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The application of cremated remains analysis for the reconstruction of burial ritual and cultural identification on the example of Site 5 in Brudnice

Site 5 in Brudnice is a multicultural cemetery dating to the Roman Period which is located in Northern Mazovia, and is a statement of the Przeworsk-Wielbark relations in this part of the ancient world. The research concerned bioarchaeological analysis of cremated human remains from selected burials of both cultures from the site.

The aim of the study was to characterize the cremated human remains from the Przeworsk and the Wielbark burials, and to verify whether differences in the details of the burial rites between these cultures in the Brudnice site can be observed based on the analysis of cremated bones.

The study examined a series of 208 graves, including 54 associated with the Przeworsk culture, 126 with the Wielbark culture, and 28 graves not assigned to any of the cultures.

I conducted a multifaceted bioarchaeological and taphonomic analysis, including such features as: grave type, state of preservation of the object, total weight of bones in the burial, fragmentation (size fractions and length of the largest fragment), proportions of identified skeletal parts in the burials, rate of anatomical identification – percentage of the identified elements within each of the burials (RAI), degree of burning, biological profile (number of individuals, age at death and sex). I tested the collected data using non-parametric statistical tests to observe differences between the described traits of cremated remains within different archaeological contexts (grave type and preservation state of objects) in each archaeological culture separately. I further compared the obtained bone characteristics between the analysed cultures. The discriminant analysis was used to determine which of the analysed characteristics best distinguish between the Przeworsk and the Wielbark burials.

The research revealed some differences in the characteristics of the cremated remains from Brudnice. There are usually far fewer bones in Wielbark pit graves than in Przeworsk ones. They are also more fragmented, although in this case the differences between the two cultures are much smaller and their nature is qualitative rather than quantitative. The proportions of size fractions (fractional weight) are comparable, while the lengths of the largest fragments in each anatomical category are higher in the Przeworsk graves. The RAI index and the average proportions of identified skeletal parts are similar in the pit graves of both cultures.

In the Przeworsk culture, the best-preserved remains (in terms of total weight and fragmentation) were found in multi-vessel graves. A comparison of remains from different types of graves shows that the difference in the state of preservation of bones is not due to the mere presence of vessels, which protect the remains from environmental conditions, but distinguishes a certain type of grave – multi-vessel, in which one individual was buried in more than one vessel. In addition, the previously expected differences in the description of remains from well-preserved versus damaged and destroyed objects were not present in the Wielbark graves.

In light of the results, the impact of environmental conditions on the bones from Brudnice's cemetery turned out to be less than expected, in all analysed parameters, so the observed differences may have a basis in the way the remains were treated during the burial ritual. The comparable degree of cremation in all the graves analysed indicates that the cremation process may have proceeded similarly in both cultures, with the goal of completely cremating the remains of the deceased. On the other hand, differences in the total weight and degree of fragmentation of the remains discovered in the graves indicate that the handling of bones after the cremation varied.

Discriminant analysis based on described features of cremated bones showed that the differences between the remains of the Wielbark and the Przeworsk cultures at Brudnice are large enough to allow cultural identification with little error.

Based on the total weight of the bones and the length of the largest fragments, the efficiency of grave identification was 100% for the Wielbark culture and 80% for the Przeworsk culture. Thus, the observed differences between Wielbark and Przeworsk remains cannot be coincidental. In the Brudnice cemetery, the difference in fragmentation, which is related to the manipulation of remains after cremation, proved to be the most useful for distinguishing between Przeworsk and Wielbark graves. On the basis of discriminant analysis, it was possible to classify half of the objects without a predetermined affiliation to either culture.

In light of the research presented here, it seems possible to estimate the influence of taphonomic factors on the condition of the bones and to link the objects to a specific culture, based on the analysis of the various characteristics of cremated remains from a single cemetery. This provides hope for a better understanding of the differences observed in prehistoric cremation burials and the possibility of broader interpretations regarding the cremation rituals used in the past.