all 27</td>
</tr>
</tbody>
</table>
The second cluster is rather similar to the first one. There are 11 specimens from 5 find spots. They also have partitions. But the bodies of the pendants are more regularly lunula-shaped, and the openwork pattern is narrower and very curved. All pendants of this group were concentrated in central Lithuania (Pajuostis, Upytė, Varšvai, Vaitiekūnai and Đūkštas*).
There are 21 pendants from 4 places of the third cluster. The openwork pattern differs from the first two. The bodies of the pendants are decorated with small triangles. They were found in western Lithuania (17 specimens), Latvia (3 specimens) and Estonia (1).

Subtype B. It includes simple pendants (344 pendants from 60 find spots), which differ from the subtype A in non-openwork, solid, more or less regular lunulae-shaped bodies. Only part of Newiadora pendants, which have the bending inward bodies (Latvijas Saule 1927: 638, Fig. 17) makes an exception. The pendants of subtype B were spread all over the discussed region. In western Lithuania, where openwork pendants were more popular, the metalworks of subtype B were relatively few. They were more popular in historical lands of Semigallians and Selonians. There are 2–5 knobs of a different shape on each ending of the bodies of the pendants. 7 variants could be discerned (1 variant covers profile knobs, 2 – sharp horn-shaped knobs, 3 – cylindrical knobs, 4 – rounded horn-shaped knobs, 5 – ball-shaped knobs, 6 – cubic knobs, 7 – flat knobs). Such division is relative. There could be a more detailed division or some variants could be united under one unit. But it has been decided to keep to this level of separation, because it reveals the changes of stylistics in different regions best.

Variant 1 consists of pendants with profile knobs (30 pendants from 5 find spots). 27 openwork pendants with a partition and 3 simple pendants belong to this variant. The 1st variant was spread exclusively in the monuments of littoral Lithuania. The pendants from Stragnai are very characteristic (Fig. 4). Obviously, they were manufactured in the surroundings of Siltūnė and Klaipėda.

Variant 2 includes sharp horn-shaped knobs. There are 76 pendants (21 of subtype A and 55 of subtype B) from 14 find spots. A big part of the pendants has 4 knobs on each ending, although there are rather enough metalworks within 3 knobs. Variant 2 was spread almost exceptionally in Lithuania. There are only 2 pendants with horn-shaped knobs known in Latvia (Bokši). Variant 3 comprises cylindrical knobs (42 pendants from 7 find spots). There are just 3 openwork pendants decorated with massive cylindrical knobs (Pušmančiai and Veršvai). Others pendants are of subtype B. There are 5 neck-rings with 38 pendants from Lazdiniųkai surroundings, Postawy and Razbuki find spots. This type of neck-rings (the 5th group according to M. Michiebertas; Michiebertas 1986: 93, 95–96) was very popular in the lower Nemunas culture. Consequently, they could have been manufactured here, as well as the neck-ring from Newiadora. The pendants from Marvele, grave 103 end even in 5 distinct cylinders.

Variant 4 embraces rounded horn-shaped knobs. This group is in intermediate position between sharp-horn knobs and ball-shaped knobs. 27 specimens from 6 monuments are exceptionally pendants of subtype B. As a rule, they have 3 knobs on each ending. Contrary to the first 3 variants, these metalworks are common in Lithuanian monuments (24 specimens). Only some of them are from Lithuania.

Variant 5 consists of ball-shaped knobs, which are 3 on each ending of the pendants. There were 112 specimens from 18 find spots. 109 of them belong to subtype B and only 3 to the openwork pendants. The latter were found in various regions of the collection of the Latvian metalwork. Half-moon pendants with ball-shaped knobs were distributed equally in Lithuania and Latvia. They were the most characteristic finds in the Culture of the burial mound with the stone circle, especially in its eastern part. Only 2 pendants were from littoral Lithuania, 1 from Estonia and 4 from Finland.

