Late Mesolithic individuals of the Middle Danube origin on the Dnipro Rapids (Ukraine): archaeological and bioarchaeological records.

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Abstract

The region of rapids on the Dnipro River was a natural niche rich in resources for the subsistence of hunter-fisher-gatherer groups. This caused the rise of numerous large burial grounds dated to the 10th-5th millennium BC there. The remains of many buried were investigated with a broad suite of bioarchaeological methods during the last 70 years. The stable isotope analysis carried out by Kenneth Jacobs and Malcolm C. Lillie has shown that several individuals from the Late Mesolithic burial ground of Vasylivka II (Vasilyevka II in transliteration from Russian) are characterised by $\delta 13$ ratios more positive than those obtained for any of the other cemeteries. According to Jacobs, this points to the significant role of plant food (including cereals) in nutrition of these individuals in contrast to the rest of the Mesolithic inhabitants of the region who exploited freshwater resources and herbivores. Both scholars explained this as a possible presence of migrants from some unnamed territory there. In the current report I present an attempt to verify this hypothesis comparing published information about archaeological finds, funerary rites, craniometry, stable isotope, osseous pathology and DNA of individuals from the cemetery and other sites of the region and from the distant territories.
The Vasilyevka II cemetery dated to the late 8th-7th millennium cal BC was excavated by Abram Stoliar in 1953. In total, 27 burials containing the remains of 32 individuals interred in the extended position were excavated. But our knowledge about the funerary rite and grave goods from there is extremely scant due to the lack of full-fledged field report and publication, as well as the loss of all finds except human bones.

Generalization of all available information and searching for analogues has enabled to suggest that several bearers of the Middle Danube Lepenski Vir culture were buried in the cemetery. In the first place, this is indicated by "dozens and hundreds" perforated cyprinid pharyngeal teeth and "necklaces of peculiar spiral nacreous shells of possibly Mediterranean origin", mentioned by some participants of the excavation. In the North Pontic area, 2 such perforated fish teeth were found by Dmitrii Krainov in the Mesolithic burial of a single human skull within the Crimean rock-shelter site of Zamil-Koba 1 in 1936; and 18 ones by Oleksandr Bodianskyi in the cemetery with no radiocarbon date of Skelia-Kamenolomnia on the Dnipro Rapids in 1954. In the distant territories, hundreds such beads are known among finds from the Late Mesolithic burials on the sites of Vlasac, Schela Cladovei, Kula, and Lepenski Vir in the Iron Gates area on the Middle Danube, and one from the Mesolithic cultural level in

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the Vrbička cave in Montenegro.

Scatterplot of the δ15N and δ13C stable isotope values for burials of the Mesolithic and Neolithic cemeteries from the Dnipro River and the Iron Gates regions shows the grouping of two remote clusters. Among all the Dnipro cemeteries indexes, only 2 females and 1 male from Vasylivka II are included in the Iron Gates cluster, and another 10 individuals are located between the clusters. On the contrary, only one buried mature male from Vasylivka II falls into the Dnipro burial grounds cluster.

Currently, the mtDNA of only one female among the individuals from Vasylivka II with the "Danube" δ13 ratios has been analysed. It attributed to subclade U5b2. In the Iron Gates area, carriers of this subclade were found in synchronous burials on the sites of Schela Cladovei, Vlasac and Hajdučka Vodenica, including burials with finds of perforated cyprinid teeth.

According to Ilya Gokhman monograph of 1966, the buried in Vasylivka II are different from the rest of the Meso-Neolithic population of the Dnipro region by the frequent presence of *torus mandibularis*. This osseous pathology is recorded on 18% of all examined jaws from there, compared to less than 1% of all examined jaws from the rest of the burial grounds. Based on the data published by Mirjana Roksandić, *torus mandibularis* is on 63.6% of the examined lower jaws from Padina, 45.4% from Vlasac, 40.0% from Hajdučka Vodenica, 19.6% from Lepenski Vir. It is noteworthy that perforated fish teeth were found in the burials of some individuals with *torus mandibularis* in Vlasac.

Finally, analyses done by Jacobs found significantly higher barium content in the bones of people from Vasylivka II compared to people from one of the earlier neighboring cemeteries. Now, barium content is not used to research an ancient diet, but along with the strontium content it is considered as a possible marker indicating a specific geographical area. In this regard, it draws attention that barites are not mined industrially in the Dnipro region, but their deposits are exploited near the Negotin city in the Iron Gates area.
Thus, the archaeological and archaeobiological peculiarity of Vasylivka II can be plausibly explained by some of the individuals buried there were born on banks of the Middle Danube, and the group that used the cemetery persistently contacted with inhabitants of that distant territory. This conclusion should be verified by a further deliberate comparative multidisciplinary research of the Late Mesolithic materials from the Dnipro Rapids and the Iron Gates areas.

Keywords: Late Mesolithic, North Pontic area, Iron Gates area, cemetery, perforated cyprinid pharyngeal teeth, funerary rites, stable isotopes, craniometry, osseous pathology, DNA, migration