

COMPARATIVE ANALYSIS OF DIFFERENT GUANCHE POPULATIONS OF TENERIFE: A PRELIMINARY AND SHORT REVIEW

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Abstract. Along the 19th and 20th centuries the Guanche population of Tenerife (around the C.E. - 1496) was observed as a whole, without chronological and geographic differences. Since the so-called “Cronos Project. Bioanthropology of Guanche mummies” (concluded in 1992) new perspectives in archaeological and bioanthropological research were introduced demonstrating that the

Guanche prototype did not exist and, on the contrary, the different pre-Hispanic populations of the island suffered a long period of adaptation depending of the area in where they lived. There was no a Guanche, but many. This paper is a brief summary of the differences observed in several populations according to different parameters.

Keywords: Tenerife. Guanche. Archaeology. Bioanthropology. Demography.

INTRODUCTION

During the Scientific Romanticism, the French Berthelot (1842) introduced an element that should mark the bioanthropological research in the Canaries during more than a century: raciology. He was the first to carry out comparative studies between prehispanic Canarian skulls, mainly from Tenerife, and those from different regions (Estévez, 1987; Rodríguez-Martín, 1997a). Since then until World War I, the Canarian bioanthropology was strongly influenced by the Ecole d'Anthropologie (Paris, France) and raciology was the main tool for the study of the aboriginals, avoiding the consideration of other social and biocultural factors during many decades. Therefore, it is not strange that after Quatrefages and Hamy (1874) noted similarities between Guanche and Cro Magnon skulls the islands became a focus of attraction for European anthropologists (Diego Cuscoy, 1976), mainly French and German, but, on the contrary to their French colleagues, the Germans began to perform paleopathological research on prehispanic Guanche material.

It was not until the last third of past century, when new orientations appeared in the bioanthropology of the Canary Islands thanks to two physicians, Juan Bosch-Millares, in Las Palmas, and Conrado Rodríguez-Maffiotte, in Tenerife, who understood that the pathological study of the skeletal and mummified remains of the ancient inhabitants were fundamental for understanding their lives (Rodríguez-Martín, 2012).

In the decade of 1990, Tenerife's Archaeological Museum organized the so-called "*CRONOS PROJECT. Bioantropología de las Momias Guanches*" changing the perspectives and introducing new research lines (genetics, demography, diet and nutrition analyses, environmental studies, paleopathology - skeletal, soft tissue and dental -, parasitology) and research on the human colonization of the archipelago (Rodríguez-Martín, 2019).

ATHANATOS

Athanatos. Muerte e Inmortalidad en poblaciones del pasado (2016-2018) was organized by the Instituto Canario de Bioantropología and Tenerife's Archaeological Museum to commemorate the 25th anniversary of CRONOS PROJECT. As we all know, Athanatos consisted in an homonymous international exhibition on mummies in the Museo de Naturaleza y Arqueología (MUNA) and the Extraordinary World Congress on Mummy Studies, both held in Santa Cruz de Tenerife during

the first half of 2018, as well as a multi-annual (2016 – 2021) research program entitled “Guanches, una visión integradora” (“Guanches, an integrating view”). The goals of this study are the following:

- Correct location of the archaeological sites (place, altitude, geography, environment – flora and fauna -, orography -) selected for this study.
- Increase the chronological data.
- Integration of the archaeological data through the complete documentation of every single site.
- Expansion of the chemical dietary reconstruction until complete the whole island.
- Review of the demographic data of the selected areas.
- Continuation of the analysis of metabolic stress markers and physical activity markers.
- Continuation of the paleopathological studies until complete the whole pre-hispanic population of the island. Other goal of these studies is the inclusion of the contact period between Guanche and European (with special attention to the epidemic and non epidemic diseases – contact diseases - introduced in the island) because Tenerife was an important port of connection between the Old and New World and Africa and many epidemic diseases affected the island severely (Rodríguez-Martín, 1994; Rodríguez-Martín & Martín Oval, 2014).

The preliminary results of that program are presented here in a summarized manner:

METHODOLOGY

In order to facilitate the study of the population, Tenerife was divided in seven different areas according to their own geographic, orographic and environmental characteristics that varies from many points of view between them due to the microenvironments present in the island and the diverse economical possibilities they offered as observed in previous studies (Aufderheide *et al.* 1995; Tieszen *et al.* 1995; Rodríguez-Martín, 1995, Rodríguez-Martín *et al.* 2009; Rodríguez-Martín & Martín-Oval, 2009).