Variant 6 includes cubic knobs (19 pendants from 3 monuments). This group of pendants is rather conditional. It has some common features with the 3rd and the 5th variants. It could be called "pendants with short cylindrical knobs or rounded cubic-shaped knobs". 15 pendants of 2 neck-rings from Daugliskis, graves 25 and 39 are decorated with small knobs (the lower knobs of the pendants from grave 39 were profile). Similar knobs are on the endings of the openwork hangers from Vaitiekūnai. 2 pendants of subtype A from Pajusostis end in 4 massive knobs.

Variant 7 comprises flat knobs (82 specimens from 30 monuments). Although this variant is not so numerous as the 5th one, but the pendants are found more frequently. Most of them are of subtype B. There are only 2 openwork pendants (Mūkuli, Latvia and Virunukė, Estonia). Usually they were two-knob, more seldom three-knob pendants. The latter were spread just in Lithuania and Latvia. The size of such pendants is very various. There are very small, 1,4×1,8 cm artifacts, as well as quite massive which are 2,6×3,5 cm big, etc. The latter are characteristic of the northern districts of Estonia and Finland. So far there was an opinion that pendants of B7 were characteristic only of the Finnish western regions (East 1982: 230; Hackmann 1905: 206; Moora 1938: 249). It appeared, that they were no less popular in the Baltic countries. 20 pendants are from 8 Lithuanian find spots, 36 from Latvian 8 places, 16 from Estonian 9 places, 4 from 4 Finish monuments. So, there were even more pendants than in the northern areas and contrary to the latter they were not two-knob, but three-knob pendants. At first sight the chaotic decoration of the pendants with different shaped and various number of knobs is not completely accidental. Subtype A is common in the 1st and the 2nd variants (Fig. 5). The A1 pendants make up...
42%, and A2 – 32% of all openwork pendants. The other shapes of knobs are not unusual or missing. While the 1st variant inside subtype B is very rare. There are only 3 B1 pendants (1%). The most characteristic are the B2, B5 and B7 pendants (16%, 32% and 23% of all non-openwork pendants).

The recurrence of the identification features reveals the change of the style of in consecutive order. The openwork body was replaced by the non-openwork knurled. The long knobs were becoming shorter, rounder, flatter, and the quantity of knobs was becoming lesser moving from the southwest to the north – northeast.

Some Aspects on Pendant Manufacturing

The production of pendants was not complicated because of the simplicity of metalwork shapes. Most artifacts were cast and only the bodies of Pakalniski pendant pendants seem to have been cut out from metal sheet. Though no casting mould of such pendants was found the uniformity of pendants of each necklace, however, makes us assume that they were cast in multifoul moulds. The pendants are supposed to have been cast in two-piece mould (at least one piece had to be made of clay). In order to produce a mould in loam, a model was required. The cire perdue or lost wax method was simple and has been known since the Bronze Age, but it was not suitable for mass production, because both model and mould used to be lost. (Brinch Madsen 1984: 91–2). So, solid models of clay, wood, metal, antler, etc. might be employed, which could be removed and pressed into pliable and damp loam repeatedly. A big part of these patterns was not undercut. Another plate of the mould used to be plane, so the backside of a pendant had a plane surface. Sometimes only knobs were cast. An ear was fixed later.

The Eastern Baltic metallurgy started to use stone moulds more widely only in the Late Iron age and they were used mostly for small tin metalwork (Volkaite-Kuikaviskiene, Janusauskas 1992: 161–162; Sivrak 1985; Dalgia 1950: 84–85, tabn. 2). As the construction of the artifacts under discussion was not complicated, necklaces could have been cast in moulds of some mineral origin as well. A soapstone mould of a half-moon pendant was found in Haidhub in Germany (Fig. 6). As the outer construction of the pendant is rather similar to the one described the process of manufacturing could have been analogous (Lenborg 1998:31, Fig. 17–18).

Obviously there could have been all conditions for the mass production of such necklaces even in the Roman period. But the outer characteristics show differently. The comparison of 2 necklaces of the same variant shows that the pendants differ (Fig. 2: 2, 3). One can suppose that, after the necklace had been made the mould and the model were thrown away, and in case of one of a new ornament they were renewed. This explains the fact that no two necklaces of identical half-moon pendants have been found yet. Consequently the production was not frequent. Several or even more years could have separated the production of necklaces. This fact confirms manufacture made to order in the Roman period.

