

SKELETAL VS MUMMIFIED POPULATIONS IN THE PROTOHISTORY OF TENERIFE

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Abstract. Since the discovery of Guanche mummies by the Europeans after the conquest of the island in 1496, these remarkable specimens attracted a large number of scholars. So, it is not strange that the chroniclers and early historians wrote about them, describing the mummification method and the social status of the individuals (the elite). In this

paper, we try to establish differences between the skeletal (represented by a large number of remains) and mummified (a much smaller group) populations from different points of view: number of individuals, demographic data of both populations, physical data, physical activities, dietary patterns, metabolic stress markers, pathology (skeletal and dental), etc.

Keywords. Guanche. Tenerife. Mummies. Skeletons.

INTRODUCTION

The protohistoric inhabitants of Tenerife were known as “Guanches” and their presence in the island was due to reasons related to the economic activities of exploitation and as a consequence of the colonization of the archipelago by the so-called Cultures of the Strait (Gibraltar Strait) on first place and then by the Romans (González Antón *et al.*, 1995).

The study of islands

Human colonization of islands leads, normally, to their isolation of other groups in the mainland and this implies cultural answers to adapt to a new and different environment, usually with less natural resources that can be used for the subsistence of the population than that of the mainland (Rodríguez-Martín *et al.*, 2009). Different phenomena at two levels appear shortly after the settlement of the population:

At a cultural level

Changes in relationships, group cohesion system, funerary practices, etc.

At a biological level

The existence of biological adaptation, including genetic phenomena, appearing specific markers that have been proved in different archipelagos around the world.

As a scientific consequence, the islands are true laboratories for the study of human adaptability to different environments and situations like those created by the contact with new epidemic diseases brought by the Europeans during the colonial expansion of the Old World (Crosby, 1986).

Human Colonization of the Canary Islands

The populations that inhabited the seven major Canary Islands were of Berber origin and this has been proved by genetic markers and cultural customs, traditions and language.

There are different theories about the islands settlement by human groups although the most plausible is that it was probably the final result of an extensive colonization process of the Western Mediterranean (during the First Millennium BCE) that was carried out by Phenonics (*Strait Circle* or *Carthage Circle*) first and, after the battle of Zama (202 BCE) between the Carthaginian Army of Hannibal and the Roman Legions of Publius Cornelius Scipio "Africanus" (Scipio), by the Romans. In fact, after the defeat of the Carthaginians, the final part of the colonizing process was carried out by the Romans and as a consequence the Roman presence in the archipelago began to be notorious as it has been checked recently in the islet of Lobos (in front of the northern shore of Fuerteventura, eastern Canary Islands) where a Roman factory of purple was discovered by chance and is being excavated now (del Arco *et al.* 2016).

Recent radiocarbon dating on human remains belonging to the ancient inhabitants of Tenerife fluctuates between 1st and 4th centuries AD, although there are many cultural artifacts and charcoal dated so early as the 10th century BCE demonstrating that the islands were very well known by the Mediterranean cultures long before the own human permanent settlement on the archipelago.

Rediscovery

The second step was the human colonization and settlement processes of the archipelago and its ulterior isolation from the Mediterranean cultures around the 3rd - 4th centuries AD lasting until the beginning of the European conquest of the Canary Islands during the first years of the 15th century AD by the Normans first and then by the Portuguese and Spanish conquerors.

CHRONICLES, STORIES AND GUANCHE MUMMIES

Pierre Bontier and Jean LeVerrier, chaplains in the expedition of Jean de Béthencourt and Gadifer de la Salle to the Canary Islands at the beginning of the 15th century, did not mention the practice of mummification in their famous *Le Canarien* (first third of the 15th century).

There are chronicles of the conquest and descriptions of the islands, written between the 15th and 17th centuries that mention that practice. Of all these volumes, the most known accounts were those of Leonardo Torriani (1591), Alonso de Espinosa (1594) and Juan de Abreu Galindo (1602) that describe the mummification methods used by the protohistoric Canarians in general and Guanche, more specifically. As well as other authors like the English physician and merchant Thomas Nichols (1526) who wrote *A pleasant description of the Fortunate Islands* being one of the first to mention the presence in Tenerife of funerary caves with hundreds or thousands mummies inside.

