

The non-adult population at the Copper Age settlement of Valencina de la Concepción (Seville, Spain): a demographic, contextual and sociological approach*

La población no adulta del asentamiento de la Edad del Cobre de Valencina de la Concepción (Sevilla): una aproximación demográfica, contextual y sociológica

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ABSTRACT

This article draws together work from previous studies and new mortuary evidence in order to describe the non-adult population at the Copper Age settlement of Valencina de la Concepción (Seville). In total, we examine 39 non-adult individuals found in a range of burial structures which span the entire chronology of the site. We observed a high variability in both the proportion of the non-adult segment of the population interred in each burial structure, as well as evidence of differentiated funerary treatment related to age. We discuss the distribution of these individuals across different types of burials, as well as their association with adult individuals and grave goods, thus providing the basis for an assessment of their demographic and social significance.

no adultos inhumados en contenedores funerarios de distinto tipo y repartidos a lo largo de la amplia cronología de este asentamiento. Como resultado se constata la alta variabilidad de la proporción de este segmento de la población en las estructuras funerarias de Valencina así como la existencia de indicios de un tratamiento diferenciado para el mismo. Como parte de la discusión se examina la asociación de estos individuos con tipos de contenedores funerarios, individuos adultos y ajuares, valorándose su significación demográfica y social.

Key words: Copper Age; Non Adult Population; Bioarchaeology; Demography; Social organisation; Funerary practices.

Palabras clave: Edad del Cobre; Población No Adulta; Bioarqueología; Demografía; Organización social; Prácticas funerarias.

RESUMEN

A partir de la revisión de estudios previos y de la aportación de datos inéditos se realiza un análisis de la población no adulta del asentamiento de la Edad del Cobre de Valencina de la Concepción (Sevilla). En total se examinan 39 sujetos

1. INTRODUCTION

For a number of years, non-adult¹ individuals (foetal, children and juveniles), together with women, have been largely forgotten in prehistoric archaeology, which

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¹ Although other terminological alternatives in the literature include 'pre-adults' and 'sub-adults', throughout this study we shall employ the term 'non-adult' in accordance with Lewis (2000, 2002, 2004, 2011), Heuzé and Cardoso (2008), Manifold (2012, 2013), Cunha *et al.* (2015) and Fibiger (2014).

has traditionally focused on masculine adult individuals. Interest in non-adults was sparked by criticism from Feminist/Gender Archaeology regarding the Social Sciences in general, and archaeology in particular, especially from Anglo-American scholarship (Lillehammer 1989; Sofaer 2000; Kamp 2001; Baxter 2005; Wileman 2005).

In the last two decades, interest in the gender aspect of Iberian Late Prehistoric societies has increased significantly. This is well reflected in the publication of studies focused on the Neolithic period (Miguel Ibáñez 2010; Gibaja Bao *et al.* 2010; Waterman and Thomas 2011), the Copper Age (Miguel Ibáñez 2010; Aliaga Almela *et al.* 2015; Cunha *et al.* 2015; Garrido-Pena and Herrero Corral 2015; Beck 2016) and, in particular, the Bronze Age (Valiente Malla 1991; Ortiz del Cueto and López Covacho 1997; Ayala Juan *et al.* 1999; Lull Santiago *et al.* 2004; Lull Santiago *et al.* 2005; Nájera Colino *et al.* 2006, 2010; Sánchez Romero 2004, 2007; Miguel Ibáñez 2010; Aliaga Almela *et al.* 2015), a period in which, due to the greater number of known burials and their largely individual nature, the non-adult segment of the population is easier to recognize.

Notwithstanding other indirect evidence (material culture), bone remains undoubtedly represent the most direct empirical record for learning about the non-adult population of prehistoric societies. Careful analysis of the different elements making up the non-adult skeleton reveals, first and foremost, the biological age at the time of death, as well as valuable information with respect to rites of passage or the rights of different age groups to various funerary practices. Biological age is of prime importance as it is closely related to the physical and social environment of the child, and abilities such as walking and talking are linked to the child's interaction with other members of society (Lewis 2011: 2). Compared to adult individuals, the methods for estimating the biological age of children are relatively accurate, since the period of growth and development involves a large number of changes that occur in a precise, known chronological sequence (González Martín 2008: 64). Determining the sex, however, remains an unresolved issue when subjects have not reached adulthood. Despite the importance of this variable, current methods based on morphological characteristics of the child skeleton are not precise. Presently, the only reliable source for obtaining this information involves DNA analysis, which cannot always be undertaken due to the recurring problem of inadequate bone preservation. However, the study of osteological collections of children of known age and sex provides interesting keys for solving this problem (Alemán Aguilera *et al.* 2012).

Non-adult bone remains are also especially useful for studying patterns of health and disease in prehistoric societies, since they are the most sensitive and

variable indicators of cultural change from a demographic standpoint (Halcrow and Tayles 2008). In point of fact, there are many examples of so-called metabolic alterations which can be observed in children, with the most common being hypoplasia lines on tooth enamel and the various porous phenomena affecting different bones (*cribra orbitalia*, porotic hyperostosis, *cribra femoral*, etc.). Although the etiology of these markers remains unknown, different studies point to multi-factorial causes which would include infections, nutritional imbalances and even the immature nature of the bone itself (González and Polo 2005; Lewis 2007). Such observations can currently be complemented with the chemical analysis of stable isotopes in order to reconstruct the diet of infants (Howcroft *et al.* 2014) and address such interesting topics as the age at weaning (Wright and Schwarcz 1998; Eerkens *et al.* 2011). One should add that the presence of non-adult individual burials with 'remarkable' grave goods are an important indicator for evaluating the existence of 'ascribed' social statuses within a given community, indicating the greater ability of certain groups to accumulate and give away significant quantities of goods and of passing this ability down to offspring in the form of inheritance (Lull Santiago *et al.* 2004: 240; but see relevant counter-arguments in Garrido-Pena 2006: 82).

This article seeks to contribute to research on non-adult groups in Iberian Late Prehistoric societies. Specifically, we will assess the data available for the large Copper Age settlement of Valencina de la Concepción-Castilleja de Guzmán, Seville (henceforth Valencina) and thereby contribute to research on the way of life of southern Iberian Copper Age societies and of the processes of social complexity in which they found themselves immersed.

2. FUNERARY PRACTICES AND BIOARCHAEOLOGY IN VALENCINA

The settlement of Valencina offers a highly diverse range of funerary practices. In fact, the extent and character of the burial deposits is at the core of debate on the nature of this large archaeological site (García Sanjuán 2013: 30-35 for a recent overview). In the 1990s, it was proposed that Valencina would have been divided into two segregated and functionally differentiated areas, one residential and domestic, the other 'exclusively' funerary (Arteaga Matute and Cruz-Auñón Briones 1999a; Vargas Jiménez 2004a, 2004b; Mejías García 2013: 495). Recent studies, show, however, that this exclusionary functional division is not supported by the available evidence, as human remains deposited as part of funerary practices appear across the entire settlement (Costa Caramé *et al.* 2010; Díaz-Zorita

Bonilla 2013: 71, 2017; García Sanjuán and Murillo-Barroso 2013) (Fig. 1). Indeed, the oldest identified activity in this settlement is funerary (García Sanjuán *et al.* in press).

