Estimation of shoulder height from long bone measurements on dogs unearthed from the Van-Yoncatepe early iron age necropolis in Eastern Anatolia

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SUMMARY

During the excavations carried out from 1999 through 2002 in the Van-Yoncatepe necropolis dated from the beginning of the 1st millennium BC, a large number of long-bones belonging to dogs were unearthed from two burial chambers (M5, M6). While skeletal remains of a single dog were found in burial chamber M5, there were plenty of them scattered around in three burial layers in chamber M6. Considering the number of long bones found in the three layers of burials in chamber M6, all dating from the same period as above, it is estimated that here, a maximum of 59 dogs were buried. Various measurements were made on these long bones in order that the height at withers sizes of the dogs could be estimated. The female dog found *in situ* in chamber M5 was estimated to have a shoulder height of 54.5 cm. The measurements of the long bones unearthed in M6 revealed that the dogs in this chamber might have had a mean shoulder height of 59.4 cm, ranging from 54 to 64.8 cm. These dogs of large size are considered to have had a close economic relation with the societies living in and around the excavation area at that time and probably subsisting with stock-breeding. Estimation of the shoulder height of these dogs enabled us to make a comparison with the available data gathered from various other archaeological sites and to further our knowledge of dog size in the Early Iron-Age Anatolia.

Keywords : Long bone - measurement - shoulder height dog - Van-Yoncatepe - Anatolia - early Iron-Age.

RÉSUMÉ

Estimation de la hauteur au garrot à partir des mesures d'os longs de chiens déterrés dans la nécropole du premier âge du fer de Van-Yoncatepe en Anatolie Orientale. Par V. ONAR et O. BELLI.

Les fouilles effectuées de 1999 à 2002 dans la nécropole de Van-Yoncatepe ont mis au jour, un grand nombre d'os longs de chiens, dans deux Fosses d'inhumation (M5, M6) datées du 1er millénaire avant Jésus-Christ. Tandis que des restes squelettiques de seulement un chien ont été trouvés dans la Fosse M5, la Fosse M6 recélait un grand nombre d'individus (59 au maximum), dans trois couches d'inhumation. Diverses mesures ont été réalisées sur ces os longs pour déterminer la taille de ces chiens. On a estimé que la chienne trouvé *in situ* dans la chambre M5 avait une hauteur au garrot d'environ 54,5 centimètres. Les mesures des os longs découverts dans la chambre M6 ont révélé que les chiens de cette chambre pourraient avoir eu une hauteur au garrot en moyenne de 59,4 centimètres, variant de 54 à 64,8 centimètres. Ces chiens de grande taille sont considérés comme avoir eu un rapport économique avec les sociétés ayant vécu sur le site, probablement en relation avec la présence d'animaux de la ferme. Les évaluations de la taille au garrot de ces chiens nous ont permis de faire une comparaison avec les données déjà disponibles recueillies à partir de divers autres emplacements archéologiques à notre connaissance et d'estimer la taille de ces chiens au début de l'âge du Fer en Anatolie.

Mots-clés : Os long - mesure - hauteur au garrot - chien Van-Yoncatepe - Anatolie - âge du Fer.

Introduction

Among all domesticated species, dogs have had a distinguished role in the subsistence of human communities and have established very good relations with man and remained as the closest domesticated species to him anywhere in the world [1, 3, 21, 39]. A puppy skeleton found buried alongside a human 12.000 years ago in Israel was considered as evidence for this close relationship [13]. This further indicated that dogs had been bred not only as hunting partners and guards, but had also been kept as pets [40].

By evaluating the skeletal remains of dogs from various archaeological sites, it is possible to have a fair understanding of the feeding habits, diseases, body shapes and sizes of dogs as well as the significant role they might have played in the communities they lived with in [18].

Three sources are of much use in determining the representatives of dog types in antiquity : descriptions in classical writing, figurations in Greek and Roman art, and dog bones unearthed from archaeological excavations. Of these sources, dog bones appear an exclusive source of information on a number of interesting aspects which are not mentioned in literature or depicted in art [36].

