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A Paleoanthropological and Paleopathological Approach to the Dimal Population (3rd–2nd Century BCE, Albania)

Mauro Rubini – Paola Zaio

Während der letztjährigen Ausgrabungen in den Nekropolen von Dimal wurden die Reste von 12 Individuen freigelegt, die im August 2015 anthropologisch untersucht wurden. Im folgenden Arbeitsbericht werden die vorläufigen Ergebnisse zur Geschlechts- und Altersbestimmung sowie zu Fragen von Körperbau, Ernährung und Krankheitsbildern angesprochen.

Within the framework of the Albano-German research project at the Illyrian site of Dimal in modern Albania during the season 2014 and 2015 parts of a Hellenistic necropolis has been uncovered with the skeletal remains of 12 individuals. In order to investigate the human remains the Anthropological Service of the Soprintendenza per l'Archeologia del Lazio e Etruria Meridionale has joined the project and analysed the skelettal remains during a stay in August 2015. The aim of this study was to investigate the Illyrian-Albanian population during the first millennium BCE under the biological aspect. Biologically very little is known of the people who occupied these lands especially in the first millennium BCE. The discovery of a necropolis in Dimal allowed to start a number of studies which, though in the beginning, are an important source of biological information about the Illyrian people. The geneticist Cavalli-Sforza studying today's Albanian populations through the blood groups and especially the Y chromosome, came to the conclusion that under the genetic profile all the populations settled along the Adriatic coastal side of Italy and Albania belonged to the Illyrian ethnic[1]. Furthermore according this author the Albanian population shows a genetic *substratum* very old that according him makes it one of the oldest European populations.

The Dimal population

The burials were dated to the 3rd century BCE by the grave-goods found in association and often occur embedded in a very tough clay. The cleaning operations have necessitated of a long time but have product the advantage to be cleaned by laboratory specialists minimizing contaminants (such as especially invasive glues and consolidations) in anticipation of the deepening of chemical and physical analyses which among other the extraction of collagen for aDNA and stable isotopes, and the identification of trace elements by atomic spectrometry.

The anthropometric analysis (**tab. 1**) showed a skeletal structure with skulls rather broad and moderately long (mesocrania) with ovoid profile and fairly high. The face appears rather elongated well in the palate, narrow nose. The orbits are sub-rectangular Cro-Magnon type. The post-cranial skeleton shows femurs with circular section flattened in the sub-trochanteric region (platymeria) while the *tibiae* are of triangular section in both sexes. The morphological and ergonomic analysis related to functional stress highlights humeral diaphysis with robust torsions and presence of enthesopathies in all the analyzed individuals (n = 7). The interesting datum was the bilateral aspect of the lesions. This result suggests an indifferent functional use of the two limbs, this event quite rare today as yesterday. The lower limbs show in men's presence of hypertrophic femoral *aspere* lines associated with the presence of enthesopathies in the insertion of the muscles *adductor magnus* and *tibialis posterior*. These findings are found in most subjects who practice equestrian activities[2]. Obviously this is just a guess though it could be indicative of the activities performed by the male group of Dimal.

1 Cavalli-Sforza 2001; Cavalli-Sforza 2009.

2 Capasso et al. 1999.

Burial	Sex	Age	Morphometric indexes									Stature (cm)	Genetic markers of the skeleton
			Skull	Humerus		Ulna		Femur		Tibiae			
				dx	Sx	dx	Sx	dx	sx	dx	sx		
D3	M	40-50	Mesocranio	Platibrachia	Euribrachia	/	Eurolenia	P. debole Platimeria	/ Eurimeria	Euricnemia	Euricnemia	/	Absent
D3 (out)	F	>20							P.debole	/	Euricnemia	/	/
D6/7	**M**	45-50	Mesocranio Ipsicranio Acrocranio Orto cranio Tapeinocranio C.frontali div. Fronte stretta	Euribrachia	Platibrachia	/	/	P.debole Platimeria	P. debole platimeria	Platicnemia	Mesocnemia	170,5	Absent
D11	**M**	28-33	Mesocranio Ipsicranio Acrocranio C. frontali inter. Fronte larga Leptoprosopo Leptene Dolicocranico Brachystaphylino Ortognato Orbite subret.	/	Euribrachia	/	/	P. medio Iperplatimeria	P. medio Iperplatimeria	Mesocnemia	Mesocnemia	181,6 182	Absent
D12	A-F	22-29		/	/	/	Platolenia	P.medio Eurimeria	P. medio Eurimeria	Mesocnemia	Mesocnemia	164	
	B-M	30-35	Mesocranio C. frontali inter. Fronte stretta					P. debole Platimeria				174,5	Metopic. suture
	C-M												
	D-infant												
D13	A-M	Adult	Incomplete	Euribrachia				P. debole Iperplatimeria					Absent
	B-F	30-35	Incomplete					P. debole	P. debole Iperplatimeria				Metopic. suture
	C-M	Adult	Incomplete					P. debole	P. medio	Mesocnemia	Mesocnemia		(Metopic suture)
D14	F (?)	20-22	Incomplete	Euribrachia	Euribrachia	Eurolenia	/	P. debole Platimeria	P. debole Platimeria	Mesocnemia	Euricnemia	154-158	

Tab. 1: Morphometric indexes. The measurements were relevated according to the Martin and Saller method. Sex and age were estimated according to the international standard suggest by Buikstra and Ubelaker. The statures were calculated according to the Trotter and Gleser method for white. A, B, C, D are the individuals of multiple/collective burials (D12 and D13). M= Males; F= Females

