

Overview of the Results of Anthropological Research of Deformations of Human Bones Remains from the Neolithic and the Chalkolithic Periods in Bulgaria

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The present overview summarises the anthropological research results published up to now that describe deformations of human bones from the Neolithic and Chalkolithic periods in the current territory of Bulgaria caused by diseases, by deliberate action or by accident. It is based on the publications from the past 45 years in scientific research periodicals, popular science magazines or monographs. Three groups of bone deformations are distinguished — pathological deformations, traces from ritual manipulations and evidence for medical treatment or prophylactic activities. The pathological group includes diseases like fractures, tuberculosis, tumours, anaemia, etc. Ritual deformations are found more frequently on skulls, and include post-mortem trepanations, punctures with sharp objects, as well as artificial deformations of the skull. Medical treatment activities is the least represented group with data from only one necropolis, and few copper rings found on teeth of several skeletons.

Key words: Neolithic, Chalkolithic, pathological deformation, ritual manipulations.

Data about the diseases of the people who lived in the past can be derived from the traces that those diseases left on the bones and teeth remains of ancient people. These traces are studied by palaeoanthropology that on the other side, is part of anthropology, and on a larger scale is a part of medicine. Its research results contribute to different scientific areas, as is archaeology in this case.

The deformations of the studied bone and teeth material can be classified in three major categories:

- pathological deformations caused by diseases or traumas;
- deformations caused by manipulations of ritual character that the individuals survived or such that were conducted post-mortem;
- deformations caused by attempts for medical treatment or prophylactic activities.

Deformations of bones of the three categories were discovered in 18 Neolithic and Chalkolithic sites (necropoles and individual graves) in the current Bulgarian territory, namely Kremikovtzi — Sofia, Vaksevo — Kiustendil Distr., Tziganova Tell — Harmanli Distr., Malak Preslavetz — Silistra Distr., Chavdar — Sofia Distr., Slatina — Sofia, the necropolis at the village of Durankulak — Dobrich Distr.,

Iasatepe Tell — Plovdiv, Ruse Tell, Kubrat Tell, the necropolis at Liliak village — Targovishte Distr., Iagodinska Cave — Smolian Distr., the necropolis at Varna, the necropolis near Targovishte, Okrajna bolnitsa Tell — Stara Zagora, Devetashka Cave — Pleven Distr., Polianitsa Tell — Targovishte Distr., and the Pchelina necropolis near Omurtag. The distribution of the different types of deformations varies from site to site. The summary of research results reveals that some of the deformations are concentrated in a certain necropolis, several sites or a bigger region.

Pathological deformations

Diseases of the blood

Traces (cribra orbitalia) of blood diseases (probably haemolytic anaemia) are discovered in three necropoles on the total of seven skeletons — one Neolithic [18] and one Chalcolithic [19] skeletons from Durankulak, one from the necropolis at Targovishte [22], and four from the Pchelina Necropolis [5]. In the latter case two of the skeletons are of children, one of whom was 8—9 years old.

Diseases of the dentition and jaws

Dentition and jaw diseases, the most frequent of which is the tooth caries, are found in the majority of the enlisted sites (Table 1). In three cases (one from Kremikovtzi [10], one from Okrajna bolnica Tell [17], and one from Pchelina Necropolis [5]) traces of carious processes are found on the milk teeth — something untypical and rarely discovered in prehistoric populations. Caries' complications (dental-root cysts, pulpitis), as well as parodontal changes are found at most of the sites (Slatina [4], Chavdar [1], Vaksevo [21], Rouse Tell [8], Tziganova Tell [6], etc.). A bigger concentration of complications is observed in the necropolis at Targovishte [22].

