

Late Neolithic-Early Copper Age human tooth samples used for TB paleomicrobial research

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Abstract: It is well known that tuberculosis (TB) causes 1.5 million deaths every year, and one-third of the world's total population are infected by *Mycobacterium tuberculosis* (WHO, 2011). These facts give a great importance to TB research. Previous investigations carried out in some parts of the 5th millennium BC osteoarchaeological sample of Alsónyék-Bátaszék (western Hungary) have already provided interesting paleopathological cases of tuberculosis (Köhler *et al.*, 2012). Köhler and her colleagues were written earlier an interesting case where detected Pott's disease, hence Alsónyék-Bátaszék was tested by paleomicrobial methods, too. Molecular methods for the detection of mycobacterial ancient DNA (aDNA) have also been developed considerably in the last few years (Donoghue, 2008, 2011, Nicklisch *et al.*, 2012). The good state of preservation of the material, the important chronological period of the series encouraged us to carry out a test of TB-related lesions in the 13th grave-group of Alsónyék-Bátaszék. From the previous paper it is well known that the tooth samples are better for the paleomicrobial investigation (Pósa *et al.*, 2013), thus the samples were chosen from teeth, while we wanted to continue the test and to evidence that these areas of the body are better for our assumption. Skeletal material of 39 individuals was chosen for the molecular investigation from the 13th grave-group, which contained the interesting case with Pott's disease by Köhler (Grave No. 4027). Paleomicrobiological analysis was used to study the presence of *M. tuberculosis* aDNA in morphologically positive and negative cases, while we were interested which of the skeletons was infected by DNA of MTB (*Mycobacterium tuberculosis*) complex. A confirmatory paleomicrobial analysis was carried out on these samples, where were detected morphological lesions and was tested the presence of *M. tuberculosis* aDNA in Late Neolithic-Early Copper Age skeletal series.

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Key words: paleopathology, aDNA, skeletal tuberculosis, *Mycobacterium tuberculosis*, Hungary

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