The originality of each adornment shows that different craftsmen in their community created them. Though it is too early to speak about the society stratification in the Roman period. Irregular metal supply, lack of raw, slight purchasing power and similar conditions did not ensure constant demand of craftsmen work and subsisting on it. Jewels needed a lot of raw material for the production of some pendant necklace. Because of lack of material artifacts used to be made from differently obtained metal: raw material, scrapmetal, rejects of production, old shabby artifacts. The process of production could be imagined as the casting of the mentioned metal in parts in small crucibles. In this case the metal of one necklace pendant should be greatly heterogeneous. For this purpose some analysis was carried out to reveal the metal alloy composition. Metal alloys of 6 necklaces from Dusetos, Palieciai, Pakalniski, Piedadars, Vaineikaici were investigated. One can see a considerable homogeneity with a standard deviation inside each necklace (Fig. 7, 8, 9, pl. 2) (detailed findings are presented further). There were only some pendants with different metal composition. Most heterogeneous were metal alloys from Dusetos. But there the highest values of lead were found, and this feature distinguishes the necklace from others.

Jewels created their works with the greatest responsibility. With the model of the future adornment in their mind they both sought to use as uniform metal alloy as it was possible and to create a necklace consisting of uniform pendants both in morphological and physical characteristics. The authors of the things had deep knowledge of metal treatment. Therefore they could not have been ordinary members of the community, who sometimes were engaged in foundry work apart from their direct daily occupation. They should have been professionals. Unfortunately there are too few evidences to prove this, but there is a great possibility of itinerant jewelers (Brinch Madsen 1984: 95; Michelbertas 1896: 214). Itinerant craftsmen used to throw away moulds for casting because they did not need any additional burden travelling. Besides they never knew what order to cast they would get in another place.

Great experience of archeometallurgy shows that there is a great possibility to find the uniformity in metal composition of a single center of production. “It is surely to be expected that if we study the composition of all the bronzes [...], or the metals from a single homogeneous cemetery [...], or all examples of a homogeneous type [...], we should find that the greater number of specimens represents one homogeneous metal group [...].” (Waterbolk, Butler 1965). Arhenius suggests “that the metal artisan aimed at a homogeneous alloy because uniform alloys have uniform physical reactions with similar melting temperatures, expansion and oxidizing developments. Metal workers probably had a relatively good knowledge of metallurgy and would have been able to produce uniform alloys. Analyses of Greek and Roman bronzes point to such a knowledge” (Fosshell 1982: 59). Though there have not been carried out purposeful tests on such examination in Lithuania, there are some remarks confirming coincidence of artifact types and alloys composition (Merkevicius 1973: 72; 1984: 127–128). We made sure of this when we checked the metal composition of separate necklace pendants. Each necklace was made of quite homogeneous metal alloys. But when we compared the results of different necklaces, the data received had differed
more or less. Analyzing the same type brooches from Öland (Sweden) of the Roman and Migration periods, U. Näsman drew the conclusion that the craftsmanship of that time was not developed enough: "the big variation in the alloys supports the assumption that the craftsmen worked with low precision and/or that they used waste bronzes, alloy of which they were not aware of. A centralized, technically conscious fabrication cannot be deduced from the diagram" (Forshell 1992: 59, tab. 5–1).

The artifacts from the Roman period are less known as metal compositions in Lithuania. This was done the first time when the same type material from the Old Iron age was analyzed consciously. Further we are going to present the results of the investigation carried out by dr. Eimutis Matulonis in the laboratory of the Institute of Chemistry. The alloys composition has been identified with the aid of the electron probe microanalyser (JEOL JXA-50A). Having in mind the possible heterogeneity in the composition of the objects, corrosional aspects, tendency of element dispersal in alloys, reliability of methods and results of single laboratory etc. (Forshell 1992), the conclusions drawn are not final and unchangeable.