The majority of the ancient races found in the Middle East were either saluki or Persian greyhound, and *Canis familiaris asiatica* has been suggested as a general name to represent the greyhound-like chalcolithic dogs unearthed from the archaeological remains in south Turkmenistan dating to the second half of the 4th Millenium BC [24].

Following the preliminary results of the osteometric analyses of the dog remains excavated from the prehistoric sites in north-eastern United States, two types of dogs have been reported; one was about the size of a spaniel and the other had a wolf-like appearance [19].

In determining the changes in the size and morphology of dogs from the Early Neolithic until the Roman period, long-bone measurements of dogs have been taken into consideration, thereby making it possible to bring forward various suggestions on the use of dogs [14]. In an effort to obtain information on the size of dogs, many other researchers have

also taken long-bone measurements on dog remains, and the data collected by this means have been used in making various comparisons [7, 8, 9, 15, 19, 35, 43, 44].

Shoulder height is one of the most useful component in explaining the variability of dogs as well as in describing their physical appearance [10]. Of the various methods of comparison used in estimating the size and shoulder height of dogs, many are considered too impracticable for archaeozoologists to apply [17]. It is therefore significant that at present, there is almost no controversy among archaeozoologists or other scientists from related fields over the practicability and reliability of long-bone measurements in estimating shoulder height of dogs. In this connection, the «Harcourt Factors» [20] are used as a reliable method in estimating the size of the body and shape of the skeleton of archaeological dogs.

HARCOURT [20] has collected data on dog measurements classified according to the periods the skeletal remains belong to. Afterwards, making use of the long-bone measurements, he developed a method whereby shoulder height of dogs could be estimated. The methodology presented by HARCOURT is thought to be an extension of KOUDELKA' s [25] work [e.g., 10, 17], and it has been reported that, unlike Koudelka's method, the Harcourt factors contained a corrective factor as well [17]. In addition to «Harcourt Factors», the «metapodial factors» were incorporated in the process of estimating shoulder height, and thus, regression formulae for metacarpals and metatarsals were designed [10].

Skeletal remains of dogs datable to about 7,000 BC have been identified in one of the very early sites in Çayönü, south-eastern Anatolia [12, 26]. However, it was in Degirmentepe that the first dog skeleton associated with religious practices was found and dated back to 5,000 BC [16]. LAWRENCE [27] has reported that skeletal remains belonging to domesticated dogs were scarce in Çayönü, whereas there were plenty of them in the Yoncatepe necropolis, where this study was carried out.

A limited number of dog bones have been found together with those of other species during the excavations carried out in the Kaman-Kale tumulus in central Anatolia. Upon the analysis of the faunal remains, it was reported that dog *(Canis familiaris)* remains were found in the 2nd and 3rd phases dating back to the 2nd and 1st millennia BC [23].

At the end of the 19th century, other dog skeletons dating back to the beginning of the 1st millennium BC were unearthed during the archaeological excavations carried out in the necropolises in the Shamkhorsk region of Caucasus. It is a pity that there is little information about the dog remains from this site [37].

During the excavations performed in the northern courtyard of the Upper Anzaf Urartian Castle, which was built by Menua (810-786 BC), the son of the Urartian King Ishpuini, a dog skeleton was unearthed together with those of sheep, goats and cattle [4, 5]. The dog skeleton, which is still being studied by our team, is new to the district of Van.

Dogs probably assumed a significant role in guarding hun-

dreds of livestock taken to highlands during the reign of the Urartian Kingdom, where a semi-nomadic life style was dominant [2, 3]. It has also been stated by the same authors that there was a revival of hunting in this semi-nomadic culture, and dogs once again began to be used as hunter partners. Despite these statements, it is (still) unusual to find dog skeletons in close proximity with those of humans. This was the case in the graves of M5 and M6 unearthed from the Van-Yoncatepe necropolis, dating back to the beginning of the 1st millennium BC. It seems that this was a traditional method of burial, and is likely to open up a new page in the understanding of the civilizations of Anatolia and Early West Asia.