Several attempts have been made to classify the numerous funerary containers found at Valencina. Functionally, they have been grouped into the following categories according to their accessibility: (i) pit-type negative structures, (ii) non-megalithic burial chambers (including “artificial caves” or “hypogea”), (iii) megalithic burial chambers and lastly, (iv), large-scale megalithic tombs (García Sanjuán and Díaz-Zorita Bonilla 2013: 396). On the other hand, our study of the PP4-Montelirio sector used a morphological classification based on the presence or absence of stone ar-

chitecture, which divides the funerary structures into (i) negative, (ii) negative with stone elements and (iii) megalithic (Mora Molina *et al.* 2013: 266-269). For alternative classifications see Cruz-Auñón Briones and Mejías García 2013: 182 and 183 or Mejías-García 2013: 491.

Given the large number of structures with human remains at Valencina and the numerous excavations carried out (around 130 at the time of writing this article), an immense volume of human bone remains has been accumulated over the years. These constitute a true scientific treasure due to their potential to provide data on the demography, living conditions and social organisation of the communities that inhabited and/or frequented this settlement. Unfortunately, apart

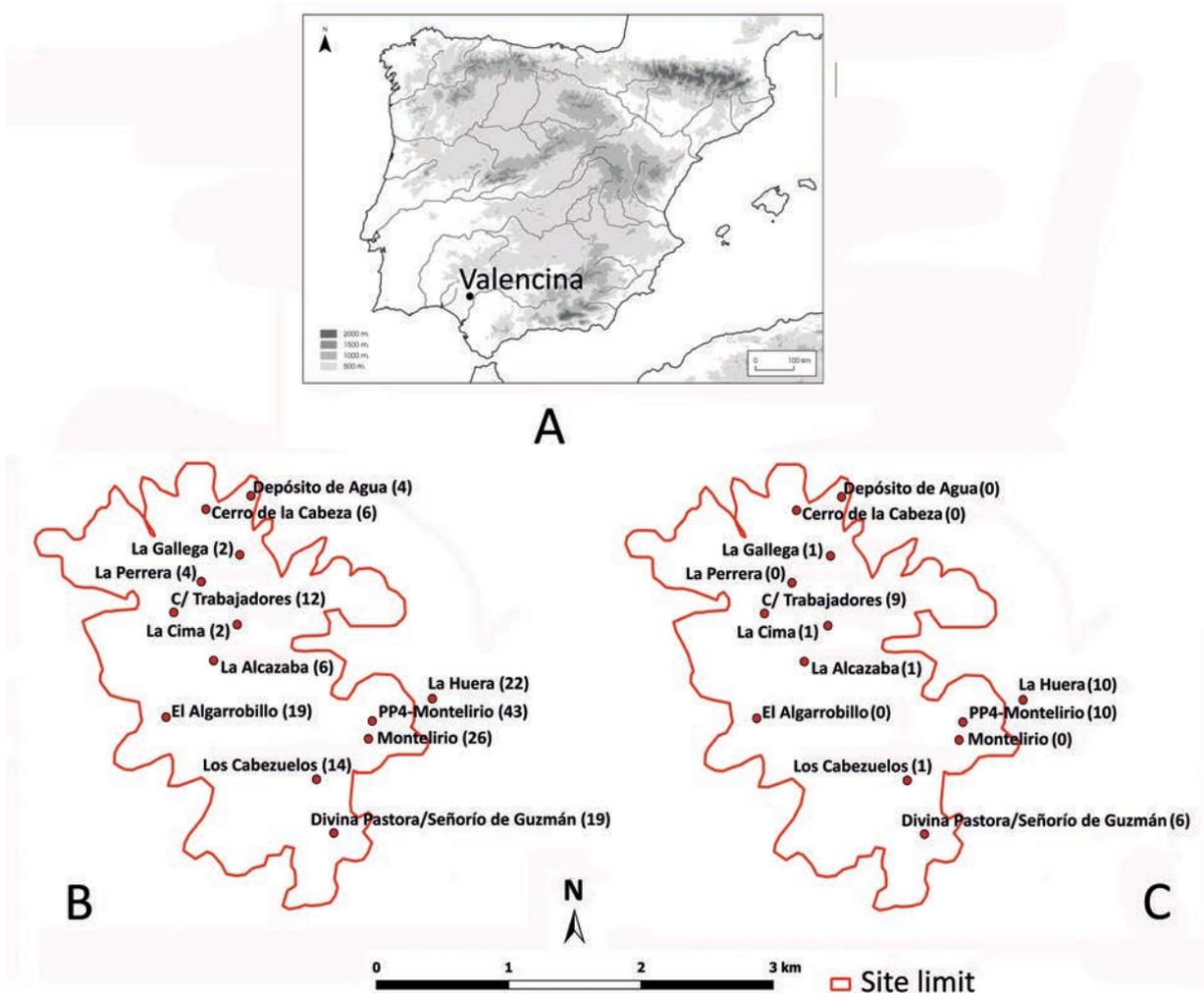


Fig. 1. (A) Location of Valencina in the Iberian Peninsula; Site plans of Valencina showing, respectively, total MNI (B) and non-adult MNI (C) included in this study (MNI counts in brackets). Design Manuel Eleazar Costa Caramé and Leonardo García Sanjuán.

from a handful of exceptions (Basabe and Benassar 1982; Alcázar Godoy *et al.* 1992; Guijo Mauri *et al.* 1996; Lacalle Rodríguez *et al.* 2000), this record only started to be investigated very recently. In the last few years, however, progress has begun to be made in the bioarchaeological study of Valencina, specifically in the PP4-Montelirio and Montelirio sectors (Díaz-Zorita Bonilla 2013, 2017; Robles Carrasco and Díaz-Zorita Bonilla 2013; Fontanals-Coll *et al.* 2016; Pecero Espín 2016; Robles Carrasco *et al.* 2017)².