These seven areas content 56 archaeological-burial places well documented from the archaeological (excavated with correct methodology) and geographic perspectives, neglecting places “collected” in the campaigns that were carried out

by different personalities during the 19th century that, in their majority, lack of a minimum documentation that can be useful for the research.

As an advance of the research program and to present here a preliminary and short report, we have selected four archaeological sites from the island's four points of the compass:

- In the northern slope: Cueva del Guanche (Tegueste municipality).
- In the southern area: Cueva de Uchova (San Miguel de Abona).
- Tenerife's eastern part: El Becerril (Metropolitan Area that includes Santa Cruz de Tenerife, San Cristóbal de La Laguna, Tegueste and El Rosario).
- In the West: Majagora (municipality of Guía de Isora).

All these sites are comprised in the same chronological period (between the 6th and 11th centuries AD) and all of them are located at different levels but in the range of the middle mountain regions of the island.

CHRONOLOGY

As we have commented above all the selected sites are comprised in the same chronological range (6th- 11th centuries AD) representing the middle of the period of permanent human settlement in Tenerife when the Guanche population was well established there:

- Cueva del Guanche: located in the north with a chronology as follows 581 AD – 777 AD; 582 AD-894 AD; 654 AD -1040 AD.
- Majagora: in the west of Tenerife shows a chronology between 766 AD and 1052 AD.
- Uchova is placed in the southern slope showing a chronology from 654 AD to 901 AD.
- El Becerril, at the east: 655 AD to 1041 AD.

ALTITUDE OF THE SITES

As noted above, all of the sites are located in the middle mountain regions of the island to favor the comparison between them:

- Cueva del Guanche (Tegueste): 285 meter of altitude.
- Majagora (Guía de Isora): 600 m.
- Uchova (San Miguel de Abona): 850 m.
- El Becerril (Metropolitan Area): 300 m.

MINIMUM NUMBER OF INDIVIDUALS

The burial sites in Tenerife show, in general, an important difference in the number of individuals buried there that fluctuate between sites with a single individual and other caves containing a few hundred. This implies difficulties when comparing statistical, epidemiological and demographic data because their value varies greatly.

The inclusion of the four selected sites of this paper is an example of the aforementioned situation. The minimum number of individuals of each cave is as follows:

- Cueva del Guanche (Tegueste): 118 individuals (42 adult males, 60 adult females and 16 subadults).
- Majagora (Guía de Isora): 32 individuals (16 males, 15 females and a single subadult).
- Uchova (San Miguel de Abona): 52 individuals (24 males, 25 females and 3 subadults).
- El Becerril (Metropolitan Area): this is one of the examples of caves with a very short number of individuals that complicate the panorama because only the skeletal remains of nine individuals (3 males and 6 females) were found there.

TAPHONOMY

Regarding the type of corpse found in the different burial sites (caves with only skeletal, only mummified and skeletal-mummified individuals), this is the picture:

- Cueva del Guanche (Tegueste): only skeletal remains.
- Majagora (Guía de Isora): only skeletal remains.
- Uchova (San Miguel de Abona): skeletal and mummified remains.
- El Becerril (Metropolitan Area-San Cristóbal de la Laguna): only skeletal remains.

The state of preservation in both type of individuals was good in 90% of the cases and this represents an advantage for their study.

DIET

As it has been previously demonstrated by different authors (Aufderheide et al. 1995, Tieszen et al. 1995; Rodríguez-Martín, 2000a; Rodríguez-Martín & Martín-

Oval, 2009), in general, the prehispanic population of Tenerife shows important dietary differences, not only between the two slopes in which the island was traditionally divided (the humid and green north and the more arid south), but inside the northern slope too. In the case of the north, the dietary differences and nutritional status are due to the different orographic characteristics of the areas that show important variants offering different resources and economic possibilities to the population. In the area of Tegueste, for example, the protein fraction of the diet is very high (around 70%) while in its neighbour Tacoronte that fraction hardly reach 28% because the people there did not have space for shepherding because the forest extended at that time until almost the shore.

Tenerife, in general, shows the following parameters:

- Protein fraction: 50-55 %.
- Vegetal fraction: 40-45 %.
- Sea products fraction: less than 5 %. This could be strange in an island population but happens in other islands of the world too.

The parameters of the sites selected for this study (although not complete yet) show a similar spectrum to that of Tenerife in general.

