

## PALAEOPATHOLOGICAL STUDY OF THE SKELETAL REMAINS FROM ČELAREVO

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*Abstract: Čelarevo is a village apr. 20 miles west of Novi Sad, the capital city of Vojvodina. At its outskirts there is a site from which clay is taken for the brick factory where a burial was discovered. At the beginning of the archaeological excavations remains of 248 human skeletons were found. The burial is a large one and archaeological excavations are still in progress. The present study is limited to this first group of 248 skeletons which have been anthropologically examined and settled there in the early Mediaeval period (c. 10 to 11 century AD). The examined part of the burial was used by a homogeneous population which did not mix with members of diverse racial groups which also migrated into the area. The burial at Čelarevo represents one of the rare archaeological sites where a large number of skeletons was discovered in a relatively good state of preservation so that morphological, anthropological and palaeopathological features of individual skeletons could be studied, thus providing the relevant information and contributing towards the better understanding of the interrelationship of this people and the environment of the Pannonian plain. The preliminary palaeopathological investigation indicates that the population which used the examined part of the graveyard, lived and enjoyed uninterrupted development and their life was not affected by any major disease of war, or any other disaster. It is interesting to point out that in many graves of close to them a number of fragmented Roman bricks inscribed with menorah and Hebrew letters were found.*

*Key words: Čelarevo; Palaeopathology; Mediaeval skeletons.*

### Introduction

Man represents a single element in the general natural scheme which is continually changing and which he influences according to his needs and his desires, but which for its part exerts its influence on man as an individual and upon the human race as a whole. Studying the traces of diseases, disorders and injuries in human remains from ancient burials in Vojvodina it is possible to learn something which helps us to deduce the laws of natural environment and the social conditions of civilisations which have led to specific phenomena which in their turn are reflected in the traces of disease or injury which we can now, observe in human remains from archaeological sites (Živanović 1982). Pannonia, with Vojvodina as its southern part is a very interesting observation area for palaeopathological studies because of numerous migrations of different populations over the centuries. Some of these populations found Vojvodina an attractive place to settle and it is now interesting to see how the new environment influenced the settlers and what changes in the general pathology of the population could be observed. The plain country, the proximity of major rivers, the rich soil and all the other environmental and nutritional factors exercised their influence on all newcomers. Nomadic peoples could not adjust to the new conditions of life and moved away and those adjusted to agricultural production settled and remained there.

## Material and Methods

Following the anthropological examinations of the skeletons (Živanović 1972–73), sex and age were determined and palaeopathological and radiographic investigations were carried out in the Department of Anatomy of the Medical College of St. Bartholomew's Hospital in London and Zavod za anatomiju, Medicinski fakultet in Novi Sad. Dates of the examined human remains were obtained from the radiocarbon laboratory of The British Museum in London. Specimens of collagen from human bone (humerus, skeleton No 244), collected in 1973, were dated by liquid scintillation counting of benzene. The dates are expressed in radiocarbon years relative to AD 1950 based on the Libby half-Life for  $^{14}\text{C}$  of 5570 yr, and are corrected for isotopic fractionation. No correction has been made for natural  $^{14}\text{C}$  variations. The skeleton No 244 from Čelarevo BM-1394 was dated  $970 \pm 70$  bp (Burleigh and Ambers 1982). The total number of skeletons was 248, and sex and age are presented in the following table (Table 1).

Table 1. Sex and age

Sex	Male		Female		Unknown		Inf. I. and II	
	No	%	No	%	No	%	No	%
Infans I	—	—	—	—	—	—	28	—
Infans II	—	—	—	—	—	—	31	—
Juvenile	1	1.33	5	7.14	1	2.27	—	—
Adult	12	16.00	15	21.43	7	15.90	—	—
Mature	47	62.66	35	50.00	32	72.72	—	—
Senile I	11	14.66	10	14.28	4	9.09	—	—
Senile II	4	5.33	5	7.14	—	—	—	—
<b>Total</b>	<b>75</b>		<b>70</b>		<b>44</b>		<b>59</b>	

The remains of human tissue found on archaeological sites has in the passage of time suffered such changes that it bears little resemblance to the tissue which a practising pathologist examines in his laboratory. A bone found in a grave after excavation is in fact only a sort of template of the bone as an organ, which functioned in a living organism. Signs of pathological change in such bones are evident only for those types of disease which lead to the disintegration or accumulation of bone tissue and which may even influence a change of shape in the bone. A whole range of diseases arising from metabolic disorders cannot be observed because of mineralisation after death and the influence or the environment in which the skeleton lay. In palaeopathological examining of such human remains from Čelarevo all the current pathological and scientific methods were used including gross, microscopic and X-ray examination, radiocarbon dating and archaeological observations. The investigation of the skeletons followed the pattern described by the author (Živanović 1964, 1982).