The approximate number of human individuals documented in Valencina to date has recently been estimated at 443 (Díaz-Zorita Bonilla 2013: 364). This figure, however, is approximate, as it includes estimations made during the field work and is yet to be corroborated following comprehensive laboratory-based studies. The current MNI count at Valencina for which bioarchaeological analyses have been carried out and published amounts to 179 (Tab. 1), which is the figure that shall be referenced in this study. As regards the

SECTOR OF THE SITE	ADULTS			NON-AD.	UND.	MNI	REFERENCES
	F*	M*	UND				
Los Cabezuelos	3	3	2	1	5	14	Arteaga Matute and Cruz-Auñón Briones 1999: 596; Costa Caramé <i>et al.</i> 2010: 91
Cerro de la Cabeza	3	0	3	0	0	6	Díaz-Zorita Bonilla 2017: 53
Divina Pastora-Señorío de Guzmán	7	6	0	6	0	19	Lacalle Rodríguez <i>et al.</i> 2000: 353
La Alcazaba	2	1	2	1	0	6	Díaz-Zorita Bonilla 2017: 53
La Cima	1	0	0	1	0	2	Alcázar Godoy <i>et al.</i> 1992: 22
La Gallega	1	0	0	1	0	2	Alcázar Godoy <i>et al.</i> 1992: 23
La Perrera	1	3	0	0	0	4	Díaz-Zorita Bonilla 2017: 53
Montelirio	19	2	5	0	0	26	Díaz-Zorita Bonilla 2017: 53
El Algarrobbillo	5	9	5	0	0	19	Díaz-Zorita Bonilla 2017: 53
Depósito de Agua	3	1	0	0	0	4	Díaz-Zorita Bonilla 2017: 53
La Huera	0	0	12*	10	0	22	Méndez Izquierdo 2013: 301
PP4-Montelirio (10.031, 10.034 and 10.042-49)	3	6	3	2	1	15	Robles Carrasco and Díaz-Zorita Bonilla 2013: 371
PP4-Montelirio (10.073, 10.075-78 and 10.044)	2	2	6	0	0	10	Robles Carrasco <i>et al.</i> 2017
PP4-Montelirio (10.071)	2	0	2	3	0	7	Herrero Corral 2015, unpublished.
PP4-Montelirio (10.005)	0	0	1	1	0	2	Robles Carrasco <i>et al.</i> 2017: 106
PP4-Montelirio (10.012)	0	0	3	2	0	5	Robles Carrasco <i>et al.</i> 2017: 106
PP4-Montelirio (10.035)	0	0	1	1	0	2	Robles Carrasco <i>et al.</i> 2017: 106
PP4-Montelirio (10.080)	1	0	0	1	0	2	Robles Carrasco <i>et al.</i> 2017: 106
Calle Trabajadores	1	0	2	9	0	12	Herrero Corral 2015, unpublished.
TOTAL	54	33	47	39	6	179	

Tab. 1. MNI of Valencina considered in this study. *The publication does not specify the number of male and female individuals. MNI: minimum number of individuals. F*: female or likely female M*: male or likely male; UND: undetermined. Source: the authors.

² This is the main topic of the Doctoral Thesis "Bioarqueología del asentamiento de Valencina de la Concepción-Castilleja de Guzmán (Sevilla, España): demografía y estructura social en una comunidad de la Edad del Cobre" by Sonia Robles Carrasco, currently under way.

adults, 33 of those 179 individuals are male, 54 are female and 47 are of undetermined sex. In terms of age, there are 134 adult individuals, 39 non-adults and 6 of undetermined age. These 39 non-adults make up the data set for this study, which is based on a comprehensive review of the available information (Fig. 1C

and Tab. 2), as well as fresh analysis of a series of new individuals (Fig. 1C and Tab. 3). The review of this data sample shall then be used to evaluate Valencina's non-adult population from a demographic, contextual and sociological point of view.

SECTOR	MNI	ADULTS	REMAINS	AGE	SEX	PATH.	GRAVE GOODS	STRUCTURE	P/S	REFERENCES
Los Cabezuolos	1	2M, 2F, 2UND	ND	8-9	UND	ND	ND	Tholos (slate)	ND	Arteaga Matute and Cruz-Auñón Briones 1999: 596; Costa Caramé <i>et al.</i> 2010: 91 There is an anthropological study but it is not published and we did not have access to it.
Divina Pastora-Señorio de Guzmán	1	1M, 1F	ND	Infant II	UND	ND	ND	Tholos (masonry)	P	Lacalle Rodríguez <i>et al.</i> 2000: 353
	1	1M, 1F	ND	Infant II	UND	ND	ND	Tholos (slate)	P	Lacalle Rodríguez <i>et al.</i> 2000: 353
	1		ND	Preadult	UND	ND	ND	Tholos (slate)	P	Lacalle Rodríguez <i>et al.</i> 2000: 353
	1	3M, 4F	ND	Infant II	UND	ND	ND	Tholos (masonry)	P	Lacalle Rodríguez <i>et al.</i> 2000: 353
	1		ND	Infant II	UND	ND	ND	Tholos (masonry)	P	Lacalle Rodríguez <i>et al.</i> 2000: 353
	1		ND	Preadult	UND	ND	ND	Tholos (masonry)	P	Lacalle Rodríguez <i>et al.</i> 2000: 353
La Alcazaba	1	1M, 2F, 2UND	Rib fragment	Infant I	UND	No	No	Negative feature	S	Díaz-Zorita Bonilla 2017: 96
La Cima	1	1F	Cranium, teeth and postcranial remains	5 ± 16	UND	High teeth wear	No	"Possible presence of a megalithic or semi-megalithic structure not recognised during fieldwork [...] or presence of monumental architectonic elements complementary to the main negative features" (García Sanjuán and Díaz Zorita Bonilla 2013: 394)	S	Alcázar Godoy <i>et al.</i> 1992: 22
La Gallega	1	1F	Cranium and post-cranial remains	7	UND	No	No	Negative structure	ND	Martín Espinosa and Ruiz Moreno 1992; Alcázar Godoy <i>et al.</i> 1992: 23

Tab. 2 [1]. Non-adult individuals from Valencina considered in this study. MNI: minimum number of individuals. ND: no data. F: female or likely female M: male or likely male; UND: undetermined. PATH.: pathologies. P/S: primary/secondary. Source: the authors.

SECTOR	MNI	ADULTS	REMAINS	AGE	SEX	PATH.	GRAVE GOODS	STRUCTURE	P/S	REFERENCES
La Huera	1	12 adults*	Cranium, mandible and upper left limb	12-15	F?	No	Possible, diverse elements	Artificial cave	P?	Méndez Izquierdo 2013: 301 *The paper does not specify the sex of the individuals.
	9		Cranial and postcranial remains	2 (2-4); 1 (5-6); 1 (6-7); 1 (7-9); 2 (12-20) y 2 PreAd.	UND	ND			P?	
PP4 Montelirio:	10.031	1	1M and 1F	6 ± 24	UND	Teeth wear	No	Negative structure dig in the rock	P	Robles Carrasco and Díaz-Zorita Bonilla 2013: 383
	10.042 – 10.049	1	2M and 2F	Fragment of phalanx and long bone.	“subadult”	UND	No	Megalithic double chamber: individual in the corridor or in the first chamber	S	Robles Carrasco and Díaz-Zorita Bonilla 2013: 379
TOTAL	21									

Tab. 2 [2]. Non-adult individuals from Valencina considered in this study. MNI: minimum number of individuals. ND: no data. F: female or likely female M: male or likely male; UND: undetermined. PATH.: pathologies. P/S: primary/secondary. Source: the authors.

3. RECORD OF NON-ADULT INDIVIDUALS

The child and juvenile individuals currently documented at Valencina come from the following sectors: Los Cabezuelos (MNI=1), Divina Pastora/Señorío de Guzmán (MNI=6), La Alcazaba (MNI=1), La Cima (MNI=1), La Gallega (MNI=1), La Huera (MNI=10), PP4-Montelirio (MNI=10) and Calle Trabajadores no. 14-18 (MNI=9) (Fig. 1C).