MARKERS OF PHYSICAL ACTIVITY

Markers of physical activity are good indicators of resources exploitation (economy) and fighting in past populations (Kennedy, 1989). The markers studied in the Guanche populations above mentioned indicate that pastoralism was much more important in Uchova, in the south, and Cueva de los Guanches, in the north, than any other economical activity (Fig. 1). These markers do not appear with the frequency of the previous sites in Majagora where other activities, like agriculture and plant harvest, are well represented too. El Becerril



Fig. 1. Mountaineer's gait.

shows less markers for pastoralism than the other three sites and this can be explained by the fact that the geographic area where the cave is located is an abrupt and steep slope ravine making difficult the practice of shepherding and favoring agriculture and vegetal gathering, as it is demonstrated by the markers observed there and confirmed by its vegetal dietary fraction (high in comparison with the others).

In general, these data confirmed the observed in previous studies performed on different sites of Tenerife (Rodríguez-Martín & Martín-Oval, 1997; Estévez, 2004).

MARKERS OF METABOLIC STRESS

Regarding growth arrest lines (Harris lines) (Fig. 2) the results are as follows:

- Cueva de los Guanches: no lines were observed among the adult male group while the females show a mean of 2.7.
- Uchova: 3.3 lines in males and 6.7 in females.
- Majagora: males show one line per individual and the females account for 3.5.
- El Becerril: no lines in males and 10 in females. This site shows the greatest difference between males and females of the whole sample but the size of the sample does not permit to reach a conclusion and lacks of statistical value.

Enamel hypoplasia is much more uncommon than Harris lines in the four sites accounting for less than 10% in every group with the exception of El Becerril where the frequency increases until 22% in total (the two cases observed affected females increasing the frequency in this sex until 33%).

Harris lines and enamel hypoplasia are more frequent between 5-9 years and in the female group, especially in Tenerife's northern slope (Kelley & Boom, 1995) and this occurs in the present study too, although

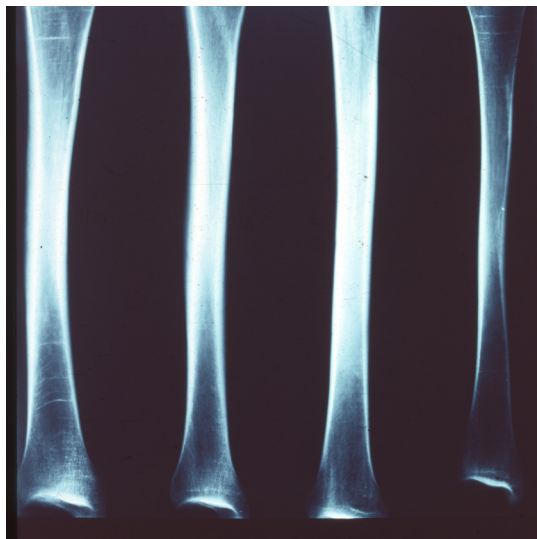


Fig. 2. Radiograph showing Harris Lines.

the number of subadults in the four sites is scarce and does not permit to get to definitive conclusions from an epidemiological point of view.

The only osteoporosis type diagnosed in this sample was senile osteoporosis. No cases of juvenile osteoporosis were detected, as happens in other areas of the island.

No cases of *cribra orbitalia*, porotic hyperostosis and *cribra femorii* are present in the 211 individuals represented in this sample, confirming the studies done in other areas of the island (Rodríguez Martín et al., 1986; Rodríguez-Martín, 1995a; Rodríguez-Martín & Martín-Oval, 2010).

DEMOGRAPHY

The demographic data of the four sites are like follows: Cueva del Guanche shows a life expectancy at birth of 35.03 years and 28.2 per thousand crude mortality rate (this cave, as the whole area of Tegueste, shows the best parameters in prehispanic Tenerife, Rodríguez-Martín, 2000a; Rodríguez-Martín and Martín-Oval, 2009); Majagora 31.8 and 31 respectively and Uchova 34.9 and 28.3. El Becerril, due to the very short number of individuals, does not have demographic value.

It is interesting to note that the demographic data of Tegueste are concordant with the scarcity of metabolic stress markers in that site (this constitutes, almost, the exception in the northern slope of Tenerife where these values were rather higher than those of this cave). However, Uchova that shows almost double markers than Majagora has better, even much better, demographic data. Perhaps this fact may be the result of the bigger number of individuals in the first site and this makes the data more realistic. Other possibility is that the volcanic orography of Majagora complicates the life conditions shortening the life expectancy but this is something to be elucidated.

PATHOLOGY

The pathology in the four areas is similar to the rest of the island although the prevalence varies in the different sites.

Joint diseases

Degenerative joint disease (osteoarthritis) is, by far, the most common of these conditions affecting more than 50% of the adult population in all these areas but

the anatomical distribution depends on the site: Cueva del Guanche and Uchova present a higher percentage in the lower limbs than in the upper limbs (Fig. 3) while Majagora and, especially, El Becerril show a higher frequency in the upper limbs and spine (Fig. 4) and this implies a bigger effort with the arms (farming and harvesting).