68 pendants from 12 Lithuanian monuments have been investigated in 71 tests. Metal of the lunula pendants does not differ from the general context of the Eastern Baltic old metal works (Черныш, Хофре, Варцея 1969). All wares examined were made of artificial multicomponental alloys with either zinc (50 specimens – an. No 8–16, 31–71) or lead (19 specimens – an. No 3, 4, 6, 7, 18–30) predominating. 2 additional pendants were made of alloys with tin predominating (an. No 1, 17). It does not mean that the alloys inside the group are identical. On the basis of their metal composition several groups could be distinguished. In this case a new question can arise, namely, if there is any interdependence between the variants of the artifacts and the metal composition. From 68 investigated pendants 31 are of variant B5, 21 (22 tests have been carried out) of B2, 8 of B7, 6 (6 tests have been carried out) of B3, 3 of A6 and 1 of A2. In spite of the great number of analyzed metalwork, the reliability of the conclusions decreases because the bulk of the necklace pendants could be regarded as one unit. Besides, not all variants are represented equally.

The alloys from Paliečiai, Perkūniské, Pūsdvaris, Pajuostis, Vainelkiai, Vališkūnai and Žviliai, grave 34 belong to the most numerous group with Zn predominating. The ratio of the main admixtures with copper (Cu) is more or less homogeneous: Zn/Cu = 0.1, Sn/Cu = 0.01–0.05, Pb/Cu = 0.001–0.02. Of 31 variant B5 27 pendants, all pendants of B7, all of A6 and 1 of B2 pendants have the mentioned composition.

One can see that both necklaces from Vainelkio barrow cemetery were made following the same jewelry tradition. The ornaments made by 2 different models, but the differences were not distinct. Both necklaces belong to the same B5 variant (Fig. 2: a, b) and were cast from quite homogeneous metal (average amount of Zn was 13.24% and 13.74%, Sn – 2.44% and 2.39%, Pb – 0.17% and 0.43%). The fact that they were found in the same barrow mound reinforces the possibility that they originated from one pair hand. The necklace from Paliečiai consists of the same variant B5 pendant and has the same range of the main metal elements (except one pendant, which has tin more than zinc). Despite of that outwardly they are not similar to Vainelkio pendants, besides their values are a little different (at an average Zn – 7.65%, Sn – 2.057%, Pb – 0.71%).

Pajuostis and Pūsdvaris pendants belong to the same variant B7 and were made of quite homogeneous brass (average amount of Zn was 13.24% and 13.74%, Sn – 2.44% and 2.39%, Pb – 0.17% and 0.43%). Not far from Pūsdvaris one pendant of the same variant B7 was found in Perkūniské. The composition of the admixture does not differ distinctly (Zn – 12.04%, Pb – 0.25% and a little bit higher Sn – 4.89%).

Fig. 7. The results of metal analyses. Graphic presentation.

Fig. 8. Imports pattern of 68 crescent-shaped pendants according to the method of H. T. Waterbolk (1965).
<table>
<thead>
<tr>
<th>No</th>
<th>Cu</th>
<th>Zn</th>
<th>Sn</th>
<th>Pb</th>
<th>Fe</th>
<th>Se</th>
<th>Ag</th>
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<td>0.081</td>
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<td>0.007</td>
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<td>2</td>
<td>65.05</td>
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<td>4.076</td>
<td>28.175</td>
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Pl 2. The results of metal analyses of the pendants.

The pendants from Marvľa, Veršaľ, Šarkáli and Úzvali, grave 34 could be united into another group. They were made of the alloys with zinc (Zn) over tin (Sn), but in this case lead is predominating or >3%; Zn-Cu = 0.04 – 0.07, Sn-Cu = 0.02 – 0.05, Pb-Cu – 0.001 – 0.2. The artifacts include 4 pendants with cylinder knobs (A3 and B3) from central Lithuania and 2 BZ pendants from Samogitia (Šarkáli and Šarkáli). There is 1 more pendant from Úzvali cemetery, grave 297 which differ not only outwardly (A2 and B2), but in metal composition as well. One could have expected that 3 openwork pendants of A6 from Varičkoniai (Central Lithuania) would be of the same metal composition as the others hangers from central Lithuania. But they were made of the alloys, which were closer to the first group.

