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LITHUANIAN MESOLITHIC AND NEOLITHIC GRAVES: DATA ON THE TRANSITION FROM A FORAGING TO FOOD-PRODUCING ECONOMY

ABSTRACT: The process of Neolithization (transition from foraging to food-producing economy) is discussed using Lithuanian archaeological and anthropological data. Local Neolithic Nemunas and Narva cultures show continuation of the Mesolithic tradition and preference for a foraging economy up to the Early Bronze age. Origins of people of these cultures should be searched for in Central Europe. Late Neolithic Corded Ware culture and its bearers also probably arrived from the south and differed craniologically from the indigenous population. During interaction with local cultures and people, the hybrid Pamariu (Baltic Coastal) culture emerged, its subsistence strategies more related to food production and its population occupying a morphologically intermediate position. Paleodemographic data suggest demic expansion from the south, thus confirming archaeological and craniological data. Paleopathological lesions demonstrate high levels of stress. Morphology of postcranial skeleton and estimated somatometric indices reveal tendencies for gracilization during Neolithic transition, improvement of demographical indexes and leptosomization with the rise of civilization.

KEY WORDS: Neolithic transition – Eastern Baltic region – Paleodemography – Paleopathology – Somatometry.

INTRODUCTION

The process of Neolithization in the Eastern Baltic region took place with the spread of agriculture from southeastern and central Europe in a north-eastern direction, in combination with the conversion of local populations. As such not only material from settlements, but also material from Mesolithic and Neolithic graves in Lithuania, can be informative about the spread of a food-producing economy in this region.

The economy of the Mesolithic population of the Nemunas and Kunda Cultures was based on fishing, hunting and gathering. We also have evidence of these activities from Spiginas Mesolithic graves, 5 520 ± 60 B.C. (Butrimas, 1992): grave goods – animal teeth (elk and beaver) and a flint arrowhead. It is possible to assume that the material from Lithuanian Mesolithic sites, as well as pollen analysis and scanty grave material, does not show any data for a food-producing economy. The skull from Spiginas can be attributed to the circle of mesomorphic mesocranial mid-faced Europids, belonging to the robust Central European odontological type, according to A. Zubov's classification (1973).

Lithuanian Neolithic materials are represented by rich peat-bog habitation and settlements situated on riverside sandbanks, and by 18 graves. Their hunting, fishing and gathering subsistence strategies gradually expanded to include domesticated plants and animals. Neolithic material can be divided into two cultural-chronological groups. The local Neo-

lithic Narva and Nemunas populations are characterized also as hunting, fishing and gathering cultures, and this testifies to great abilities for rational exploitation of the natural environment (a continuation of the 'Mesolithic' type of economy based on Biržulis, Kretuonas and Šventoji archaeological complexes).

A second cultural-chronological group – late Neolithic Corded Ware Culture and Baltic Coastal (Pamariu) – is represented by settlements and graves mainly from the West Lithuanian region. The cultural differentiation of the Eastern Baltic Corded Ware culture populations can be described as a different stage of development and a food-producing economy. The West Lithuanian Nida, Šventoji, Šarnele and Donkalnis settlements are all represented by complexes of agricultural implements. Pollen studies and seed analyses in this region show that the following plants were cultivated: emer wheat (Triticum dicoccum), barley (Hordeum), millet (Panicum), hemp (Canabis) and mallow (Malva). The main domestic animals in this region were cattle, sheep, goats, pigs and horses, as seen at Šarnele, Šventoji 1A, Donkalnis and Daktariške 5. Even in the early phase of Corded Ware culture (Šarnele site), domestic animals made up as much as 39.5 % of the total, and domesticated animals were even more numerous at Donkalnis – a settlement with the largest excavated cemetery in Lithuania – in this period.

In the eastern part of Lithuania, we have at the same time other results (Kretuonas complex). We find a strong influence of the Corded Ware culture, but local cultures (Narva culture) still retain the main role. We find no agricultural implements complex in this region, and domesticated animals make up only 2.9 % of the whole paleoosteological material. Even in the following Early Bronze period domestic animals reached a level of only 9.06 % in this region. We observe the same in eastern Latvia.