For the sectors that we have studied directly (e.g., El Algarrobilllo, Cerro de la Cabeza, La Alcazaba, La Cima, La Gallega, PP4-Montelirio and Calle Trabajadores no. 14-18), standard bioarchaeological methods have been used, as already described in previous papers (Díaz-Zorita Bonilla 2013, 2017; Robles Carrasco and Díaz-Zorita Bonilla 2013; Robles Carrasco *et al.* 2017). The age ranges considered for non-adults are as follows: Infant I (from birth until six years of age), Infant II (7-12 years) and juveniles (13-17 years). These ranges have been estimated according to the development and degree of epiphyseal fusion of the long bones and tooth development and eruption (Buikstra and Ubelaker 1994; Scheuer and Black 2000).

3.1. Los Cabezuelos (MNI=1)

During the rescue excavation undertaken in 1994, two funerary structures were found in this sector (Ar-

teaga Matute and Cruz Auñón Briones 1999b). The first of these (Tomb A), is a *tholos* structure built with slate slabs and measuring 5.30 m in length, in which three stratigraphic layers (I, II and III) were distinguished during excavation, yielding a MNI count of 12, 1 and 1, respectively. The total MNI count for Tomb A (14) includes the remains of 8 adult individuals (57.1%), 5 individuals of undetermined age (35.7%) and 1 infant (7.1%).

The infant was found in layer I, corresponding to the time when the structure was first used. Arteaga Matute and Cruz-Auñón Briones (1999b: 596) suggest the infant was 8 or 9 years old, but give no information about what remains were preserved, their position, orientation, pathologies or associated grave goods. They mention an ongoing anthropological study, but no such study has been published to date.

3.2. Divina Pastora/Señorío de Guzmán (MNI=6)

A total of 5 tombs were excavated in the Divina Pastora/Señorío de Guzmán sector in 1996. Three of them yielded bone remains of non-adult individuals. These were probably primary burials that had undergone very intense post-depositional processes (Lacalle Rodríguez *et al.* 2000: 344).

In Tomb 1, a multiple-burial *tholos*-type structure with masonry walls and Beaker pottery, three individuals

SECTOR / STRUCTURE	MNI	ADULTS	REMAINS	AGE	SEX	PATH.	GRAVE GOODS	STRUCT.	P/S	
PP4 Montelirio	10.071	1	1F and 1UND	Skull and postcranial remains	7 ± 24	UND	No	No	Negative structure	P
		1	2UND	Skull and postcranial remains	3 ± 12	UND	No	Possible		S
		1		Skull and postcranial remains	9-11	UND	No			S
	10.005	1	1UND	Skull and postcranial remains	8 ± 24	UND	Moderate dental plaque	No	Negative structure	S
	10.012	1	3UND	Skull, postcranial remains and teeth	4 ± 12	UND	No	Possible	Negative structure	S
		1		Teeth and others remains that cannot be individualized	12 ± 30	UND	No			S
	10.035	1	1UND	2 teeth	7-10	UND	Linear enamel hypoplasia	No	Negative structure	S
	10.080	1	1F	Fragments of radius	<16	UND	Yes	No	Negative structure	S
Calle Trabajadores no. 14-18	9	1F and 2UND	Mainly cranial and postcranial remains	1 (3); 4 (6-8); 4 (12-15)	UND	It is not possible to associate the evidences to individuals: <i>Cribra orbitalia</i> (1) and hypoplasia (3).	No		S	
TOTAL	17									

Tab. 3. Non-adult individuals from Valencina considered in this study. MNI: minimum number of individuals. ND: no data. F: female or likely female M: male or likely male; UND: undetermined. PATH.: pathologies. STRUCT.: structure. P/S: primary/secondary. Source: the authors.

were found, of which one was an Infant II accompanied by two adults, a male and a female (Lacalle Rodríguez *et al.* 2000: 350). No further data referring to the type of preserved remains, the position or orientation, presence of grave goods or individualised pathologies related to the infant have been published.

In Tomb 3, a *tholos*-type structure with walls constructed from slate slabs, also described as a multiple burial, a MNI=4 was identified, of which two were adults (male and female), one an Infant II and the other

a juvenile, both of undetermined sex. The publication does not cite any information regarding the position, orientation, grave goods or pathologies of these individuals.

Finally, Tomb 5 is another *tholos* structure (like Tomb 1 with masonry walls) with Beaker pottery, in which the remains of at least 10 individuals were found, including seven adults and three non-adults: 2 Infant II individuals and 1 non-adult. Once again, the information in the publication is insufficient in terms of the categories of grave goods.

The similarity in the morphological characteristics of the dentition (shovel-shaped incisors, cingulate sulcus or lingual sulcus, among others) in individuals found in each of these tombs was considered evidence of biological distance (Lacalle Rodríguez *et al.* 2000: 345). The same non-metric traits have been reported in individuals from PP4-Montelirio (Robles Carrasco and Díaz-Zorita Bonilla 2013: 384).

3.3. La Alcazaba (MNI=1)

In the La Alcazaba sector, three negative structures were excavated in 1996 (Cruz Auñón-Briones and Arteaga Matute 2001). In Structure no. 19, a circular-plan pit measuring 0.53 m in depth and 1.70 m in width, the remains of what were initially believed to be 7 individuals were discovered (Cruz Auñón-Briones and Arteaga Matute 2001: 701). A later anthropological study (Díaz-Zorita Bonilla 2017: 96) reduced this count to 6 individuals: five adults and one rib fragment corresponding to an Infant I. Recently obtained radiocarbon dates (Tab. 4) have made it possible to produce a chronological model for Structure no. 19 that suggests the corpses were first introduced between 2985 and 2875 cal BC (95% probability), likely between 2915 and 2885 cal BC (68% probability) the last one being introduced between 2900 and 2750 cal BC (95% probability), likely between 2895 and 2860 cal BC (68% probability) (García Sanjuán *et al.* in press). The total period over which this funerary structure was used would have been 1-220 years (95% probability), or 1-50 years (68% probability).

3.4. La Cima (MNI=1)

The 1989 excavation at La Cima revealed a circular pebble floor measuring around 4 m in diameter, along with large slate slabs (Ruiz Moreno 1991: 462). García Sanjuán and Díaz-Zorita Bonilla (2013: 393) suggest this evidence indicates the possible existence either of a megalithic structure not recognised as such during excavation, or of ancillary stone elements of major negative structures. Bone remains appeared in relation to this structure. According to the only anthropological report available for this excavation (Alcázar Godoy *et al.* 1992: 22), these remains would correspond to two individuals, one adult and one child.

The latter, found in Square no. 6, layer IV and at a depth of 1.5 m, is an infant of undetermined sex aged 5 years \pm 16 months at the time of death. The remains of both this individual and the adult were rather fragmented due to taphonomic processes (Costa Caramé *et al.* 2010: 90-91). The child is represented by the

skull (whose maxilla preserves both deciduous and permanent dentition), the left femoral head, and fragments of long bones. There was also significant tooth wear which could be associated with the consumption of abrasive particles (Alcázar Godoy *et al.* 1992: 22).