In our previous research [32], we had studied the typology, age and sex of, and pathologic deformations on the skulls and other skeletal remains of 15 dogs found in two burial chambers named as M5 and M6 in the necropolis of the Van-Yoncatepe Castle (15 km south-east of the Urartian capital Tushpa). In the meantime, a number of other skeletal remains of dogs were found with the discovery of two new burial layers in M6. Apart from the dog remains, there were also human, sheep, goat, cattle, and horse skeletons in these layers, but 90-95% of the fauna in the burial chamber consisted of dog and human bones. Noticeably, a female dog was found *in situ* in chamber M5 [32].

This method of burial observed in the burial chambers of M5 and M6, dating back to the beginning of 1,000 BC (Early Iron Age), is not common in the Near East and is unique to East Anatolia [2, 3]. This study is therefore aimed at determining the size of these dogs found in the above mentioned tombs.

Material and methods

Two years after the archaeological studies that started in 1997 in East Anatolia, two burial chambers were discovered in the Van-Yoncatepe necropolis (figs. 1/A and 2/A). These burial chambers were named as M5 and M6. A female dog skeleton (fig. 1/B) at an estimated age of 11-12 years was found lying *in situ* on its right side in a large pot in the former chamber, and 14 skulls and many bones of other dogs scattered around in the latter (fig. 2/B) [32]. A close examination of the dog skeleton in burial chamber M5 revealed that the dog had been placed in the grave with great care [3].

Since 1999, two other burial layers have been detected in M6. It was observed that slab-stones were used in these layers, and that some were broken due to the pressure from above (fig. 2/B). The dog bones unearthed from these layers were sorted and numbered.

The skulls and skeletal remains of 15 dogs were previously examined with respect to typology, age and sex, and pathologic deformations [32]. However, the many new skeletal remains found during the later excavations urged us to investigate the long bones in a separate study and to estimate the shoulder height of dogs from both burial chambers by this means. We further aimed to find new data which might be of some use in determining the morphologic appearance of dogs.

As the first step in estimating shoulder heights, osteome-

FIGURE 1.—Burial chamber M5. A. Interior view of the chamber; B. Dog skeleton found *in situ* in this chamber.
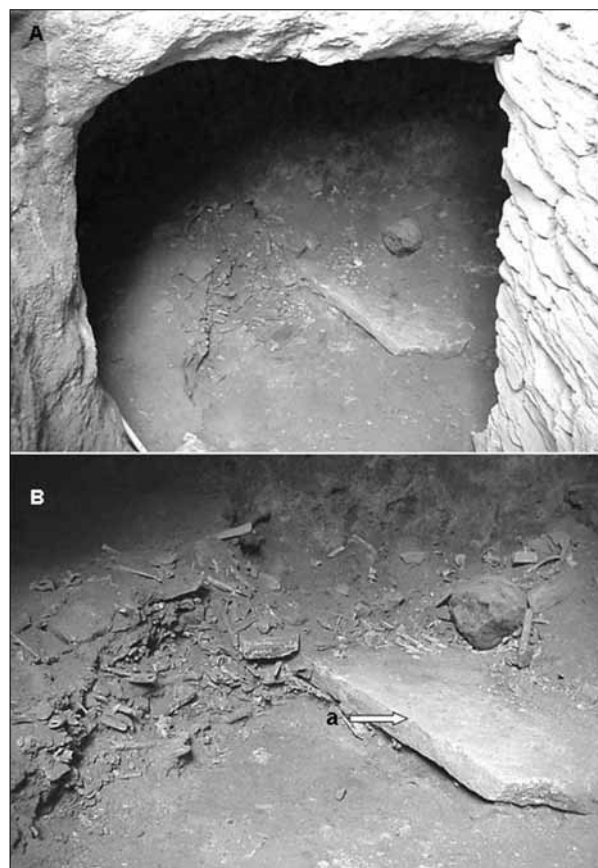

FIGURE 2.—Burial chamber M6. A. Entrance to the burial ground ; B. Bones scattered around in the burial ground ; a. The slab-stone used to separate burial layers.

tric measurements were taken on the long-bones. Considered as a reliable method both by archaeozoologists and researchers from other related fields, the «Harcourt factors» were used in estimating shoulder heights [20].