One of the most important, if not the most, historical sources during the 18th century is José de Viera y Clavijo (1776) with his *Noticias de la historia general de las Islas Canarias* where the author explains in detail the funerary practices of the prehispanic inhabitants.

A common fact to all the authors mentioned above is the eternal comparison between Egyptian and Guanche mummification methods and the results and, as occurs in the case of the Egyptian mummies, most of the authors agree that only the elite of the Guanche society was mummified.

GUANCHE TYPES OF BURIAL

The Guanche buried their deceased in natural caves normally located in the slopes of the island ravines. There were different types of burial in Tenerife prior to the conquest (Del Arco, 1976; Rodríguez-Martín and Martín-Oval, 2009):

- Burials with a single individual (mummified or not). This is the most uncommon burial in the island.
- Caves with mummified individuals only. These caves can contain a variable number of specimens, from a few to dozens to hundreds (according to some historical sources) (Nichols, 1526; Viera y Clavijo, 1776). According to these authors, the number of these large necropolis with hundreds or thousands of mummified individuals account, at least, for 20 caves distributed through the island of Tenerife. Nichols affirmed that the “old Guanches” showed him a cave of this nature in acknowledgement for his medical services and Viera y Clavijo mentions the discovery of a cave with hundreds of mummies inside

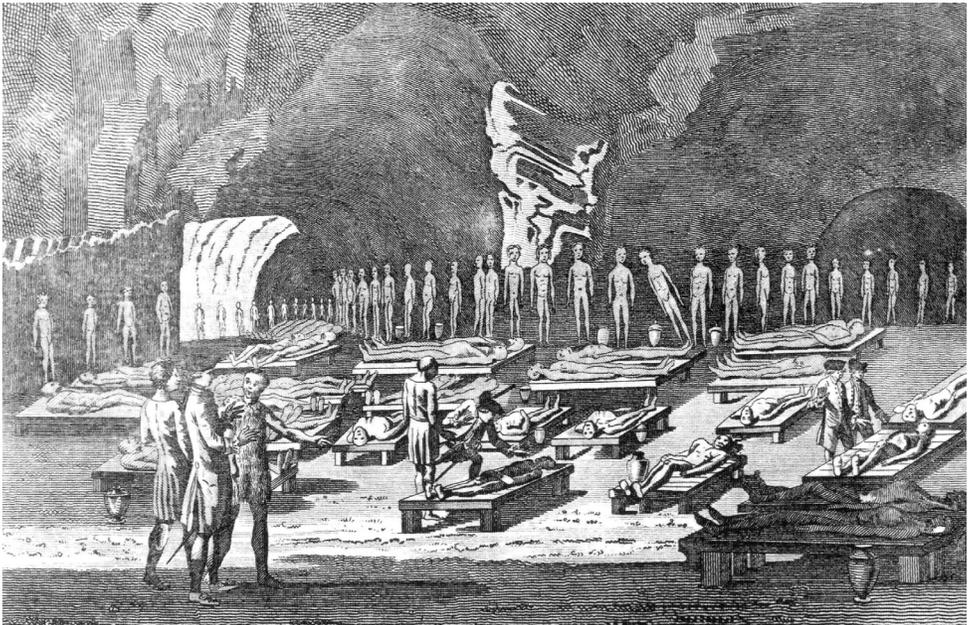


Fig. 1. Engraving of the 18th century that reproduces a Guanche burial cave based on the description of an English doctor.

in the Barranco de Erques, between Arico and Güimar; at the southern slope of Tenerife, in the 18th century. An important number of specimens were sent to different museums, cabinets and universities around Europe. (Fig. 1)

- Burials with skeletonized individuals. Most of them are true ossuaries. As in the case of mummies, the skeletonized remains may account from several individuals to hundreds of them like are the cases of Uchova (San Miguel de Abona in the southern part of Tenerife) and Cueva de los Guanches (Tegueste, in the northeastern part), to mention only two of them.
- Caves with mummified and non-mummified individuals. Natural mummification cannot be excluded in this case.

TYPES OF MUMMIFICATION AMONG THE GUANCHES

A long debate on the different types of mummification and, in general, on Guanche mummies has existed since the moment of the conquest up to the half of 20th century (and even later). In general, corpses show two types of mummification.

