AN UNUSUAL PREHISTORIC MASS BURIAL FROM JAGODNJAK, EASTERN CROATIA
– A BIOARCHAEOLOGICAL APPROACH

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Geographic and archaeological context
Archaeological rescue excavations of the Jagodnjak-Krčevine site (AN 7) in the Osijek-Baranja County in eastern Croatia were carried out in 2014 and 2015. Excavations revealed numerous traces of human activity at the site, ranging from prehistoric (Neolithic, Bronze Age, Late Iron Age) to later periods (Roman and Early Medieval). A round-shaped, slightly truncated pit, approximately 3.8 x 1.5 m in dimension and about 30 cm deep (burial 41) was discovered within a larger Neolithic feature and surrounded by numerous Middle Bronze Age burials. The pit is dated based on the preserved pottery fragments and the presence of three Neolithic pit-dwellings in its immediate vicinity. The human remains found at the bottom of the pit were mostly articulated but the individual skeletons became partially commingled due to the haphazard placement of the bodies at interment and post-depositional processes. Unfortunately, due to time concerns and nature of excavations, no bioarchaeologist was present at the site during excavation.

Osteological analysis
The skeletal remains were analysed in the bioarchaeological laboratory of the Institute for Anthropological Research in Zagreb, Croatia. Due to commingling and partial articulation of the skeletons it was not possible to perform a complete re-individualisation, and therefore, only minimum number of individuals (based on the number of the left femora) was established. The biological sex and age-at-death were estimated based on the macroscopic examination by using standard protocols described in Buikstra & Ubelaker (1994). For the purposes of ancient DNA and stable isotope (carbon and nitrogen) analyses human bone samples were taken from each of the studied skeletons. Additionally, one bone sample was taken for radiocarbon dating that is still in progress.

Results
A minimum of ten individuals are represented in the pit. All skeletons belong to adult males aged between 18 and 45 years (seven are young adults and three are middle adult males). A whole range of pathologies is observed in the sample, including injuries (two individuals), ante-mortem tooth loss (one individual), ectocranial porosity (six individuals), cribra orbitalia (one individual), and linear enamel hypoplasia (two individuals). Furthermore, one skeleton exhibits a healed ante-mortem blunt force injury on the left side of the frontal bone, while another exhibits a series of peri-mortem cranial injuries consisting of cuts and blunt-force trauma. These include: 1) a straight cut on the left side of the frontal bone, 35 mm in length, 2) a straight cut on the posterior side of the frontal bone, 15 mm in length, a fragment is lost post-mortem, 3) a half-round defect 15 mm in diameter (a larger part is missing post-mortem) on the frontal bone, probably blunt force trauma, 4) a straight cut on the left parietal bone, 30 mm in length, 5) two possible cuts on the right parietal bone, 7) a possible oval-shaped blunt force trauma on the right parietal bone (superior half is missing post-mortem).

Discussion and conclusion
The prehistoric mass burial from Jagodnjak is one of the few similar finds on the territory of Croatia, and one of several from Neolithic Europe. Prehistoric mass graves that are chronologically and geographically close to the Jagodnjak burial were found at Esztergályhorváti (Zoffmann 2007) and Ajpony-Turajnyos-dülő (Fabian et al. in press) in Hungary, as well as at Alba Iulia-Lumea Nouă, Romania (Gligor 2010). However, the authors studying these sites suggest that they have a ritual character (proper placing of human bodies, intentionally placed ceramic vessels, animal remains, traces of fire) that is apparently absent at Jagodnjak. Demographic profile, as well as presence of perimortem trauma in this assemblage might indicate that the victims of an episode of intentional violence were buried here. Furthermore, the morphology of recorded injuries strongly suggests that they were caused by different types of weapons/tools. The closest analogy to Jagodnjak could be found in the Potočani assemblage from continental Croatia where a mass burial in a pit dated to the Middle/Late Neolithic Lasinja culture (around 4100 BCE) with commingled remains of at least 41 individuals of both sexes and all age groups was found (Jankovic et al. 2017). At least 13 skeletons from this burial exhibited evidence of cranial peri-mortem injuries similar to those observed at Jagodnjak, and it was hypothesised that the victims of a prehistoric massacre were buried there (Jankovic et al. 2017). Other prehistoric mass graves from Europe that are similar to Jagodnjak include Aspar/Schletz, Talheim, and Schöneck-Kilianstädten. These sites, located in Austria and Germany, are dated to the Early Neolithic (LBK) and represent the victims of prehistoric massacres. At Aspar/Schletz skeletal remains of at least 67 individuals were found within the fortification ditches (Tischler-Nicola et al. 1999), at Schöneck-Kilianstädten at least 26 individuals were killed by stone axes and arrows before being deposited in a commingled mass grave (Meyer et al. 2015), while the burial pit from Talheim contained the remains of 34 individuals deposited haphazardly without intentional grave goods (Wahl & Trautmann 2012). Based on our current data, we cannot tell with certainty if the human remains from Jagodnjak belong to the victims of a massacre or to the individuals killed in an armed conflict, as in the case of the famous Bronze Age Tollense Valley battle (Jantzen et al. 2011). Both scenarios are possible, although the main issue here is a relatively low frequency of peri-mortem trauma, as only one in ten skeletons exhibits this type of injury. According to the data obtained so far it seems that the Jagodnjak mass burial contains the remains of victims of a prehistoric episode of intentional violence. Unfortunately, there are still many unresolved issues, including: 1) were the individuals massacred or killed in a face-to-face combat, 2) were they locals or outsiders, 3) what was the cause of this violent episode? Hopefully, additional multidisciplinary studies such as CT scanning, ancient DNA and stable isotopes analyses that are in progress will answer these questions and add to our understanding of complex patterns of contacts and behaviour of prehistoric Europeans.