

**BALCHIK 3, EXCAVATIONS 2004 – ANTHROPOLOGICAL  
IDENTIFICATION OF BURIED IN THE GRAVES WITH  
CREMATION RITUAL**

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*Balchik 3, VIII-IX c., graves with cremation*

**ABSTRACT.** Anthropological material from graves with cremation burial ritual from necropolis Balchik 3, Bulgaria, dated to VIII-IX c. is investigated. Determination of the age and/or sex of buried as well as the number of individuals in the material from graves was possible in some cases after data from dentition, cranial fragments, epiphyseal fusion and basic measures.

Necropolis Balchik 3 in the area of Military Airport in Balchik is dated to VIII-IX c. AD and presents one of earliest archaeological materials from the Bulgarian Middle Ages [8, 9]. In the 2004 excavation season were studied 27 graves. The studied sector presented graves with both burial rituals specific of the biritual necropolis – cremation and inhumation, or 21 graves with cremated and seven with inhumated remains. The identification of sex and age of the buried in the graves with cremation ritual was of great interest as such graves prevailed highly in the excavated sector and are often found in the necropolises from North-East Bulgaria from the period.

**MATERIAL AND METHODS**

The study includes material from the excavation season 2004 from 27 graves with cremated bones NN: 128-130, 132-135, 137, 139-144, 146-147, 149-150, 153-155. It aims at comprised identifying the age and sex of buried and number of individuals in the material from one grave. Because of highly fragmentary state of the anthropological material, the determination of buried was in most cases incomplete or in approximate terms.

The determination of the age was achieved at the first place according to data for growth and maturation of teeth [10, 2]. At the second place data from obliteration

of cranial sutures [6, 1] were used. These data made possible age determination of individuals in broad terms as it was impossible to precisely associate the fragments with the correct segments of sutures, which made impossible the specification of the age intervals of 5-10 years after the methods using cranial suture closure. At the third place were used data about epiphyseal fusion [1, 2, 4, 5]. Difficulties with the latter marker came from insufficient experimental data about cremation process in the literature. Separation of the bone on the line of fusion of epiphyses in the process of cremation appears to be possible on the early stage of fusion shortly after the growth is ceased.

Data for sex determination were also scarce. In this approach were used mostly metrical data – diameters and breadths of epiphyses [2, 3]. In some cases for sex determination were used observations on massiveness and relief development of bones in their interrelation in the investigated series. The latter were used only as an additional source in connection with other complex data from the grave. Specifying the number of individuals, buried in one grave was possible only by evaluating if the material presents individuals from clearly different age intervals or with clearly different sex identifications. In cases when fragments found in the material from one grave were not contradicting to the age and sex determination and physical development of one individual the grave was considered as individual.

## RESULTS AND DISCUSSION

### *Age structure of buried in the necropolis Balchik 3*

Age determination of nine individuals was possible according to data from growth of teeth (Figures 1): from graves NN 129, 132 (three individuals), 134 (two individuals), 137, 139 and 140, 144, 146, 150, 153, quadrant 37. Only fragments of mandibles were present in the material from graves NN 135 and 137 (Figure 2), which showed alveoli of the teeth from permanent dentition. In the material from the grave N 134 was found a deciduous lower molar which presented still not finished growth of the radix. In material from the grave N 132 were found a first upper incisor from the permanent dentition, growth of the radix was at early stage of development and a crown from a molar. The dentition of the individual was deciduous at stage of eruption of permanent teeth. From the grave N 149 came a fragment from the mandible with places for the nuclei of the permanent teeth, while the dentition was still deciduous at time of death. After these data the age at death of the individuals was ascertained as follows – infant I (6 years) – grave N 132, infant I (at about 3-4 years of age) from the material in grave N 134 and infant I (4-6 years of age) after the mandible fragment from grave N 149. The age of 12 individuals was determined according to maturation level of teeth from the permanent dentition. From them the growth of the teeth was not finished and was observed opened apex radii in two individuals from graves NN: 146 (radix from an incisor or canine) and 150 (premolar). Those individuals were determined as juveniles at the age about 18 and 15 years respectively. Growth of the found teeth was on finished stage with closed apex radii in eight cases, or graves NN: 129 (fragment of radix from teeth 1-3), 132 (incisor), 134 (fragments of radii from two incisors and a whole canine), 139

(fragment of radix of a molar), 141 (fragment of radix of canine and radix of a premolar or molar), 144 (premolar), 153 (a canine and a radix from a premolar), remains from quadrant 37 (canine). In these cases teeth development did not provide more precise data about the age of individuals except they have successfully finished the juvenile stage of maturation.