Although VON DEN DRIESCH' s [41] method was basically utilised in taking osteometric measurements, those of other researchers were also paid attention to for purposes of comparison [17, 20, 22, 28, 33, 35, 42]. The osteometric measurements taken on the long bones are shown in figure 3.

The classification of dog formats [42] was made using both long-bone measurements [22] and shoulder heights calculated by means of «Harcourt factors». The data obtained were then compared with those of other authors obtained from various archaeological sites [17, 20, 22, 28, 35, 42].

Results

Osteometric data obtained from the burial chamber M5 are given in table I.

According to the measurements taken on each long bone (humerus, radius, ulna, femur, and tibia), the following mean values were calculated: greatest length of humerus - 166.86 mm; greatest length of radius - 168.4 mm; greatest length of tibia - 180.2. As it was observed that the proximal extremity of left femur and the distal extremity of right ulna were lost, the osteometric value for only one side was taken as the

value for these two bones (left ulna 185.3 mm, right femur 181.6 mm). In an attempt to make the estimation of shoulder height as accurate as possible, we examined the osteometric measurements of the long bones on either side separately. For, there might have been homotypic variations between the right and left long bones as stated by Markel and Stelman [29]. Following these calculations, the shoulder height of the dog from burial chamber M5 was estimated to be 54.45 cm (table I).

The total number of dogs buried in chamber M6 was thought to be something between 49 and 59 (the minimum number of individuals was 49, The maximum number of the individuals was 59). The number of long bones unearthed from this chamber is given in table II. The descriptive statistics of the fore and hind long bone measurements are shown in table III.

As a result of the calculations made on the long bones, it was estimated that the mean shoulder height of the dogs from burial chamber M6 was 59.42 cm, ranging from 53.99 to 64.84 cm (e.g. Humerus, with the smaller Coefficient of variation) (table IV).