The alloys of necklaces from Dusétos and Pakalniški (all pendants were of B2 variant), also one pendant of B5 from Pallečiai belong to the group of multicomponent alloys with tin (Sn) over zinc (Zn): Zn-Cu = 0.01 – 0.04, Sn-Cu – 0.04 – 0.2 and with lead (Pb) predominating (Pb-Cu – up to 0.79). In Dusétos and Pakalniški metalworks there is an average at 23.35% and 24.74% lead respectively; in some cases it reaches 41.21%. Only in 2 pendants from Dusétos and Pallečiai there is less lead (Pb – 0.72% and 1.39%) with tin dominating in them (an. No 1, 17). Besides, similar metal composition and the same variant the necklaces from Pakalniški and Dusétos have an additional similarity, i.e. their bodies have been decorated which is very rare in subtypes B. The half-moons from Dusétos are decorated with incisions, and the edge of one Pakalniški pendant is adorned with incuts. They could have been made according to the same stylistical jewelry tradition.

The cultural-regional examination of the spread of the metal alloys has not been very handy because of an unequal quantity of the analyzed artifacts from different areas. Pendants only from 12 find spots were investigated. Unfortunately, it is not enough to clarify cultural and geographical spread of different metal compositions. 7 find spots belong to the Barrow Cultural area, 3 are from central Lithuania and 2 from Samogitia. There is no analysis from littoral Lithuania. Anyway, one can state that all metal alloys with higher values of zinc and lower values of tin have been found in northern Lithuania, in the Burial mound with stone circle.
culture. In the same culture all alloys with tin over zinc and lead predominating were found. The central Lithuania and Samogitia finds are characterized by intermediate position: there is zinc over tin, but also rather high values of lead which drew them closer to the second group.

Chronology

The traditional date of lunulae-shaped pendants with knots is 3–4 c.c. AD. According to M. Michelbertas they appeared at the end of E1/C, (the end of the 2 c. AD) and stayed in use until C3 (300 AD – openwork pendants) and C4 (350 AD and later – simple pendants) (Michelbertas 1986: 103). Only a small part of graves suits to define the chronology more precisely. In this case the data from the territory of the Finno-Ugrian population are less helpful. The Finno-Ugrian inhabitants used to scatter cremated remains and the inventory mixing various complexes of graves. This is why the only sets of graves (with not less than 2 dating finds) from Lithuania and Latvia are valuable, all in 17 complexes.

The graves with coins from littoral Lithuania were of special value. In Rūdačiai cemetery I, grave No 50 a coin of Antoninus Pius (158–161 n.) was found. Such coins were in use until 240 AD in Lithuania (here and hereinafter – Michelbertas 1986: 83). Neck-ring with cone-shaped terminals of the 2nd group and a bracelet with a triangular cross-section were found in the grave as well (Michelbertas 1968: 108), which should be dated the first half of the 3 c. AD. Of the same period should be the necklace with lunulae-shaped pendants from Kurmačiai cemetery, grave 8. One coin of Faustina the II (coins were in use from 160 AD until approximately 245 AD), one coin of Aleksandras Severas (the second quarter of the 3 c. AD), a neck-ring with cone-shaped terminals of the 2nd group, 2 bracelets with a concave cross-section, headband with fringes and other artifacts were found in this grave (Kulikauskas 1951: fig. 3). Even five coins of the middle of the 3 c. AD (two coins of Gordianas the III, one of Otacilia, one of Decijus, one of Trebonianas Galas) were found in Šernai cemetery, grave 67 (Lietuvos gyventaøjų 1972: 121). Grave 330 of Aukškiemiai should be dated the middle of the 3 c. AD. In the grave there were three Roman coins: of Adrianas (117–138 AD, such coins were in use until 250 AD), of Gordianas the III and of Otacilia (Lietuvos gyventaøjų 1972: 111), a spiral bracelet of the 1st group, a bracelet with a concave cross-section, two brooches with a bent foot and a neck-ring with a loop-and-hook clasp. Even 4 neck-rings with half-moon pendants were found in Dauglaukis cemetery. In grave 110 there were bracelets with a semicircular cross-section of the 1st group, a neck-ring with cone-shaped terminals of the 2 group, a bracelet with a concave cross-section, neck-ring with cone-shaped terminals of the 5th group, round openwork pins, cruciform ring, etc. The grave should be from 200–240 AD (Michelbertas 2000). The others neck-rings with pendants of the 5th group from Dauglaukis cemetery should be of the same period. In graves 25 and 39 there were a bracelet with a semicircular cross-section of the 2nd group, the necklace consisting of stick-shaped pendants, pins with a barrel-shaped head of the 2nd group and other artifacts. There was no chronological difference between various subtypes and variants of western Lithuania.