Diseases of the dentitions and jaws, ranging from caries in early stages of development to heavy damages around dental roots and deformations of the alveolar parts of the jaws, are found on all seven skeletons, which also have other bone deformations. At one of the skeletons the damaged teeth amount to thirteenth. In one case (Okrajna bolnitsa Tell [17]) mortification as result of caries is found on one of the molars. Against the background of this frequency of dentition and jaw diseases, we have to mention that at some of the biggest necropoles, such as the Varna Necropolis, these cases are just an exception [11].

Tartar is found on five skeletons (one from Vaksevo [21], two from Slatina [4], one from Iagodinska Cave [12], one from the necropolis at Targovishte [22]). The case from Targovishte is distinctive with the heavy coating of tartar, causing loss of the grinding qualities of the teeth.

Abrasion of the grinding and incisive dental surfaces is very frequent (Vaksevo [21], Malak Preslavetz [14], Slatina [4], Durankulak [18, 19], Iagodinska Cave [12], etc.). The level of abrasion varies ranging from loss of the surface layer of enamel to almost complete abrasion of the dental crown as is in one case from Slatina [4].

Bone and joint diseases

Pathological changes of the bones and joints are almost as common as those of the dentition and jaws (Table 1). Basically, they are represented by formations of bone growth at the edges and joint surfaces of the vertebrae (Vaksevo [21], Iasatepe Tell [9], Slatina [4], Durankulak [18, 19], Varna Necropolis [20], Pchelina Necropolis [5],

Table 1. Pathological deformations of the bones and teeth

Site	Period	Diagnoses					
		traumas	diseases of the bones and the joints	diseases of the dentition and the jaws	diseases of the blood	tuberculosis	tumours
Kremikovtzi	Neolithic			1			
Vaksevo	Neolithic		1	1			
Tziganova Tell	Neolithic			1			
Malak Preslavec	Neolithic	1	2	1			
Iasatepe Tell	Neolithic		1				
Chavdar	Neolithic		1	1			
Slatina	Neolithic			3			
Durankulak	Neolithic		6	2	1	1	
Russe Tell	Chalkolithic	2		4			
Kubrat Tell	Chalkolithic	1					
Iagodinska Cave	Chalkolithic			3			
Varna Necropolis	Chalkolithic		1	1			1
Targovishte Necropolis	Chalkolithic		2	7	1		
Okrajna bolnica Tell	Chalkolithic		1	3			
Devetashka Cave	Chalkolithic			1			
Polianitza Tell	Chalkolithic			1			
Pchelina Necropolis	Chalkolithic	3	2	3	4		
Durankulak	Chalkolithic	1	12	1	1		2

etc.). In three cases (one from Iasatepe Tell [9], one from Varna Necropolis [20], one from Okrajna bolnitza Tell [17]) more serious damages are found that had probably impeded or caused loss of the motor abilities of the individuals.

Malignant formations

Tumour formations are found in individual cases — one from Varna Necropolis [20] and two skeletons from the Chalkolithic period in Durankulak [19]. In all three cases the tumour formations are at the inner side of the skull. This kind of formations could be a cause for epileptic attacks [20].

Tuberculosis

The only case of bone tuberculosis is found on two thoracic vertebrae of one Neolithic skeleton from Durankulak [18].

Traumas

Traumatic injuries are found in eight skeletons (one from Malak Preslavetz [14], two from Rouse Tell [8], three from Pchelina Necropolis [5], one from Kubrat Tell [8] and one from the Chalkolithic period of Durankulak [19]). In six of those cases the traumas are of the skull, which five of the individuals survived (two from Rouse Tell [8], one from Pchelina Necropolis [5], one from Kubrat Tell [8], and one from Durankulak Necropolis [19]). In the sixth case (Pchelina Necropolis [5]) the injury most probably caused death. At the seventh skeleton (Pchelina Necropolis [5]) the cervix of the left femoral bone was fractured, but later healed up. Fractures of two ribs of the skeleton from Malak Preslavetz were found, but they were survived and later healed up [15].