On examining the coefficient of variation, it was noticed that the estimated shoulder height obtained by using the greatest length of humerus showed a more homogeneous distribution than that obtained by using the greatest length of other bones.
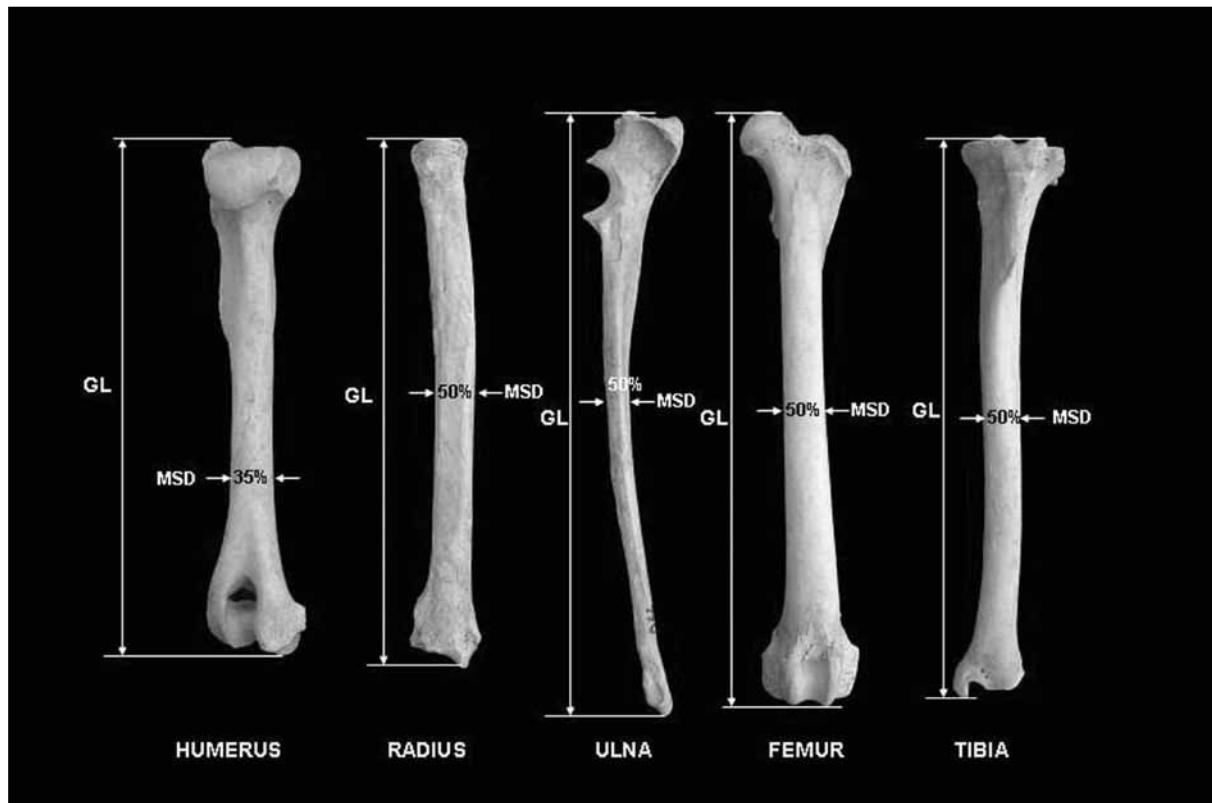
FIGURE 3.—Osteometric measurements of long-bones :
Long-bone descriptive statistics (measurements in mm) :
   Humerus variables :
      Greatest length (GL)
      Mid-shaft diameter (MSD): MSD taken at a point 35% proximal to the distal end of the humerus.
   Radius variables :
      Greatest length (GL)
      Mid-shaft diameter (MSD): MSD taken at a midpoint on the long axis of the radius
   Ulna variables :
      Greatest length (GL)
      Mid-shaft diameter (MSD): MSD taken at a midpoint on the long axis of the ulna
   Femur variables :
      Greatest length (GL)
      Mid-shaft diameter (MSD): MSD taken at a midpoint on the long axis of the femur
   Tibia variables :
      Greatest length (GL)
      Mid-shaft diameter (MSD): MSD taken at a midpoint on the long axis of the tibia
   Index calculation of the bones examined :
      Mid-shaft diameter x 100 / Greatest length

Discussion and Conclusion

In the Urartian Kingdom, where a semi-nomadic life style was dominant, dogs were reported [1] to have probably assumed significant roles both as a sheepdog and a hunting partner.

Following the examination of the previously unearthed 15 dog skulls in respect of typology, age/sex and the pathologic deformations on both these skulls and the long bones [32], attempts have been made to estimate the shoulder height of these dogs along with those found during the later excavations in burial chamber M6 of the Early Iron Age. This was how data which might be of some use in determining the morphologic appearance of dogs of that era was attained.

These graves in the necropolis of Van-Yoncatepe, where so many human and dog skeletons coexisted, revealed a burial tradition which is not common in the Near East, and even newer in East Anatolia. Generous amount of material made it easier to determine the dog formats of that time and to estimate their mean shoulder height. Consequently, data were obtained that might be of some use in the representation of dog types of the Early Iron Age.

BURIAL CHAMBER M5 (M5 DOG)

The Dolichocephalic type of dog found *in situ* in burial chamber M5 [32] was placed on its right side in a large pot. This was important in the sense that it shows how dogs of that time were taken care of (fig. 2).

There were no signs of a cutting weapon either in the chamber or on this skeleton [32] found articulated, which ruled out the possibility of dogs being eaten or sacrificed by the people of that period. So far in this study, we have not encountered any finding evidencing the contrary.