The grave implements of the Culture of the Burial mound with stone circle were scantier usually, without coins. That is why their chronological limits are wider and not so precise. The earliest pendants would be from Muoškiai barrow 4, grave 4. A neck-ring with cone-shaped terminals of the 1st group and a pin with a wheel-shaped head of the 1st group enable to date this grave the end of the 2 c. AD – the beginning of the 3 c. AD. But the date is hardly precise, because it is based just on 2 things. There were a lot of artifacts from Išles Galitsi barrow, grave F. Beside the necklace with lunulae-shaped pendants there was a neck-ring with cone-shaped terminals of the 3rd group, a pin with a spoon-shaped head of the 3rd group, a symmetrical brooch, sash-like bracelets with a rectangular and multiverged cross-section and rounded terminals (Moora 1931). All this set should be dated from the last quarter of the 3 c. AD. The necklace from Lejniki barrow 1, grave 3 could be from the same period (Šnore 1993: 28).

In Central Lithuania, in Vališkiai cemetery, grave 4, lunulae-shaped pendants were found aside the necklace of Alkmeniai type and some bracelets with a triangular cross-section of the 1st group (Varnas 1984: Fig. 11). The grave is dated 225–300 AD. In Vėrišvai cemetery, grave 197, 2 openwork pendants were found within the Vėrišvai–Veliuona type necklace. Also there were some bracelets with a semicircular cross-section of the 1st group, neck-rings with trumpet-shaped terminals of the 2nd group, with loop terminals of the 2nd group, with spoon-shaped
clasp of the 2nd group, with cone-shaped terminals of the 3rd group (Puzinas 1941). These things belong to different periods and were put into the grave at the turn of the 3rd and the 4th c. AD. The latest pendants were found in Úpytė cemetery, grave 7, together with a neck-ring with a spoon-like clasp of the 2nd group, a round openwork brooch, bracelets with a triangular cross-section of the 1st group and semicircular cross-section of the 3rd group (Kulikauskas 1951: 30–31, Fig. 18). The grave should be dated approximately 275–350 AD.

Sometimes the Roman period pendants could be reused later. For example, one can suggest that the pendants from the Late Iron Age Mažolė hillfort (Ginters 1939: Fig. 29) were produced in the Roman period, but later they were reused or made according to the Roman period tradition adapting them to the taste of that period. This hypothesis is based on the pendant decoration. Some doubled eyes have been engraved on their bodies. This way of decoration is not characteristic of early pendants.

More than 95% of all pendants could be dated the 3 c. AD. At the beginning of the 4 c. AD they became unpopular and disappeared about the middle of the 4 c. AD. The pendants from the Finnish territory seem to have been simultaneous. The most popular the 7th variant from Estonia and Finland have been known in Western Lithuania from the beginning of the 3 c. AD (Rūdaičiai).