Fragments, containing cranial sutures were found in the material from 11 graves: NN 130, 132, 135, 137, 140, 141, 142, 144, 150 and 153. As there were no clues for situating the fragments at the correct position and ascertaining the correct segment of cranial suture, these data could not be used as an indicator of precise age determination. Only three stages of development were observed – no synostosis at all fragments from cranial skeleton of the individual, early stage of synostosis at some of the fragments or advanced to complete stage of synostosis at all fragments (Figure 3, 4). These data made possible the determination of the individuals in major age groups of infants, juveniles, adults, matures and senile. Tiny cranial fragments with totally opened sutures were found in graves NN 128, 132, 137, 144, 149 and 150. As for individuals from graves NN 137 and 150 there were no other clues for more precise age determination it was defined in broad terms of the first age group of infants 0-7 years. Together with data from epiphyseal synostosis the cranial suture closure was used in age determination for individual from grave N 144 as well. From individuals from graves N 128 and 130 were found cranial fragments with very tiny dimensions, which also should be identified as children in the first age group of infants – 0-7 years. As the edges of these fragments were highly destructed no cranial suture could be observed. Data from cranial fragments from individuals from graves NN 132 and 149 only confirmed the age determination made on the basis of teeth formation. Early stage of synostosis of cranial sutures at some segments was observed in the material from graves NN 128, 135, 140, 141 (both defined individuals), 144, 150 and 153. In these cases individuals were determined as adults, 20-40 years with an exception of the one from grave N 150, for whom data from dentition and epiphyseal fusion ascertained an early age – juvenile, 15-18 years. Dental data for the individuals from graves NN 132, 140 and 153 ascertained the adult age. Closed cranial sutures at some segments were found in the material from graves 130 and 142 and an advanced age was suggested for these individuals, or they were included in the age group of matures, 40-60 years. Without other evidences and according to the segments one could not find a precise identification as particular cranial suture sections this age determination is far from certain.

In the studied material epiphyses, or fragments of epiphyses, were found in eight cases – graves NN 128, 135, 143, 144 (from both individuals), 147, 150 and 154. In all these cases the epiphyseal ends were found separated from the diaphyseal parts (Figure 5). For individuals from graves NN 144 and 150 was ascertained a young age according to data from dentition, to which data from cranial suture closure wasn't contradicting. For other individuals it seems more likely (after the data from dentition and cranial suture closure) that during the burning process epiphyseal ends, being fused not long ago, tended to get separated from diaphyses. So the individuals received more accurate age determination in young adult age or about 20 – 20/25

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years of age. Material from grave N 130 provided fragment with fused distal epiphysis of right tibia, which did not show any signs of braking on the lines of epiphyseal fusion (Figure 5). On the fragments of grave N 140 – was not possible to define if the epiphyses were fused.

In one case – material from grave N 147, it was possible to measure the length of radius (95 mm) (Figure 5), which determined the individual as at more than 3.5 years of age according to the method of Johnston, 1965, accepted by Bass [2]. The presence and dimensions of the epiphyseal ends determine the individual as at 5-6 years of age.

Only a distinction between infants and grown up individuals was possible according to the dimensions of bone fragments found in other graves, without any evidences for more precise determination. Tiny fragments from graves NN 128, 130 and 147 were associated with individuals in infant age (0-7 years). Fragments from graves N 132 (two individuals) and N 133 determined the individuals as grown up.

### ***Sexual structure of buried in the necropolis***

The basic dimensions of bones (diameters of epiphyses) made possible sexual determination in three cases – for the individuals from graves NN 128, 135 and 140 (Table 1). From these cases only sexual determination of the individual from the grave 140 was achieved after two measurements (Table 1, Figure 6). Other cases, which provided possibility for measurement fall into the categories of unidentified sex (graves NN 130 and 143) (Table 1).

The stage of high fragmentation of the material provided very scarce data about sex determination according to cranial features [1]. From one individual, from grave N 142 was found a highly developed supraorbital relief – the superciliary arches and glabella, which determined the individual as male. This individual showed also development of lateral tubercle of frontal process of zygomatic bone more often observed by males. In individuals from graves NN 141 and 147 were found fragments from massive mandibles and teeth, which supported their sex determination as males.

In some cases the massiveness and relief development of bones, even in highly fragmented state, contributed to sexual determination. After pronounced massiveness of epiphyses in the material from the buried in the grave N 129 (femoral condyles), one individual from grave N 132, highly fragmented from cremation at high temperature (diaphysis of the femur, epiphyses), one individual from grave N 141 (massive diaphysis of femur with highly developed linea aspera), 142 (diaphyseal fragments from femur), 147 (fragments of femoral head, head of radius, right talus and highly developed tibial tuberosity) and 153 (humeral trochlea, condyles of tibia, very massive distal epiphysis of fibula) were determined as males. The massiveness of bones supported the identification of the individual from grave N 130 as male, made according the diameter of head of the radius. Grave N 140 provided also a fragment from a massive mandible, as the one from grave 147 (Table 1, Figure 2).

## CONCLUSIONS

The results from the analysis of material from graves with cremation burial ritual are in high interest in studying the period of development of early medieval population of Bulgarian lands, the period in which the newly arrived tribes of Slaves and Protobulgarians settle on the area of Balkans. The age and sex structure of buried in the excavated section (Table 2, Figure 7) point to specific ritual after which only some of infants were buried after the inhumation ritual. These are found in the graves NN 131, 136, 138, 145, 148, 151 and 152 and their age varied from 2-3 years to 12-13 years. In the graves with cremation ritual, in opposite, were buried individuals from all age groups and both sexes. No adults were buried with the inhumation burial ritual. As the excavations of the site are not finished it remains to solve the problem in further investigations if there were specialized areas in the necropolis with specific burial ritual, which could be explained chronologically or ethnically.