Circulatory disturbances

Osteochondritis dissecans is a condition that mostly involves knee and ankle, especially in subadult and young adult males (Aufderheide and Rodríguez-Martín, 1998). All the sites of this sample show a knee involvement between 15 and 20 % with a male-female ratio of 2.5-3:1 (the highest prevalence appear in Cueva de los Guanches, 20.3%) (Fig. 5). The ankle is involved around 10-12%, being the high-



Fig. 3. Degenerative joint disease of the knee.

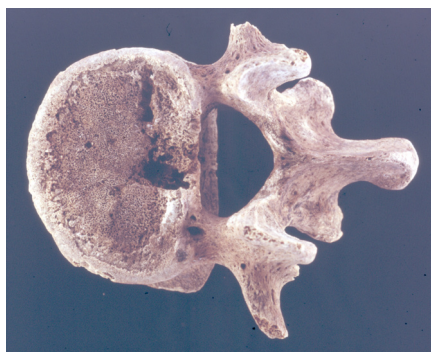


Fig. 4. Discal hernia



Fig. 5. Osteochondritis dissecans.

est frequency that got in Los Guanches too. However, elbow and wrist involvement does not show this homogeneity and Majagora and, especially, El Becerril show higher prevalence (25% and 44% respectively). Although the m.n.i. is scarce there, the frequency indicates a stronger use of the upper limbs than in Cueva de los Guanches and Uchova. The prevalence of the condition in other joints is not relevant.

This panorama is similar to the data of previous studies (Rodríguez-Martín, 2000b; Rodríguez-Martín & Martín Oval, 2009).

Congenital malformations

Congenital malformations, particularly those of the spine are very common among the Guanches as a consequence of inbreeding resulting from the isolation (*spina bifida occulta* shows 15-20% and transitional vertebra of the lumbar-sacral region fluctuates around 10% being sacralization of L5 (15%) more common than lumbarization of S1 (5-7%). Other malformations are much more uncommon (1-2%) (Rodríguez-Martín, 1995b). The prevalence on the sites presented here are very similar to the above values indicating that this was a common problem to the entire island

Metabolic diseases

The only metabolopathy diagnosed in this sample is senile osteoporosis with a prevalence of 55% of the population over 35 years of age. This is concordant with the data for other sites of Tenerife (Rodríguez-Martín and Martín-Oval, 2009).

Other skeletal pathology

Tumors, dysplasias, hematologic disorders, other joint diseases and, in general, infectious diseases are very uncommon. The few cases that have appeared are isolated without statistical and epidemiological value and no cases are present in this study.

Trauma

Traumatic lesions (cranial fractures) related to violence in these sites, like in the rest of the island, show an striking frequency indicating constant fighting due to robbery of cattle, use of restricted spaces for shepherding by other groups and forbidden crosses of the demarcation borders, before the conquest (Rodríguez-Martín et al., 1991; Rodríguez-Martín, 2000c).

An important datum is the difference between the prevalence of cranial fractures between south and north with a proportion of 3-4:1, being Uchova the site with highest frequency in Tenerife (19%) while in Cueva de Los Guanches the prevalence is only 3.3% and in Majagora 3.1%. El Becerril does not show cases.

The datum does not imply that the populations of the north or the west were more pacific than those of the south, on the contrary: the scarce space useful for shepherding in the northern slope forced the people there to cross the mountains and invade the open southern territory, ideal for pastoralism... this apart of the eternal cattle's robbery suffered mostly by the populations of the south that seem to be the losers of these conflicts (Rodríguez-Martín, 1997b). Therefore, it is not strange that they allied to the Spaniards during the conquest instead to fight them along with the Guanches of the north.

CONCLUSIONS

This is just a preliminary and short report on a sample of 211 individuals in four caves of the island of Tenerife. Although the final conclusions will be presented at the end of the project after reviewing the complete skeletal and mummified individuals of the collections in Tenerife's Archaeological Museum and other institutions (around 2500 in total), once the remaining studies and analyses are performed. However, although we have observed common prevalence for some findings than those got in previous studies, due to the important difference in the number of individuals of the burial caves of the island implying difficulties for the statistical, epidemiological and demographic data comparison, we can conclude that the research has to be performed on the areas where the different caves are located instead on the caves themselves because this will help to understand the results in a better way. For sure, everything with right chronological data and correct archaeological documentation and contextualization.

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