Origin of Pendants

The chronological difference in various regions was very insignificant. Based on more early graves with a precise chronology in litoral Lithuania one can draw a conclusion about the earlier date of western pendants. So, when we inquire about the origin of pendants with knobs, we should have in mind the works of western Lithuania with the most popular subtype A. In looking for the prototypes of such artifacts one often pays attention to Roman ornaments of such type (Michelbertas 1986: 103; Moons 1938: 251). However the latter were considerably bigger, without knobs or with indistinctly profiled endings. Besides they were ornaments of a horse harness (Förer 1907: Taf. 63: 142; Lawson 1982: 151–152, Taf. 9: 9; Szirmai 1994). We can find similar ones in the Baltic region: Augsburg-Oberhausen, surroundings of Šiltė, Barzdžiai, Žviliai, Stragnai etc. (Fig. 10) (Beczenberger 1904: 112, Fig. 91; Nowakowski 1995: 65, Taf. VI: 11–13; Vaikūnškinė 1999: Fig. 214). There is a great possibility that Roman provinces specimens have incited the production of the discussed pendants. One can guess that the shape of half-moon and its apotropaic meaning (Fig. 11) (apotro-peiós – diverting misfortunes) (Roman 1996:129, Fig. 656) was taken over.

Though, it seems that one should look for the origin of the decoration with knobs somewhere else. Enamelled crescent pendants attract attention. Earlier it was supposed, that enamelled pendants appeared later than lunulae-shaped pendants with knobs and were produced after the fashion of the latter (Pronys 1980: 120–121). When the chronology of enamelled pendants had been corrected (Pronys 1980: 120–121) it became clear that both types appeared almost simultaneously. The earliest enamelled pendants were from the beginning of the 3 c. AD or even the end of the 2 c. AD (Bjöer-Wróblewska 1991–1992: 125). But in western Lithuania no enamelled pendant was found. So, in Klai-peda–Šiltė region they were manufactured not following some tangible example but using knowledge of the same “school”. One can guess that the idea of knob stylistics was born exactly in Mozurian region. There are some common traits between those two types. Firstly this is the principle of the decoration with knobs and, secondly, the partition construction is characteristic of the majority of subtype A pendants and of enamelled metalworks (Fig. 11). Both these types were widespread in the 3 c. AD. Indeed, the enamelled pendants were in use until the end of the 4 c. AD (Goroševas 1982: 131–134). Lunulae-shaped pendants with knobs disappeared earlier. Only some items from the first half of the 4 c. AD were found in Baltic lands. The spread areas of these two types of pendants were different, although the regions were close to each other (Map. 2). After certain acts of cooperation there could appear such artifacts as a penannular enamelled fibula with knobs from Velikuškai (LLM 1958: Fig. 164), an
enamelled hanger with knobs from Pisankiś' collection (Mozurian region) (Nowakowski 1998, Fig. 23, 719).

Soon the manufacture of half-moon-shaped pendants with knobs developed to the north and east of western Lithuania. It is difficult to decide if half-moon pendants appeared in central Lithuania under the direct influence of the 3 c. AD south neighbour Mozuria (Astrauskas 1996: 6–7; Michelbertas 1996: 22–24). It would mean that the pendants common both in western and central Lithuania appeared independently under the influence of the same jewellers’ school. Most of the dated works of central Lithuania, however, were of a later period than their prototypes. That is why we should look for another possibility. This was the relations with western Lithuania (Šimėnas 1994: 14–15) which determined the spread of subtype A pendants popular in litellar region and very similar in the construction with the first. Craftsmen from littoral strip could have come there and made all central Lithuania openwork pendants of the second cluster after the fashion of the common patterns. The discussed subtype of pendants in metalworks of later period left certain traces. For example, one can discern some analogues with the lunulae-shaped pendants of Veršvai–Veliuona type headbands (4–5 c. AD). The main common trait was side- and front knobs.

It is more complicated to say something about western influence on the north and northeastern parts of discussed region. The pendants appeared almost simultaneously at least in northern Lithuania and southern Latvia. The period coincides with the movement of the inhabitants from littoral region Lithuania to Samogilia, northern Lithuania and southern Latvia (Michelbertas 1986: 192–194; Šimėnas 1993: 11). In this case the spread of different subtypes is very important. Subtype B was dominating in the territory north and north-east of littoral Lithuania. Their origin, however, should be looked for in littoral region first. The pendants of B1 have been produced in their openwork prototypes. They were found only in littoral Lithuania. The metalworks of B2 were more popular in western and southern areas of the Culture of Barrow with stone circles of Samogilia and northern Lithuania, i.e. in the territory closer to western Lithuania. One can guess that communities moving north and northeast copied only the means how to decorate with knobs. Craftsmen from the western region did not reach the countries, which were further north and northeast. This explains the fact why openwork pendants were not found there (excluding several patterns, perhaps, obtained in exchange). The further from the sea, the fewer pendants of B2 and more pendants of E4, B5, B7 appeared. There are almost no hangers of B2 in Latvia, north of Daugava B7 pendants began to dominate.