	Side	Greatest length (mm)	Mid-shaft diameter (mm)	Estimated shoulder height (cm)*	Index MSD x100/GL
Humerus	Right	167.2	12.3	54.70	7.35
	Left	166.5	12.3	54.46	7.39
Radius	Right	167.2	11.6	55.12	6.94
	Left	169.6	12.5	55.90	7.37
Ulna	Right	-	8.7	-	-
	Left	185.4	9.1	52.15	4.90
Femur	Right	181.6	13.2	55.73	7.27
	Left	-	13.1	-	-
Tibia	Right	181.3	12.2	53.88	6.71
	Left	179.2	12.4	52.26	6.89
Humerus+Radius	Right	334.4	23.9	54.76	7.15
	Left	336.2	24.8	55.08	7.38
Femur+Tibia	Right	362.9	25.4	54.91	6.99
	Left	-	-	-	-

* Shoulder height estimation after Harcourt [20].

TABLE I.—Forelimb and hind limb measurements and estimated shoulder height (in cm) of the dog unearthed from burial chamber M5.

		No. of measured bones	No. of fractured and scattered bones	Total
Humerus	Right	19	39	58
	Left	16	42	58
	Total	35		
Radius	Right	22	29	51
	Left	27	30	57
	Total	49		
Ulna	Right	13	36	49[a]
	Left	24	33	57
	Total	37		
Femur	Total	37		
	Right	15	35	50
	Left	22	35	57
Tibia	Right	23	27	50
	Left	22	37	59[b]
	Total	45		

[a]: Minimum value, [b]: Maximum value

TABLE II.—Estimated number of long bones in burial chamber M6 (those found fractured and scattered and those on which osteometric measurements are taken).

The shoulder height of the dog in burial chamber M5 was estimated to be 54.45 cm. This value is within the range reported by HARCOURT [20] for dogs of all periods except those of the Neolithic and is close to the upper limit of the values for the Iron Age.

The classification based on the long-bone measurements [22] revealed that the M5 dog fell between the groups of middle-large and large dogs; in fact, it was closer to the latter group. On the other hand, it was smaller than the large

dogs as described by LIGNEREUX et al. [28] and WIJNGAARDEN-BAKKER and IJZEREFF [42]. We, therefore, assert that the dog from burial chamber M5 was likely to go into the group of middle-large dogs.

To establish the visual morphology of the Yoncatepe dogs, estimates of their body weight were used [34]. For this purpose, the humeral and femoral circumferences were measured, on the basis of which an approximate weight of 21 kg was arrived at for the dog in burial chamber M5. On the basis of those data, the shoulder height was evaluated; it is assumed that this dog of the dolichocephalic type [32] may belong to the middle-large class of dogs and resemble a modern Saluki. Taking the usage of dogs in early iron age societies in the Van region into account [2, 4], we assume that the M5 dog with the visual aspect of a modern Saluki may be generally attributed to the Hound group within the sporting races.

With its visual morphology the dog in burial chamber M5 resembles the native Turkish hunting dog of our days called «Tazi»; those native hunting dogs are readily identifiable as gazehounds of the Saluki or greyhound type [31]. Those dogs with their narrow head, light bodies and long legs are still widely present in Anatolia [31]. Close morphological resemblance among them can be observed for the geographically near region where they are common.

BURIAL CHAMBER M6 (M6 DOGS)

A large number of dog bones were found scattered in three layers in burial chamber M6. The examination carried out previously on the 15 skulls and skeletal remains that had been found in M6 showed that these dogs, most of which were males, were of the dolichocephalic type [32].