Natural or natural intentional mummification

It is difficult to distinguish between both cases unless the corpse is accompanied by grave goods. One of the few certain examples of natural mummification from Tenerife is one of the mummies coming from the Museo Reverte at the School of Legal Medicine in Universidad Complutense de Madrid. For sure, natural mummification depends on the environmental conditions (temperature, humidity, circulating air, etc.) of the caves and there are many of them that facilitates the parameters needed to produce partial or complete mummification as has been observed in different sites of Tenerife.

Anthropogenic mummification

Most Guanche mummies are of anthropogenic origin as it is proved thanks to the presence of conserving, absorbing and antiseptic material and the typical external funerary bundle made of animal leathers, mainly goat. The extraction of organs that according to some historical sources, like Abreu Galindo (1602) or, much later, Chil y Naranjo (1876), practiced the Guanche population has not been proved in the specimens that have been studied in Tenerife or other parts of the world. The most typical mummification method is based in the use of an external treatment with dehydrating and absorbent material like pumice stone, heather

bark, pine powder and, sometimes, the use of a moss, *Neckera intermedia*, with antiseptic properties (Horne & Ireland, 1991; Rodríguez-Martín & González-Antón, 1994; Aufderheide *et al.* 1995b; Rodríguez-Martín, 1998).

In some cases, like the mummy of the Ethnography and Archaeology Museum of Cambridge University (England), subcutaneous incisions for the introduction of sand and other absorbing and antiseptic substances were also carried out in different parts of the body (Brothwell *et al.* 1969).

HOW TO STUDY MUMMIFIED VS SKELETAL GUANCHE POPULATIONS

According to the historical sources and chronicles of the Conquest, Tenerife have burial caves with thousands of mummies and thousands of bones. However, the archaeological data up to the present show that in the islands have been discovered thousands of bones and some hundreds mummies. Statistical and demographic studies demonstrate that less than 5-10 % of the Guanche population was mummified, the elite of that society.

COMPARATIVE STUDIES BETWEEN MUMMIFIED AND SKELETAL POPULATIONS

Demography

The demographic data of both populations show significant differences between them (Rodríguez-Martín, 2000; Rodríguez-Martín & Martín-Oval, 2009).

MUMMIES

- Life expectancy at birth: 34.5 years.
- Crude mortality rate: 28 per thousand.

SKELETONS

- Life expectancy at birth: 30.9
- Crude mortality rate: 33 per thousand

These differences are probably based in the type of diet consumed by both populations as can be observed in the next paragraphs.

It is also clear that there are important differences when we compare the demographic parameters of those populations with the Europeans and Northern African human groups: life expectancy at birth and crude mortality rate

show, in general, a better panorama in Tenerife and it is not only related to diet but to the lack of infectious diseases, in general, and epidemics, particularly, in Tenerife (Rodríguez-Martín, 2000; Rodríguez-Martín & Martín Oval, 2009; Rodríguez-Martín & Martín Oval, 2014) and, for sure, the own environment of the island.

Chemical dietary reconstruction

Chemical reconstruction of diet show that Guanche skeletal population had around 50% of the diet based on proteins, although some places in the north followed a different pattern as we can check in the following data (Aufderheide *et al.* 1995a; Tieszen *et al.* 1995):

Tenerife (general)

- Proteins: 50-55%
- Vegetables: 30-35%
- Marine food: < 10%

Tenerife (N vs. S)

North:

- 45-50% proteins
- 45-50% vegetables
- 5% marine

South:

- 60-65% proteins
- 30% vegetables
- 5% marine

Although the parameters are almost constant in the southern slope of the island, it does not occur the same in the north where important differences among “menceyatos” (kingdoms or chiefdoms) are clear:

TACORONTE

- 25 % proteins
- +70 % vegetables

TEGUESTE

- 70 % proteins
- 30 % vegetables

TAORO

- 50 % proteins
- 45 % vegetables

ICODEN

- 45 % proteins
- 50 % vegetables

These differences in the type of diet are due, basically, to the difficulties for shepherding in the north where the forest was almost at the level of the sea and, therefore, the necessity of farming and gathering vegetables to nourish the population (Rodríguez-Martín, 2000). Although equal in total number, it is important to remember that the population density in the north was almost double than that of the south by the reasons above mentioned.

However, mummies have a high content of N15 indicating that animal proteins contributed strongly to diet (more than 65-70%), 20-25% more than the northern population and 15% more than the groups of the south (Aufderheide, 2005). This is constant in the mummies analysed.