The metalworks with common roots were developed further independently. From littoral Lithuania the communities living further to the northeast and north inherited only knob elements, which they modified in their own way, though inhabitants were not interested enough in the improvement of ornaments. It could be the reason that such a simple construction of the pendants did not become attractive to more distant countries, which used decorated enamelled openwork pendants at that time.

Conclusions

1. In the Roman period there were revealed 409 half-moon pendants with knobs from 70 find spots. They were spread in the eastern Baltic region from the lower Nemunas in the south until the southwestern coasts of Finland in the North.

2. This type of pendants was divided into 2 sub-types and 7 variants. The classification of pendants according to the outer identification traits revealed stylistical change in the regions. Most openwork pendants (subtype A) were found in littoral Lithuania. Most simple pendants (subtype B) were spread north and northeast of western Lithuania. Long knobs were becoming shorter, rounder, flatter, and the quantity of knobs was becoming fewer moving from the southwest to the north – northeast.

3. The pendants were cast in multifold moulds made of clay or stone. But the moulds were used just for the casting of one necklace pendants and never reused for another necklace. Consequently the production was not frequent and made to order in the Roman period.

4. One necklace consisted of not only uniform pendants, but also of rather homogeneous metal alloys. Original ornaments must have been created by professionals, who could have been itinerant craftsmen.

5. Shortage of metal determined the conditions, which were common in working with any metal material. Because of that we failed to determine the dependence among the pendant variants and the composition of metal alloys. However we could discern some lower level local laws.

6. The half-moon pendants with knobs from the end of the 2 c. AD or the beginning of the 3 c. AD spread in littoral Lithuania. Soon the communities living further to the East and North took over their manufacture. More than 90% of all pendants could be dated the 3 c. AD. The chronological difference between the regions and variants if at all was very insignificant. At the beginning of the 4 c. AD they became unpopular and disappeared as far as the middle of the 4 c. AD.

7. Influence of half-moon Roman pendants on the origin of works with knobs was overestimated. A hypothesis has been raised that decoration of pendants with knobs has much in common with the production traditions of the enamelled pendants in Mozurian region. From littoral Lithuania the manufacture of lunulae-shaped hangers with knobs moved to central Lithuania, where western Lithuania subtype pendants were popular. While the communities living further north-northeast preferred common non-openwork pendants on the basis of which they created their own new variants.

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Abbreviations
AI – Archaeological collections of the Institute of History in Tallinn
b.m. – burial mound
BMK – Regional museum "Sāla" of Bīržai
GEG – Gelehrten Estnischen Gesellschaft (collections in Tallinn)
Romėniškojo periodo pumšėnulio formos kabučiai su ataugėlimis Rutų Pabaltijyje

ANDRA SIMNIKŠTYTĖ

Santrauka


Šie kabučiai dažniausiai randami kapuose, beveik išilumininės motenų, keliapiktą pilkaikinės puoštu. Pilkapų su akmenų vainikais kultūros srityje ypač populiarus iš kabučių ir ivyvių (1, 2, 3 pav.), kartais įvairios formos stiklo ar žalvario kartučių svori naikinė vėriniai. Vakaunų Lietuvoje, ypač Nemuno žemupio kabučių puošiavo antkakles (3 pav.). Kartais juos kainavo prie antsmilkinių (2: 1 pav.), smeigtukų, seglių, kito kūrinių papučių.

Strainiško tikslas – apžvelgti Rytuos Pabaltijos pumšėnulio formos kabučių su ataugėlimis, juos suklauskoti, aptarti kai kurios gamybos aspektus, patikinti chronologiją ir išsiaiškinti kabučių kilmę.