The number of dogs buried there was considerable estima-

		Humerus			Radius			Ulna			Femur			Tibia		
		Right	Left	Mean	Right	Left	Mean	Right	Left	Mean	Right	Left	Mean	Right	Left	Mean
Greatest length (mm), (GL)	N	19	16		22	27		13	24		15	22		23	22	
	Mean	178.7	182.7	180.5	177.1	182.1	180.7	205.1	206.2	205.8	192.8	192.1	192.9	198.4	196.5	197.5
	SD	9.0	8.1	8.7	11.8	11.3	11.7	13.9	14.0	13.8	11.1	11.3	11.4	13.1	12.3	12.6
	Min.	165.1	168.4	165.1	155.1	161.5	155.1	180.8	174.4	174.4	167.8	176.4	167.8	170.4	176.4	170.4
	Max.	196.8	199.2	199.2	198.5	199.7	199.7	225.2	226.6	226.6	208.1	213.0	213.0	217.6	223.1	223.1
	Cv	5.0	4.4	4.8	6.6	6.2	6.5	6.8	6.8	6.7	6.2	5.8	5.9	6.6	6.2	6.4
Mid-shaft diameter (mm), (MSD)	N	19	16		22	27		13	24		15	22		23	22	
	Mean	14.2	14.6	14.3	14.7	14.9	14.8	10.1	10.6	10.7	14.1	14.5	14.3	13.9	13.6	13.8
	SD	1.4	0.9	1.2	1.3	1.4	1.3	1.2	1.2	1.2	1.2	1.4	1.3	1.2	1.2	1.1
	Min.	12.1	12.9	12.1	12.1	11.9	11.9	8.6	7.9	7.9	11.6	12.3	11.6	12.0	12.2	12.0
	Max.	17.8	16.3	17.8	16.9	17.8	17.8	12.9	12.7	12.9	16.1	16.9	16.9	16.2	16.1	16.2
	Cv	10.1	6.4	8.6	8.7	9.2	8.9	10.9	11.4	11.2	8.6	9.5	9.1	8.5	7.1	8.3
Index (MSDx100/GL)	N	19	16		22	27		13	24		15	22		23	22	
	Mean	7.9	7.1	7.9	8.2	8.2	8.2	5.4	5.1	5.2	7.3	7.5	7.4	7.0	6.9	6.1
	SD	0.6	0.3	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.7	0.6	0.4	0.4	0.4
	Min.	6.7	7.2	6.7	7.2	7.2	7.2	4.6	4.0	4.0	6.3	5.1	5.1	6.3	6.1	6.1
	Max.	9.6	8.4	9.6	9.1	9.4	9.4	6.6	5.1	6.6	8.1	9.6	9.6	8.2	7.9	8.2
	Cv	7.3	4.0	6.1	5.8	6.4	6.1	9.9	9.4	9.6	5.7	9.2	7.9	6.1	6.2	6.2

Cv: Coefficient of variation N: Number

TABLE III.—Forelimb and hind limb descriptive statistics of long bones.

	Side	N	Mean	SD	Min.	Max.	Cv
Humerus	Right	19	58.63	3.09	53.99	64.84	5.27
	Left	16	60.02	2.77	55.12	65.68	4.62
	Mean		59.26	2.99	53.99	65.68	5.05
Radius	Right	22	58.55	3.75	51.26	65.07	6.41
	Left	27	60.13	3.57	53.32	65.46	5.95
	Mean		59.42	3.70	51.26	65.46	6.24
Ulna	Right	13	57.65	3.87	50.89	63.23	6.71
	Left	24	57.94	3.89	49.11	63.62	6.71
	Mean		57.84	3.83	49.11	63.62	6.62
Femur	Right	15	59.24	3.77	51.39	64.32	6.36
	Left	22	59.30	3.54	54.10	65.59	5.97
	Mean		59.28	3.58	51.39	65.59	6.04
Tibia	Right	23	58.86	3.82	50.68	64.48	6.49
	Left	22	58.88	3.49	52.46	66.09	5.93
	Mean		58.60	3.67	50.68	66.09	6.26

Cv: Coefficient of variation, N: Number

TABLE IV.—Estimated shoulder height in cm of dogs unearthed from burial chamber M6. (Shoulder height estimation after Harcourt [20]).

ted between 49 and 59. Since there were no signs of cut marks on bone, our efforts in trying to determine the cause of deaths have so far been in vain.