From this period we have data from 18 graves, mainly in the western part of Lithuania: Donkalnis, Rešketa, Plinkaigalis, Veršvai, Kretuonas and Spiginas. Burial traditions keep their strongly archaic religious features, and we have no evidence of a food-producing economy from the Corded Ware and Baltic Coastal (Pamariu) inhumations. But we do find pottery in these graves – and this testifies to the influence of agricultural cultures in Lithuania, because during the Narva and Nemunas culture periods such grave goods were unknown (Butrimas, Česnys, 1990).

The transition from a foraging to a food-producing economy ("The Neolithic Revolution") has a great influence on the biological status of a population. Population dynamics (demographical data) in some way reflects a population's ability to adapt biologically and culturally to the environment. A demographical situation is characterized by two main characteristics – fertility and mortality rates. We have made an attempt to characterize Lithuanian Neolithic populations in these respects. Due to a lack of research material (17 graves available for demographical analysis) we were forced to pool materials from the Nemunas, Narva, Corded Ware and Baltic Coastal cultures, thus our data should be considered as approximate. Demographic data for comparison were taken from neighbouring countries' Neolithic periods (Piontek, Marciniak, 1990) and 1st millennium A. D. Lithuanian data (Česnys, 1985). Average life expectancy (index of fertility) in the Lithuanian Neolithic period is lower than in the majority of surrounding regions (except the Elbe-Saale region) (*Table 1*). This means that the demographical situation at that period in Lithuania was worse than in neighbouring countries. Thus one could expect immigration (demic expansion) of people with more advanced technologies from south-western regions. A definite increase of both demographical indices in the 1st mill. A.D. should be noted. This means that with development of civilization a population's abilities to adapt to surrounding environment increase, and as a consequence, the demographical situation improves.

Craniological and odontological data show that the region of Lithuania was for the first time populated in the postglacial period by newcomers from the south-west, but at this moment we cannot say if these first people had some relations with platyprosopic East Baltic mesocrans. Analogies for pre-Indoeuropean Nemunas and Narva people should be searched for in Central Europe; one must expect at least several immigration waves (Česnys, 1990). Hypermorphic hyperdolichocranic Corded Ware bearers also came most probably from the south. In this way a hybrid anthropological type was formed, which occupies intermediate place between autochthonous mesocranes and immigrant hyperdolichocranes. Odontological data also allow to attribute Lithuanian Neolithic people to the Central European type. Thus we do not see a contradiction between paleodemographic and population genetic data.

The morphology of the postcranial skeleton can be of great help in solving this problem – substantial changes in the ecological situation during the transition from a foraging to a food producing economy should be expected, and definite changes in body

TABLE 1. *Comparison of demographical data between Lithuanian Neolithic and some other samples.*

Sample	e^0_{20}	R_{pot}
Lithuanian Neolithic	17.50	0.621
Polish Neolithic*	24.03	0.719
Elbe-Saale Neolithic*	17.41	0.599
Bohemian-Moravian Neolit.*	17.22	0.631
Carpathian Basin*	20.81	0.682
Ukrainian Neolithic*	20.60	0.687
Lithuania, 1st mill. A.D.**	19.40	0.690

* – from Piontek and Marciniak, 1990
** – from Česnys, 1985

TABLE 2. *Male somatometrical data.*

Index	Neolithic	1st mill. A.D.
Stature*, cm	163.48	172.80
Weight**, kg	74.10	77.49
Shoulder br. index, %	39.05	–
Arm length*, cm	73.13	78.40
Leg length*, cm	85.33	93.50
Shoulder br. index, %	23.55 (broad)	–
Arm length index, %	44.73 (short)	45.37 (avrg.)
Leg length index, %	52.19 (short)	54.11 (short)
Intermembral index, %	86.28 (avrg.)	83.85 (legs longer)
Body build:		
Quetelet:	453.27 (v. massive)	448.44 (v. massive)
Livi:	25.69 (v. massive)	24.67 (massive)
Rohrer:	1.70 (massive)	1.50 (massive)