Alcázar Godoy *et al.* (1992: 22) make reference to “ceramic finds, with forms typical of the Copper Age, animal remains, [sun-dried] adobe and lithic material being found close to this individual”, but it is not possible to interpret such elements of material culture as ‘grave goods’, nor can they be associated to the child individual.

The only two radiocarbon dates obtained for this sector, corresponding to layer 9 of Structure C-6, indicate that the activity recorded there is dated to the 29th and 28th centuries cal BC (Tab. 4) (García Sanjuán *et al.* in press).

3.5. La Gallega (MNI=1)

In the rescue excavation carried out at La Gallega in 1990 (Martín Espinosa and Ruiz Moreno 1992), a total of 23 structures were excavated, one of which contained the remains of an elderly female individual³ and an infant (Alcázar Godoy *et al.* 1992: 23). The negative feature in which these two individuals were found was described as a flat-bottomed, two-tiered pit with twin cavities, a N-S orientation, slightly inclined walls, and rounded corners (Alcázar Godoy *et al.* 1992: 23; Martín Espinosa and Ruiz Moreno 1992: 455).

The infant was found in Square 4, feature no. 11, between layers XIV and XV and at a depth of 2.24-2.41 m (Alcázar Godoy *et al.* 1992: 23). It was deposited in the area corresponding to the passage of the feature described as the ‘twinned structure’. The individual is represented by a very well preserved skull and some fragments of the postcranial skeleton. In view of the eruption of the first permanent molar and the non-fusion of the *pars basilaris*, the anthropological report indicates that he/she died aged 7 (Alcázar Godoy *et al.* 1992: 23). There is no mention of the presence of pathologies.

Neither in the brief publication referring to the archaeological intervention (Martín Espinosa and Ruiz Moreno 1992), nor in the anthropological report (Alcázar Godoy *et al.* 1992) is any mention made to whether this individual was found in a primary or secondary position, or the orientation or placement, for

³ Although the initial publication indicates that the individual is male (Alcázar Godoy *et al.* 1992: 23), further anthropological analysis estimates it to be female (Costa Caramé *et al.* 2010: 91; Díaz-Zorita Bonilla 2017: 96).

SECTOR	LAB ID	SAMPLE	CONTEXT TYPE	CONTEXT NAME	DATE BP	DATE 2σ CAL BCE
La Alcazaba	CNA-1260	H	Pit	Structure 19	4297 ± 35	3012-2878
	CNA-1261	H	Pit	Structure 19	4223 ± 32	2907-2694
	CNA-1262	H	Pit	Structure 19	4252 ± 31	2917-2759
	CNA-1263	H	Pit	Structure 19	4225 ± 28	2905-2700
La Cima	CNA-1265	H	Pit	Structure C-6	4204 ± 49	2906-2631
	CNA-1266	H	Pit	Structure C-6	4257 ± 48	3011-2678
La Gallega	CNA-1264	H	Pit	Structure 10	3905 ± 35	2479-2287
La Huera	OxA-30331	H	AC	Context 2229	4508 ± 30	3351-3098
	SUERC-53943	H	AC	Context 2229	4553 ± 31	3370-3104
	SUERC-53938	H	AC	Context 2229	4397 ± 29	3096-2917
	OxA-30334	H	AC	Context 2236	4429 ± 29	3325-2926
	SUERC-53944	H	AC	Context 2236	4390 ± 31	3094-2916
	SUERC-47677	H	AC	Pit excavated in the upper part of the infill of the artificial cave	4259 ± 33	2921-2712
	OxA-28234	H	AC	Central chamber	4416 ± 31	3319-2919
	SUERC-47678	H	AC	Central chamber	4361 ± 31	3086-2903
	OxA-28235	H	AC	Central chamber	4509 ± 30	3351-3098
	SUERC-47679	H	AC	Replica of OxA-28235	4354 ± 33	3086-2900
	SUERC-60397	H	AC	Central chamber	4319 ± 31	3014-2890
	OxA-32263	H	AC	Replica of SUERC-60397	4380 ± 40	3263-2903
	OxA-30333	H	AC	Context 2229	4429 ± 29	3325-2926
	SUERC-53942	H	AC	Replica of OxA-30333	4374 ± 29	3089-2909
	OxA-28238	H	AC	Context 2229	4493 ± 29	3346-3093
	OxA-30330	H	AC	Context 2229	4445 ± 29	3332-2941
	OxA-28236	H	AC	Context 2229	4493 ± 29	3346-3093
	OxA-28237	H	AC	Replica of OxA-28236	4469 ± 30	3339-3026
	OxA-30332	H	AC	Context 2229	4492 ± 28	3344-3094
	SUERC-53937	H	AC	Replica of OxA-30332	4437 ± 29	3329-2930
SUERC-47681	H	AC	Context 2229	4373 ± 33	3090-2908	
SUERC-47680	H	AC	Context 2236	4374 ± 33	3090-2909	
OxA-28323	H	AC	Replica of SUERC-47680	4364 ± 29	3086-2906	
Calle Trabajadores no. 14-18	SUERC-47671	H	NS	Structure 1	3957 ± 32	2571-2346

Tab. 4 [1]. Radiocarbon chronology of the different sectors of Valencina mentioned in the text. The reference for all dates is García Sanjuán *et al.* (in press). The dates have been calibrated using OxCal 4.3, curve IntCal 13. H: human bone; F: Fauna. NS: negative structure; AC: artificial cave. We do not include the dates obtained from ivory for the sector PP4-Montelirio (García Sanjuán *et al.* 2013) because they are not considered reliable.