Most of graves, which presented cremation burial ritual, provided small number of fragments, which points to conclusion that not all the remains from the funeral pyre were collected and buried. It is more probable that graves, which contained fragments from more than one individual, were not a result from simultaneous death and consequent burial, but cremated bones from cremated individuals were collected for some period and deposited together after some time. The analysis of the anthropological material from this necropolis in the context of the whole archaeological complex contributes to solving the problem for possibility of defining traces from a tribe group included in the community of Protobulgarians, which practiced cremation burial ritual and distinct of Slavonic tribes of early medieval populations of Bulgarian Lands [9].

**Table 1.** Measurements of the bones

Bone	Grave N	Measurement	mm	Sexual determination
Humerus	128	Diameter of the head	38,0	Female <sup>1</sup>
Radius	130	Diameter of the head	>21,0	Male <sup>2</sup>
Femur	135	Diameter of the head	49,0	Male <sup>3</sup>
Humerus	140	Diameter of the head	>38,5	unidentified <sup>4</sup>
Radius	140	Diameter of the head	23,0	Male <sup>5</sup>
Femur	140	Diameter of the head	>42,0	unidentified <sup>6</sup>
Hamatum	140	Diameter of hamulus	12,0	Male <sup>7</sup>
Mandibula	140	Diameter of condyle	22,0	
Mandibula	141	Diameter of right condyle	17,0	
Radius	143	Diameter of the head	19,0	unidentified <sup>8</sup>

1. Bass 1976 [2]

2. After the diameter was not preserved in its full dimension, it should have exceeded 23 mm after the reconstruction and defines the individual as male [3]

3. Pearson 1919 [2]

4. Bass [2]

5. Kühl 1985 [3].

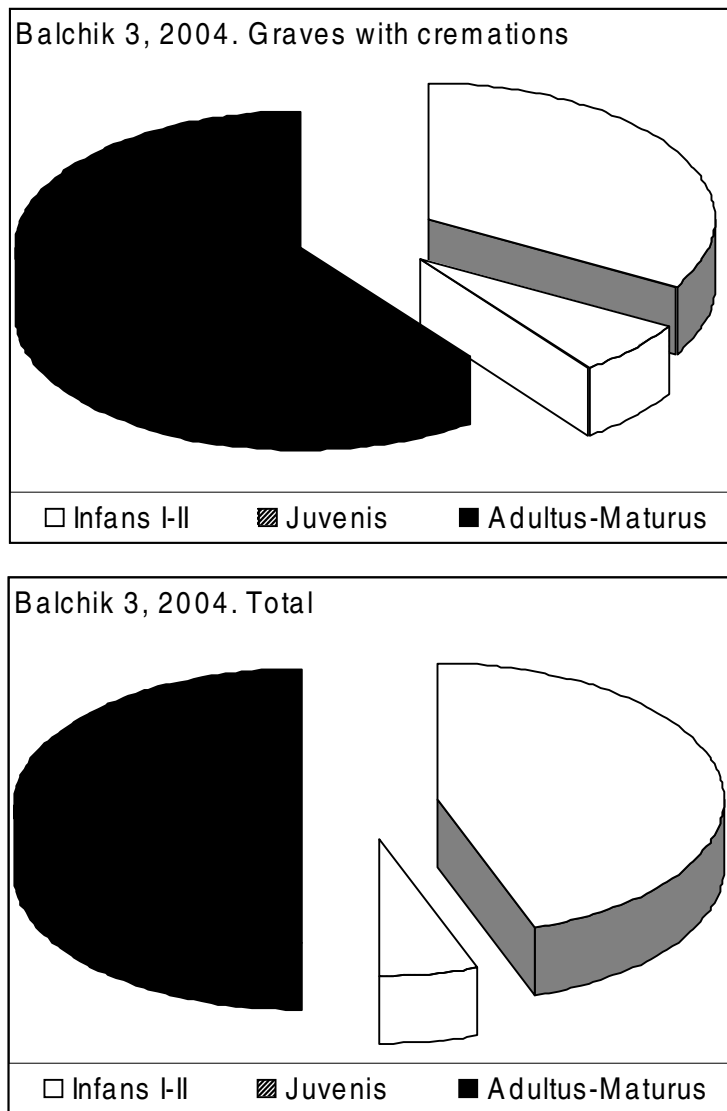
6. Bass 1976 [2]

7. Kühl 1985 [3]

8. [3]

**Table 2.** Age distribution of buried in the excavated graves from the necropolis Balchik 3, season 2004

		Infans I-II	Juvenis	Adultus-Maturus	Total
N	Cremations	10	2	18	30
%		33.33	6.67	60.0	
N	Total	16	2	18	36
%		44.44	5.55	50.0	



**Figure 7.** Age distribution of buried in the excavated graves from the necropolis Balchik 3, season 2004

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