* – according to J. V. Nainys (1972)
** – according to G. Debetz and Yu. Durnovo (1971)
*** – according to J. Piontek (1979)

build are noted in other populations. Thus we wanted to look for such changes in the Lithuanian Neolithic. Traces of pathology can be of some value to describe life conditions. The Lithuanian Neolithic can be characterized by a high level of traumatism: unhealed and healed skull vault wounds in Turlojiške, Kretuonas, Donkalnis, probable traces of scalping in Donkalnis – an analogy could be found in the Swedish Neolithic (During, Nilsson, 1991); healed fractures of clavicle and ulna – testimony of a high level of violence. Marked degenerative lesions of joints (shoulder – Donkalnis, elbow – Plinkaigalis, wrist – Donkalnis, metatarsophalangeal – Kretuonas) also point to high physical stresses (wear of joints). Metaphyseal growth arrest lines (Harris lines) suggest periodical stress (disease and/or starving) in childhood. That Lithuanian Neolithic people suffered high levels of stress is reflected also in demographical data.

Another indirect reflection of environmental stress is osteometric data on the postcranial skeleton. Unfortunately, adaptation of the postcranial skeleton to the environment has not yet been investigated properly. Material for comparison has been also scarce. Thus, avoiding broad theoretical conclusions, we have compared only Nemunas – Narva and Baltic Coast postcranial skeletons. It was found that in Nemunas and Narva cultures male limb bones where shorter (H1, R1, F2, T1), than in the Baltic Coastal peoples, but their arm bone diaphyses were slightly more massive (H7, R3), while leg bones did not differ substantially (F8, T10b); the same can be said about diaphyseal diameters (H5, R4, F6, T8a). The pooled sample from the 1st millenium was substantially more massive than Neolithic samples. In females the situation is similar, although not so marked. Detailed analysis of postcranial variability in Neolithic transition is a subject for further analysis.

Somatometric indices, although very approximate, enable more 'lively' description peculiarities of body structure. As Neolithic materials are not numerous, all samples were pooled. Neolithic males (*Table 2*) were of low stature, with broad shoulders, short arms and legs; arm and leg ratio falls into the average range; body build was very massive. During the transition to more advanced technologies, a certain leptosomization took place (see data of the 1st mill. A.D.). The same could be said about females (*Table 3*): low

TABLE 3. *Female somatometrical data. (data calculated as in Table 2)*

Index	Neolithic	1st mill. A.D.
Stature, cm	149.90	160.40
Weight, kg	53.11	64.88
Shoulder breadth, cm	33.99	–
Arm length, cm	64.50	71.20
Leg length	76.70	84.80
Shoulder br. index, %	22.83 (broad)	–
Arm length index, %	43.32 (short)	44.39 (short)
Leg length index, %	51.51 (short)	52.87 (short)
Intermembral index, %	84.09 (avrg.)	83.96 (legs longer)
Body build:		
Quetelet:	356.68 (v. massive)	404.49 (v. massive)
Livi:	25.24 (v. massive)	25.05 (v. massive)
Rohrer:	1.61 (massive)	1.57 (avrg.)

stature, massive brachymorphic body build in the Neolithic with leptosomization in the later period.

In this way demographical and morphological data allow us to make the following conclusions:

1. During the Lithuanian Neolithic, environmental stress was great, and biological adaptation to it was remarkable. This is reflected in unfavorable demographic data and specific brachymorphic body build, characteristic of Northern countries. We suspect that Lithuanian Neolithic foragers (Nemunas and Narva cultures) were even more brachymorphic than more agriculturalized Corded Ware and Baltic Coastal people.

2. During civilization development, cultural adaptation possibilities increased. The consequence was an improvement of demographic data and a tendency towards leptosomization. Similar biological regularities are observed also in recent populations.

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