SECTOR	LAB ID	SAMPLE	CONTEXT TYPE	CONTEXT NAME	DATE BP	DATE 2 σ CAL BCE
Calle Trabajadores no. 14-18	SUERC-53955	F	NS	Structure 1	3956 \pm 31	2570-2346
	OxA-30342	H	NS	Structure 1	3925 \pm 29	2489-2299
	SUERC-60391	H	NS	Replica of OxA-30342	3922 \pm 32	2488-2297
	OxA-30341	H	NS	Structure 1	3939 \pm 29	2565-2309
	SUERC-53954	H	NS	Replica of OxA-30341	3915 \pm 31	2476-2297
	SUERC-53953	H	NS	Structure 1	3955 \pm 31	2570-2346
	OxA-28242	H	NS	Structure 1	3904 \pm 29	2470-2298
	SUERC-47672	F	NS	Structure 1	3966 \pm 32	2574-2348
	OxA-28243	H	NS	Structure 1	3940 \pm 31	2566-2309
	OxA-28244	H	NS	Structure 1	3967 \pm 29	2573-2350
	SUERC-53957	H	NS	Structure 136	4130 \pm 31	2872-2582
	OxA-30380	F	NS	Structure 136	3965 \pm 29	2573-2349
	SUERC-53956	H	Ditch (near surface)	Structure 77	3878 \pm 31	2467-2233
	OxA-30343	F	Ditch (near surface)	Structure 77	3992 \pm 29	2574-2467
	SUERC-60396	F	Ditch (near surface)	Replica of OxA-30343	4005 \pm 29	2577-2470
	SUERC-53958	F	Pit	Structure 90	3884 \pm 31	2469-2244
	OxA-30379	H	Pit	Structure 90	3907 \pm 30	2471-2299
	OxA-30400	H	Pit	Replica of OxA-30379	3889 \pm 28	2466-2294
SUERC-60395	H	Pit	Replica of OxA-30379	3897 \pm 33	2472-2290	
PP4-Montelirio	OxA-32299	H	NS	Structure 10.071, Individual 1	4222 \pm 28	2905-2698
	SUERC-60401	H	NS	Structure 10.071, Individual 2	4192 \pm 27	2890-2678
	OxA-32300	H	NS	Structure 10.071, Individual 4	4147 \pm 37	2879-2620
	OxA-32370	H	NS	Structure 10.071, Individual 6	4277 \pm 30	3006-2872
	CNA-1291	H	Megalith	Structure 10.042	4161 \pm 34	2880-2631
	CNA-1303	H	Megalith	Structure 10.042	4277 \pm 31	3008-2779
	CNA-1300	H	NS	Structure 10.031	4094 \pm 36	2865-2497
	CNA-1301	H	NS	Structure 10.031	4100 \pm 68	2876-2491

Tab. 4 [2]. Radiocarbon chronology of the different sectors of Valencina mentioned in the text. The reference for all dates is García Sanjuán *et al.* (in press). The dates have been calibrated using OxCal 4.3, curve IntCal 13. H: human bone; F: Fauna. NS: negative structure; AC: artificial cave. We do not include the dates obtained from ivory for the sector PP4-Montelirio (García Sanjuán *et al.* 2013) because they are not considered reliable.

which reason, in table 2 these fields are marked as ND (no data). There is also no mention of the presence of elements of material culture in association with this infant.

For this sector, there is only one radiocarbon date (on human bone from Structure 10), which provisionally dates the activity within the structure to between 2480 and 2285 cal BC (95% probability) (Tab. 4) (García Sanjuán *et al.* in press).

3.6. La Huera (MNI=10)

Structure 1004 at La Huera is an 'artificial cave' (or hypogeum) composed of a chamber and a small rectangular passage. The chamber has an oval floor plan measuring 2.80 m at the widest point (NE-SW) and 2 m at the narrowest point (NW-SE), while the minimum surviving height would be 1.00 m (Méndez Izquierdo 2013: 296). In the southwest quadrant, it opened up into a domed space of small dimensions subdivided into three other smaller chambers.

Although it is difficult to establish a clear sequence, up to five different phases can be distinguished based on the stratigraphy, along with an MNI count of 22 (Méndez Izquierdo 2013: 301), of which 12 would be adults (54.5%) and 10 non-adults (45.5%). All the non-adult individuals, with the exception of one (which is explained in more depth below), appeared disarticulated, and were impossible to distinguish from one other. Neither was it possible to clearly associate the grave goods recovered with any of the individuals. The absence of phalanges, ribs and vertebrae was noted during the excavation (Méndez Izquierdo 2013: 301). Despite this, the only available publication does not interpret these bone deposits as secondary, attributing both the lack of articulation and the aforementioned absence of small bones to the highly aggressive sedimentological context of the remains (carbonated limestone) (Méndez Izquierdo 2013: 301). Thus, La Huera appears in table 2 as a primary deposit.

According to the anthropological study, the ages represented would be: three infant I individuals, two infant II individuals, three non-adults (12-20) and two pre-adults/adults⁴ (Méndez Izquierdo 2013: 3013). One of the three individuals classified as non-adults (UE 2207, a possible female, aged between 12 and 15 years, corresponding to phase 3 of the structure's use), was described as a primary burial. It is accounted for by the skull, which was found displaced in relation to the mandible, and the left upper limb, which was

articulated in a hyper-flexed position with an orientation of 80°. There were no associated grave goods, nor any indication of pathological changes.

The funerary activity of the La Huera artificial cave was dated using 23 dates (Tab. 4) obtained from the human bone of 17 individuals. The derived Bayesian chronological model (García Sanjuán *et al.* in press) suggests that the earliest burials took place between 3260-3100 cal BC (95% probability), likely between 3170-3100 cal BC (68% probability), making it the oldest structure so far documented in all of Valencina. It was used over a long period of time: after an interval of inactivity of 15-130 years (89% probability) or 135-190 years (6% probability), likely 35-95 years (68% probability), until the last burial was made in the upper part of the cave, already sealed over, between 2920-2860 cal BC (88% probability) or 2805-2760 cal BC (7% probability), likely 2905-2875 cal BC (68% probability).

3.7. The PP4-Montelirio sector, Structures 10.031, 10.042-10.049, 10.071, 10.005, 10.012, 10.035 and 10.080 (MNI=10)

The sector known as PP4-Montelirio was excavated for eight months between 2007 and 2008. The excavation, extending over an area of 18.878 m², revealed 134 Copper Age structures, 61 of which are funerary (including structures 10.005, 10.012, 10.031, 10.035, 10.042-10.049, 10.071 and 10.080, discussed here), the other 73 being non-funerary (Mora Molina *et al.* 2013: 266). The anthropological laboratory-based study carried out so far includes 21 structures, with a MNI=62. Various preliminary reports of this on-going study have already been published (Robles Carrasco and Díaz-Zorita Bonilla 2013; Robles Carrasco *et al.* 2017).

Structure 10.031 is an oval-shaped pit, measuring 2.40 m long and 1.94 m wide (Mora Molina *et al.* 2013: 269) that contained what is interpreted as a multiple primary burial with an MNI=3: a male and a female adult and an infant referred to as individual no. 3 (Robles Carrasco and Díaz-Zorita Bonilla 2013: 371).

The remains of individual no. 3 were highly fragmented and very badly preserved, for which reason the exact depositional pattern is unknown. Fieldwork photographs, however, do show this infant positioned between the remains of the two adults, although closer to the female. Analysis of the deciduous and permanent dentition suggests this infant died aged 6 years ± 24 months (Robles Carrasco and Díaz-Zorita Bonilla 2013: 383). There is evidence of wear on the deciduous upper incisors that is striking in a child of such a

⁴ In the publication, the age range of the 2 individuals classified as "pre-adults/adults" is not mentioned, nor is further information given on how the age was estimated.

young age (Robles Carrasco and Díaz-Zorita Bonilla 2013: 383). This could be related to the consumption of a diet mixed with abrasive particles, as is the case with the above-mentioned child from La Cima. The only artefact found in his tomb (a carved bone) was not found in connection with this individual.