The measurements of a sum of 203 long bones of the dogs from burial chamber M6 revealed that the mean shoulder height of these dogs would have been about 59.42 cm (e.g. size ranges from 53.99 - 64.84 cm).

From the humeral and femoral circumferences an average body weight of the dogs in burial chamber M6 of 28.1 kg was calculated, with a minimum weight of 16.5 kg and a maximum weight of 44.6 kg [34]. Taking their body weight and shoulder height into account, the dogs in burial chamber M6 are to be considered in general as of large size. The classification of the M6 dogs according to the measurements of long-bones [22] revealed that these dogs could be placed in the group of large dogs, which was in support of our above-mentioned view. The estimated shoulder height of these dogs was within the mean values reported by WIJNGAARDEN-BAKKER and IJZEREFF [42] for large-formatted dogs.

The activities of the societies of the early iron age in the Van region were focussed on hunting and raising animals [2, 4]; it is, therefore, assumed that those societies used dogs both for hunting and for herding purposes. The discovery of dog skeletons of approximately 44 kg of body weight [34] and 64 cm of shoulder height brings to mind the possibility of their use as work animals. Considering the greatest length of the long bones and the maximum values for the mid-shaft parameter it becomes obvious that animals of rather massive proportions had been buried in this grave too. It is assumed that those dogs are closely related to the so-called Kangal dog format dog which is widely found in Anatolia [31]. They may have been used for herding smaller animals to their grassing grounds (2, 4) which supports the assumption that they served as shepherd dogs. Large and heavy dogs of the Mastiff type which resemble present day Kangal dogs have been found fairly widespread in western Asia, it has even been reported that those dogs decorate the walls of Assyrian and Babylonian buildings [11]. It is not ruled out that in the Yoncatepe settlement, which is part of the near geographical region of the above-mentioned findings, dogs of such morphological dimensions may be found taking the osteometric data (greatest length, mid-shaft circumferences and diameter) into account.

The coexistence of many human skeletons with those of dogs in burial chamber M6 is significant in the sense that there might have been a close relation between man and dogs. To the authors' knowledge, such a close relationship is new to the Near East, suggesting that the dog's role in the social life of the Early Iron Age Van-Yoncatepe region was significant.

It has been put forward that dogs were the closest friend of man in the early ages and continued to act as a loyal guard even after his death [38]. The data we have obtained from burial chambers M5 and M6 urge us to further assert that dogs had a very significant place in the life of early societies.

The larger formats of these dogs may be attributed to their duties in the society as well as the prehistoric conditions that prevailed in the region. BELLI and KONYAR [2] have reported that the region was covered with dense forests and was rich in game animals in prehistoric times; accordingly, hunting and stockbreeding were probably the main means of subsistence. Considering their large formats, it might be asserted that dogs had an economical relation with man in these communities, and that they were not kept as pets. Nevertheless, our present knowledge does not authorise us to fully explain how such a close relation between man and dogs developed at that time.

MOREY [30] has reported that dog meat was consumed in the Northern Amerindian groups, and that there was osteological evidence to prove it. The author has also stated that this evidence predominantly existed among the remains of smaller sized dogs, but not among the bigger ones that were used as draft animals. Nonetheless, bigger size dogs were probably used as food only in times of scarcity. For another site of the early (Iron Age) in the near geographical vicinity, in Vlasac (early site), Romania, evidence has been reported for the consumption of dog meat [6]. The traces on the discovered bones were rather obvious, the bones had been chopped.

During the course of this study, we have not come across any osteological evidence to show that dog meat was consumed by the Urartians of the beginning of the 1st Millenium B.C. There is no historical record of the contrary, either. It is in support of our finding that in the Early Iron Age, the Van-Yoncatepe region was thickly wooded and rich in prey, enabling the neighbouring societies to live widely on hunting and stockbreeding [1]. Therefore, we believe that the dogs from burial chambers M5 and M6 were not used as food but kept as hunting partners or as watchdogs.

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