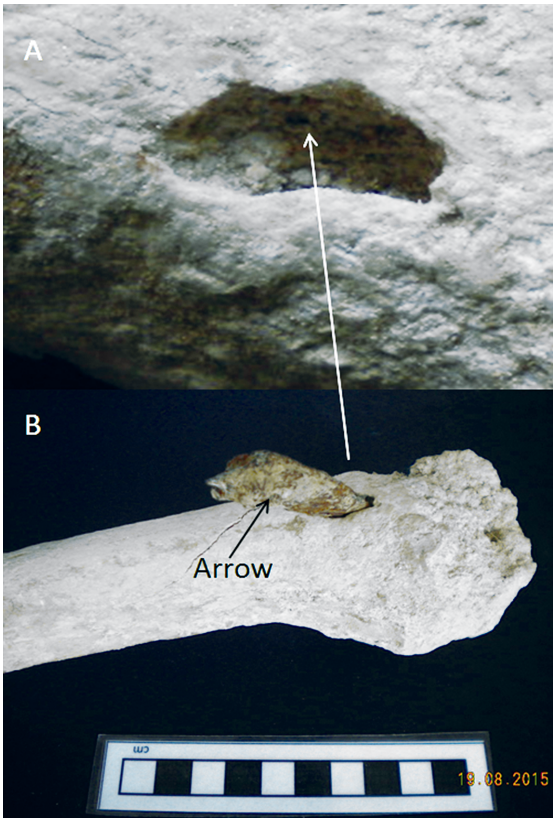

Fig. 1: Individual D11. A) Particular of the wound to kind. To note the complete healing of the lesion. B) The wound with a contemporary arrow to triangular section.

The presence in two individuals of a genetic marker of the skeleton (metopic suture) rather rare and of very low incidence in contemporary populations and not, would suggest the membership of these two individuals (D12 and D13) to the same kinship structure[3]. The stature is rather high in both sexes. The male range is between 171.6 and 182 cm while the female between 158 and 164 cm. Under the pathological profile the sample shows nothing of the articular, haematological or metabolic alteration (arthrosis, *cribra orbitalia* and/or *cranii*, rickets, osteoporosis, etc.) typical of the coeval populations in which there are always high percentages of presence[4]. The presence of a trauma in the right femur of a male of about 30 years (D11) is very interesting. In the external distal third the femur shows a wound caused by a throwing weapon, probably an arrow (**fig.1**). The lesion is not very deep (about 1.5 cm) but it presents a scar bone to kind similar to that of an arrow or a spear. We feel to exclude this latter because it would be more deeply penetrated. Furthermore the width of the wound would be larger. The lesion has healed well and the individual has survived to long after the trauma. The wound penetration angle (about 45 degrees) and poor bone penetration suggest that the arrow was thrown from a distance with a sloping trajectory as was in use among the archers of the time. This trajectory had the advantage of giving greater power of penetration to the bolt (at the expense of accuracy) after being hurled upwards. The oral and dental pathology shows the total absence of caries (71 teeth observed) while is interesting to note the absence of periodontal diseases such as granulomas, even though a documented bacterial load highlighted by cases of alveolar retraction and dental losses *intra-vitam* is present. The preliminary analysis of some trace elements (Ba, Sr, Zn) was effected. The control of diagenesys was effected contrasting the values in the bone and teeth with those present in the soil, herbivorous and carnivores[5]. The results for two individuals (male and female) was that the assumption of the cereals and vegetables is very similar to that of protein derivatives.

Conclusions

Despite the limited number of skeletons (12 individuals; 7 males, 4 females and one sub-adult) this short report presented on Dimal sample has provided some responses of sure interest under the biocultural aspect. The statement of Cavalli-Sforza about the presence of some archaic traits associated with others more modern is partly confirmed by morphometric measurements. The presence of sub-rectangular orbits and face stretched of Cro-Magnon type associated with a large femoral platymeria can be considered simplesiomorfic characters. They are associated with other modern traits such as the enlargement of the parietal that gives to the skull an aspect evolutionarily modern and the section of the tibial shaft of sub-triangular profile. The presence of high stature is not surprising. Even today, the Albanian population has two main

3 Rubini – Coppa 1995.
4 Rubini 2007.
5 Gallello 2015.

morphotypes: one high, blond and slender, the other of medium height with dark hair and stocky build. The presence today of high morphotypes (as those found in Dimal) suggests that in these centuries the Albanian population has received scarce bio-dynamic flows capable of changing the genetic sub-*substratum*. In fact in the past under the migration profile the sea to the west and mountains to the north and east have supported important gene flows only from the south by the Greek territory.

The analysis of the status of health of the sample has highlighted two particular aspects. The first is related to the absence of osteo-articular *stigmatae*. The presence of these last in the populations of the first millennium BCE is quite common in much of the Mediterranean basin. This is due to the fact that the predominant economic subsistence pattern was the agriculture. This activity right from adolescence produced lesions of articular whistles already aged adult-youth. That the individuals of the sample under study were not farmers also it emerges from the preliminary results of the paleodiet reconstruction. The significant protein contribution expressed in both sexes excludes a primary agricultural activity. This data could be indirectly confirmed also by the absence of caries which is known (outside of hereditary and/or pathological aspects) to be linked to strong assumptions of carbohydrates rich in cariogenic sugar. In conclusion we could advance the hypothesis that this sample is not an expression of the whole population of Dimal in the 3rd century BCE, but which represents a sort of wealthy elite. This could be supported by the excellent state of health, by the diet and by the lack of stress working present as those generally found in contemporary individuals. Of course, in the future we hope that new discoveries make it possible to integrate and enrich this data, as well as to confirm or not the hypothesis advanced.

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Credits: Tab. 1 and fig. 1: Mauro Rubini – Paola Zaio.

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