## Results

The most striking observations on these 248 skeletons from Čelarevo is the absence of violent injuries of the bones. Barbaric tribes that migrated into Vojvodina usually were warriors who fought their way into the new territory, and engaged themselves in many battles trying to rob their enemies. There was always a disastrous devastation in the area through which they passed. In most burials one can always find a number of skeletons with clear sign of violent injuries. In Čelarevo population such injuries have not been seen in any skeleton. On the contrary, the common type of fractures usually obtained in everyday domestic life such as injuries of two humeri and one fibula show that there were injuries of bones, but they were not very common. The next striking observation is the small percentage of skeletons with the signs of disease or a disorder that affected the bones and changed their morphology. The population living at Čelarevo was a relatively healthy one. Study of the age of individuals at the time of death indicates that only one fifth of individuals died before the age of 14, and approx. three fifths reached maturity or senility (Table 1). The incidence of death was larger in juveniles and adult females than in males of the same age group. The absence of signs of diseases and disorders in bones does not mean that this population was not affected by any disease, infection or disorder. Most diseases do not affect the bones, or individual cures itself, or dies before the bones are permanently affected. Some diseases and disorders are of a long lasting nature and in such cases pathological signs are visible on the bones.

### *Anatomical variations and congenital anomalies*

During the study of skeletons from Čelarevo supernumerary bones were found in seven skulls (supernumerary bones in parieto-occipital sutures in 2.82%). Such supernumerary bones are most probably due to a disorder of ossification. The frequency of supernumerary bones in Čelarevo skulls is much smaller than in the European mediaeval skulls and the frequency is similar to the present-day population of the same region. A proper and fully developed Inca bone could not be found in any skull from Čelarevo.

Metopic suture, which is located between the left and right half of the squama of the frontal bone in adult or mature skulls is most often found in individuals.

Perforatio fossae olecrani was seen bilaterally in one skeleton, and one complete and one incomplete Posterior vertebral artery arch of atlas. The lack of fusion of sacral vertebrae was found in one case, and Spina bifida also in one case.

### *Injuries and fractures*

There were two cases of fractured humeri and in both cases the shaft of the bone has been fractured in its lower part. The fractures healed without dislocation of the fragments, but it took some time before the fragments fused because in both cases the extensive development of calus remained at the site of the fracture. One of the humeri was left and the other one right.

Transverse fracture of the lower end of fibula without the dislocation of the fragments caused by twisting of the foot was found in one skeleton.

### *Diseases of the joints*

Signs of only one non-specific joint disease were found in Čelarevo skeletal remains. These were the signs of rheumatoid arthritis, which were found in six skeletons. In all these cases small joints of the feet or hands were affected together with intervertebral joints and at least one of the larger joints. The most striking signs were large exostoses on vertebral bodies.

### *Specific infections*

Tuberculosis was always the most common specific infection in Vojvodina and it affected the Čelarevo population right from the beginning of their life there. Tuberculosis of the bones is most frequently caused by dissemination of the tuberculous bacilli from some active focus of infection, usually in the lungs, kidneys, intestines or lymphnodes. In comparison with pyogenic infection tuberculosis most often affects the epiphyses of the bones and spinal vertebrae which have a very good blood supply. There were two such cases in Čelarevo. In the first case clear signs of Pott's disease or the tuberculosis of the spine were found and the other case was a more complicated one because tuberculosis not only affected the vertebral column, but it also spread into the upper end of femur and the articular part of hip causing the tuberculous coxarthrosis. The typical signs which resemble the bone affected by osteoporosis were quite extensive in the acetabular fossa.

## Discussion

After considering the available skeletal material from Čelarevo for signs of injury, disease and healing it is possible to conclude that population from Čelarevo did not suffer much. Diseases, disorders and injuries were not very common. The living conditions and natural surroundings of Čelarevo area were very favourable for this nomadic population. Palaepathological study of the first 248 skeletons which have been uncovered at the beginning of the excavations is the preliminary study which will be completed when all the skeletons in the burial will be uncovered. But even these first observations gave an indication of the beneficial environmental conditions for immigrants into this area.

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