Two radiocarbon dates were obtained for Structure 10.031, using samples from the skull of two individuals (García Sanjuán *et al.* in press) (Tab. 4). The resulting Bayesian chronological model suggests that funerary activity in this structure began between 4390-4190 cal BC (3% probability) or 3795-2570 cal BC (92% probability), likely 3015-2590 cal BC (68% probability), finishing between 2855-1580 cal BC (92% probability) or 1195-1010 cal BC (3% probability), and likely 2830-2790 cal BC (3% probability) or 2745-2320 cal BC (65% probability).

Structure 10.042-10.049 is a *tholos* with two chambers, and the largest megalithic structure documented in the PP4-Montelirio sector. It is also centrally positioned in relation to the other structures in this sector and has the greatest concentration of grave goods (Mora Molina *et al.* 2013: 266)⁵. Inside were the remains of 5 individuals (Robles Carrasco and Díaz-Zorita Bonilla 2013: 371): two adult females, two adult males and one non-adult.

The infant was found in the transit area between the outer passage and the first chamber (*i.e.*, Structure 10.042) and is only represented by the distal epiphysis of the first phalanx of a foot and an unidentifiable fragment of a long bone without an epiphyseal fusion (Robles Carrasco and Díaz-Zorita Bonilla 2013: 379). Given that the preserved bone evidence is very limited, it has not been possible to determine other factors such as the position or orientation. There is no evidence of pathologies.

Two radiocarbon dates are available for Structure 10.042 (Tab. 4), obtained from the left ulna of two of the four individuals found there. The derived Bayesian chronological model (García Sanjuán *et al.* in press) suggests that the earliest burials took place between 3725-3555 cal BC (9% probability) or 3515-2875 cal BC (86% probability), and likely 3185-2880 cal BC (68% probability). The activity would have ended between 2885-2155 cal BC (86% probability) or 2045-1840 cal BC (9% probability), and likely 2880-2490 cal BC (68% probability).

Structure 10.071 is a circular pit measuring 1.73 m in diameter (Mora Molina *et al.* 2013: 269), in which the remains of at least seven individuals were found, including four adults (57.1%) and three non-adults (42.9%), deposited in three different phases⁶. Three individuals (no. 1-3), two adults and one infant, all of them in primary position and anatomical connection correspond to the initial phase (Phase I) of this structure's use. Subsequently (Phase II), a further three individuals (no. 5-7), one adult and two non-adults, were deposited above the former. Their bones are, in some instances, articulated, although this is not the case for all of them, probably because the space was reused. The final phase of use (Phase III) of this Structure is marked by the deposition of an adult individual (no. 4).

Individual no. 3, corresponding to Phase I, is an infant II aged 7 years \pm 24 months of undetermined sex whose skeleton was rather incomplete, although in primary position and anatomical connection (Fig. 2). The remains of two adult individuals (female and of undetermined sex) correspond to the same phase, with the child positioned close to the female, although it is not possible to know whether they were buried at the same time. The child lies on its right side, with bent upper and lower limbs, a north-south orientation and the head looking west. The individual has shovel-shaped incisors, a feature already documented in other funerary contexts in Valencia (Robles Carrasco and Díaz-Zorita Bonilla 2013: 384; Díaz-Zorita Bonilla 2017: 100), but there are no indications of pathologies. No grave goods were associated with this infant.



Fig. 2. Phase I of the Structure 10.071 from the PP4-Montelirio, sector of Valencia. The non-adult individual is in the upper and central part of the image. Photograph: José Peinado Cucarella.

⁵ See also García Sanjuán, L.; Cintas-Peña, M.; Díaz-Zorita Bonilla, M.; Escudero Carrillo, J.; Lucíañez Triviño, M.; Mora Molina, C. and Robles Carrasco, S. (Forthcoming): "Burial practices and social hierarchisation in Copper Age southern Spain: Analysing Tomb 10.042-10.049 of Valencia de la Concepción (Seville, Spain)". In M. Hinz and J. Muller (eds.): *Megaliths, societies, landscapes - early monumentality and social differentiation in Neolithic Europe (Conference Kiel, Germany 2015)*.

⁶ Herrero Corral, A. M. 2014: *Informe antropológico de los restos óseos humanos de la Estructura 10.071 del PP4-Montelirio (Castilleja de Guzmán, Sevilla)*. Unpublished Report. For consultation please contact the author.

Individual no. 5, corresponding to Phase II, was identified from a set of bone fragments without anatomical connection, including a skull, teeth and some long bones from the upper and lower limbs. In the absence of archaeological evidence proving otherwise, it is therefore a secondary deposition. This is an infant I individual who died aged 3 years \pm 12 months. There is no evidence of pathologies.

Individual no. 7, corresponding to Phase II, was identified from a skull and various elements of the postcranial skeleton without anatomical connection, for which reason we also consider it to be a secondary deposition. The individual would be aged between 9 and 11 years (Infant II) at the time of death. There was periostitis on a fragment of femoral diaphysis, irregular porosity in the external surface of the bone caused, in the majority of cases, by an infectious process which could have been the result of various agents. As with individual no. 3 in the same tomb, the individual has shovel-shaped incisors.

As regards material culture, only fragments of two ceramic vessels of different morphology belonging to phases II and III were found in Structure 10.071. However, they did not appear to be associated with either of the individuals identified, for which reason they cannot be considered personalised grave goods, and are thus recorded in table 2 only as "possible grave goods".

Four radiocarbon dates (Tab. 4) on teeth samples from three of the individuals in Structure 10.071 have been obtained (García Sanjuán *et al.* in press). The resulting Bayesian chronological model suggests that the burials in this structure began between 3175-2870 cal BC (93% probability) or 2825-2775 cal BC (2% probability), likely 2950-2880 cal BC (68% probability). The burials ended between 2885 and 2465 cal BC (95% probability), likely between 2880 and 2715 cal BC (68% probability).

Structure 10.005 is a negative structure without stone elements, the dimensions of which are unknown as the available site plan is not altogether clear⁷. The anthropological study of this structure (Robles Carrasco *et al.* 2017), suggests a MNI=2, an infant and an adult. The on-site photographic documentation reveals likely anatomical connection of the lower limbs of the adult, next to which lies the cranium. However, given that the remains were not recovered following a thorough anthropological protocol, a primary deposition cannot be confirmed, for which reason we consider it to be secondary. No objects of material culture identifiable as grave goods were recovered.

The infant is represented by cranial fragments (including maxilla), thirty teeth, a mandible, vertebral fragments, ribs, the right clavicle, the scapula, likely the right tibia, a fragment of a likely metacarpal and fragments of long bones. Following Buikstra and Ubelaker's (1994) stages of dental eruption, it would be an infant II, aged 8 years \pm 24 months. Two morphological features are apparent: on the one hand, a shovel-shaped incisor (left upper incisor 1, or tooth 21), which also presents divided cingulum; on the other, a normal anatomical feature, but worthy of mention, is apparent on the left maxillary lateral incisor, below the cingulum: a so-called 'black hole', 'lingual pit' or lingual cervical lesion, the preferred site for cavities. However, no oral pathology is observed, except for a light build up of plaque in the vestibular area of the left permanent mandibular second molar.