Markers of physical activity

Not observable significant differences exist between skeletal and mummified Guanche populations in any geographic area of the island and this implies that both populations carried out similar daily activities, especially those referred to fighting trainings.

Metabolic stress markers and pathology

As it has been demonstrated in previous analyses (Rodríguez-Martín, 1995a; Kelley & Boom, 1995; Rodríguez-Martín and Martín-Oval, 2009), metabolic stress markers, in general, are rather unusual among the Guanche population of Tenerife:

- Porotic hyperostosis and *cribra orbitalia*: there are isolated cases of both conditions in both populations accounting for less than 15 cases in the complete population during the entire protohistoric period of the island.
- Harris lines (growth arrest lines): 50% of the skeletal population show 1-4 Harris lines (with a significant peak at the interval 5-9 years - Kelley & Boom, 1995), especially women, while less than 20% are seen in the mummy group and the number of lines is normally under 3.

- Enamel hypoplasia: 20% of the skeletal population (depending of the geographic area) present this marker that is observed in less than 5% of the mummies independently of the geographic area (Langsjoen, 1995).
- Osteoporosis: only the senile type of the condition is observed in both populations. Subadult or young adult osteoporosis is almost absent among the Guanches.

Dental pathology

Dental attrition appears in the skeletal group since early ages (50%) and it is related to abscesses (8%) and periodontal disease linked to dental calculus (more than 30%) that are the most common dental conditions among the skeletal Guanche population. On the other hand, mummies show, in general, less than 30% of attrition and around 15-20% of periodontal disease with calculi (Langsjoen, 1995; Rodríguez-Martín & Martín-Oval, 2009). Both populations show differences depending of the geographic area, being more commonly observed in the northern slope.

Regarding the presence of caries, it is important to note that this is an uncommon finding in both populations accounting for less than 5 % in the skeletons (mainly in the north of Tenerife as a consequence of the greater intake of sugar) (Langsjoen, 1995) and almost absent in mummies with a frequency of 1-2% as much. (Fig. 2)



Fig. 2. Caries and attrition. Caries was not a common condition among the Guanches. On the contrary, dental attrition was observed even during childhood.

Other skeletal pathology

Skeletal pathology, including trauma and, surprisingly, congenital malformations, show no differences between both populations. (Figs. 3, 4, 5)



Fig. 3. Discal hernia without involvement of the medullary cavity.

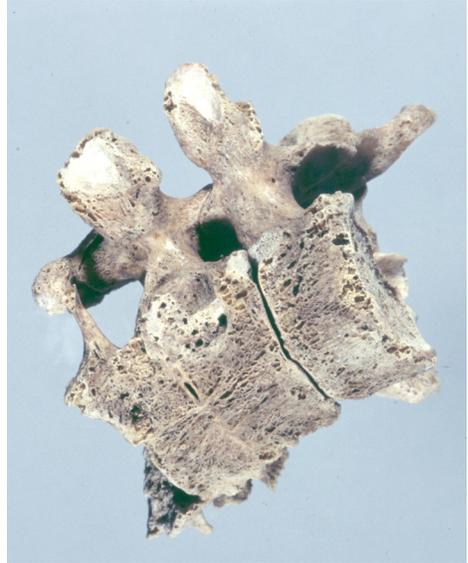


Fig. 4. Vertebral block.



Fig. 5. Degenerative joint disease involving the knee.

CONCLUSIONS

Anthropogenic mummification was only applied to the elite of Guanche society. Natural mummies have been also observed.

Evisceration has not been proved among the Guanches, despite references like those of Abreu Galindo (1602) or Chil y Naranjo (1877). The treatment of the corpse was only external and based in the use of dehydrating and absorbing material as well as antiseptics in some cases. In some instances, as observed in the Guanche mummy of the Ethnography and Archaeology Museum of Cambridge University (England) subcutaneous incisions for sand and other absorbing substances introduction were performed too.

The identical frequency of congenital malformations implies that mummies were not more affected by inbreeding than the skeletal population.

The elite carried out more or less similar daily activities than the rest of the population as indicated by the physical activity markers.

However, mummies show a higher consumption of proteins and calories and this is corroborated by the lower frequency of metabolic stress markers, the lower prevalence of dental diseases related to vegetable consumption, the higher life expectancy at birth and the lower crude mortality rate observed in the group of mummified individuals.

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