Ritual manipulations on the bones and the teeth

Intentional artificial deformation of the skull

One of the deliberate changes of bones, and especially of the skull, is the artificial deformation of single-band type. Unlike later periods, i.e. the Middle Ages, when single- as well as double-band deformations are known, in the Prehistoric periods the single-band type is the only one found in Bulgaria [16]. It was found both in Neolithic and Chalkolithic graves (Table 2). Most cases are from Durankulak — on eighteen Neolithic skeletons [18] and thirty-three Chalkolithic ones [19]. Such a kind of artificial deformation is found only in two other necropolises (five from Malak Preslavetz [14] and two from Okrajna bolnitsa Tell [17]. Special attention should be given to the site distribution of artificial deformation and the fact that it is concentrated primarily in North Eastern Bulgaria. This distribution may be accidental and due to the fact that individuals with artificial deformation have not been discovered yet in other regions, but it may also be a characteristic of the prehistoric population inhabiting the territory mentioned above.

Unintentional deformation of the skull

One of the reasons for this kind of deformation could be a regular activity, for example carrying loads, such as heavy vessels, upon the head. Another similar effect

Table 2. Ritual manipulations and medical treatment

Site	Period	Ritual manipulations			Medical treatment	Unintentional deformation of the skull	Intentional deformation of the skull
		trepanations	punctures by sharp objects	ritual manipulations on the teeth			
Malak Preslavetz	Neolithic			1		2	5
Durankulak	Neolithic			1			18
Rousse Tell	Chalkolithic	14	4				
Lijak Necropolis	Chalkolithic	1					
Okrajna bolnitsa Tell	Chalkolithic	1				1	2
Devetashka Cave	Chalkolithic	1					
Durankulak	Chalkolithic				19		33

may be a result of the continuous lying of a little child (baby) on a hard surface, such as a wooden cradle, this leading to permanent flattening of the occipital bone and of the skull [13].

Unintentional deformation of the skull was found in three cases (one from Okrajna bolnitsa Tell [17], two from Malak Preslavetz [14]). The individual from Okrajna bolnitsa Tell was 45-50 years old, and the two skeletons from Malak Preslavetz belonged to the children in Infans I.

Post-mortem trepanation of the skull

The post-mortem trepanation of the skull belongs to the ritual manipulations. Russe Tell is a good illustration with its big number of skulls with traces from post-mortem

trepanation; they are several per skull in some cases [13]. This kind of trepanation is also found on one skull from Devetashka Cave [7], one from Lilyak [2], and one from Okrajna bolnitsa Tell [3]. For comparison, in Rouse Tell post-mortem trepanated skulls are fourteen (Table 2).

Puncture of the skull with a sharp object

Such punctures are found in four cases only in Rouse Tell. They are small round holes in the skulls probably inflicted post-mortem by an awl or another sharp object [8].

Ritual manipulations on the teeth

An unusual, probably post-mortem ritual manipulation is found at two sites — one in Malak Preslavetz [14] and one from the Neolithic period of Durankulak [18]. These are peculiar fractures of the dental crown of several molars, premolars and in one case (Durankulak) of an incisor. The fracture affects parts of the grinding surface, of the tubercles and of the dental crowns. It may be possible to cause such a fracture by an abrupt infliction along the vertical axis of the tooth [16]. The skeleton from Malak Preslavetz has four teeth broken in this way, while the total number of broken teeth of the Durankulak skeleton is eleven. It is believed that such a fracture could not be caused while a human is alive, and that it was inflicted post-mortem, probably, with some kind of a ritual purpose.

Traces from medical treatment

Data about probable medical treatment is found only in the Chalkolithic part of Durankulak [19]. Blue-green colouring is found on the teeth of nineteen skeletons, more often on the incisors, canines, and the first and second premolars of the lower jaw. The cause for this colouring was discovered only in several graves — rings made of copper wire with a diameter equal to the diameter of the necks of the corresponding teeth. One suggestion is that these rings were put on the teeth to exert an overall phytochemical influence over the organism [16].

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