Structure 10.012 is a negative structure without stone elements and an irregular plan, measuring 1.88 m at its longest point and 1.40 m at its widest. The anthropological study (Robles Carrasco *et al.* 2017), suggests a MNI=5, three young adults and two non-adults whose sex could not be estimated due to the absence of differential anatomical traits. As occurred in Structure 10.005, certain anatomical connections are observed in the field documentation but, once again, it is not possible to be sure these burials were primary depositions, for which reason we have deemed it more appropriate to classify them as secondary in the table.

Individual no. 3 is accounted for by cranial fragments, dentition and postcranial elements. The preserved dentition includes 19 permanent teeth, 10 maxillary and 9 mandibular. The root apices of some of the teeth reveal the beginning of the last phase of formation of the tooth's root. This indicates an age of around 12 years \pm 30 months (without deciduous teeth, the eruption of the permanent second molar having already occurred, many of the root tips being still incomplete and the crown of the third molar still undergoing formation: Ramey Burns 2008).

Individual no. 4 is accounted for by 23 teeth from the mixed dentition stage, when the permanent teeth are yet to erupt. There are 10 maxillary teeth, of which five are deciduous and five are permanent, and 13 mandibular teeth, of which seven are deciduous and six are permanent. The classification of these teeth and the study of their degree of formation indicate that this was a child of 4 years \pm 12 months whose deciduous dentition (including the root tips) was already complete. The crown of the permanent second molar was beginning to form and all the permanent teeth, except for the third molar, are larger in size (Ramey Burns 2008). Although it is not possible to individualize the remains, other postcranial bone elements were found in this structure which would be compatible with this individual.

⁷ Mora Molina, C. 2011: *Las estructuras de la Edad del Cobre del Sector PP4-Montelirio del sitio arqueológico de Valencina de la Concepción-Castilleja de Guzmán (Sevilla)*. University of Sevilla, Unpublished Masters Dissertation, Appendix 1, 64. For consultation please contact the author.

No pathologies were observed in either of those non-adult individuals. In the adults, oral diseases have been observed, such as plaque and a curvilinear sulcus in incisors whose etiology is still being studied. Furthermore, in the dentition of the adult individuals, nonmetric traits are observed such as shovel-shaped incisors and P point of the protostylid or *foramen secum*.

The available information for this structure identifies no elements of material culture that could be classed as funerary goods. However, in the Archaeological Museum of Seville, a sea shell is attributed to this structure, as well as 12 fragments of wheel-thrown pottery and an iron object, all of which are undoubtedly the result of alteration or reuse in Antiquity as observed in other structures in this sector (Mora Molina *et al.* 2013). However, these elements cannot be clearly associated with any of the individuals, for which reason they appear in the table as “possible grave goods”.

Structure 10.035 is a negative structure of irregular plan and without stone elements, measuring 2.15 m at its longest and 1.68 m at its widest. It contained no artefacts. The study of the bone remains (Robles Carrasco *et al.* 2017) points to a MNI=2. The preserved teeth suggest Individual 1 is an adult aged 20-35 years, while Individual 2 is an Infant II aged 7-10 years. In the on-site graphic documentation, the skull and the upper and lower limbs of the adult are observed to be partially articulated. However, there are no photographs of the infant, the only surviving elements being the teeth. While we can say the adult was probably a primary deposition, we do not have such evidence for the child, for which reason it is recorded in the table as secondary deposition.

Individual no. 2 is only represented by two incisors, one left maxillary central and the other, right mandibular lateral. Both present enamel hypoplasia in the form of very fine horizontal sulcus lines. On the left maxillary central incisor, tightly packed, multiple horizontal sulcus lines are observed, identified as highly defined perikymata, except for the deepest grooves which are recorded as hypoplastic enamel defects. These develop between the first and second year of life.

Structure 10.080 is a negative structure with stone elements, namely small covering slabs. Its plan is irregular, measuring 1.95 m at its longest by 1.30 m at its widest. In the photographs taken on site, it is possible to make out a skull and a small cluster of long bones running parallel to each other, but one cannot be sure these were articulated. The anthropological study for this structure indicates a MNI=2: an adult (probably female) and a juvenile individual of undetermined sex (Robles Carrasco *et al.* 2017).

The non-adult is accounted for only by fragments of the distal and proximal epiphyses of a radius, which appear to be undergoing fusion, or to have recently

been fused, since the fracture follows the metaphyseal line of the epiphysis. This suggests that this individual would be an adolescent (<16 years). In light of the lack of anatomical connections and the absence of the majority of skeletal elements, we consider this to be a secondary deposition.

In Structure 10.080, between 10 and 15 objects of material culture were identified, including eight pieces of pottery, two sea shells (one of them inside one of the ceramic vessels), one blade, one arrowhead and one needle or bone awl. It is not possible to clearly associate any of these elements with either the adult or the juvenile.

3.8. Structure 1 on Calle Trabajadores no. 14-18

The excavation at Calle Trabajadores no. 14-18 in Valencina in 2008 resulted in the discovery of 30 predominantly circular negative structures of various sizes and depths (Pajuelo Pando and López Aldana 2013). Structure 1 contained the anthropological remains presented here. It and 14 other structures are in the central, stratigraphically most complex sector of the excavated area.

Structure 1 was *c.* 30 cm deep with a diameter around 4 m. In the upper part of the deposit there were nine human skulls, an articulated forearm and an articulated patella, tibia, fibula and foot (Pajuelo Pando and López Aldana 2013: 161). The human bone remains are mixed with a large volume of faunal remains, as well as other archaeological materials, and constitute a single phase of use (Fig. 3).

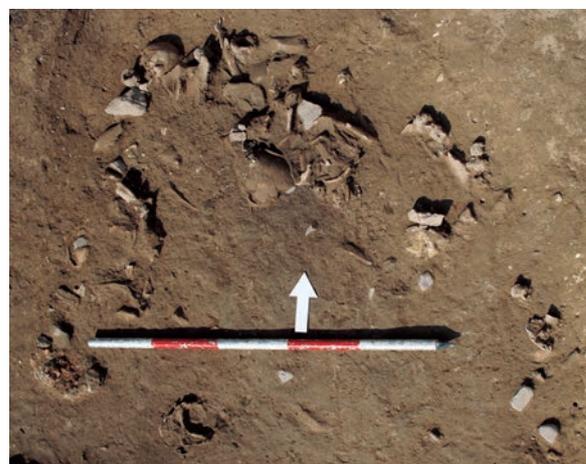


Fig. 3. General view of EU 2 from Structure 1, Calle Trabajadores no. 14-18, sector of Valencina. Human remains, pottery and fauna appear commingled and forming a semicircular pattern. Photograph: Ana Pajuelo Pando.

11 radiocarbon dates (Tab. 4) have recently obtained for Structure 1, corresponding to two disjointed human skulls, three vertebrae from three different individuals and two partially articulated individuals, as well as two fragments of articulated pig skeleton and the disarticulated remains of a sheep (García Sanjuán *et al.* in press). The Bayesian model of these radiocarbon determinations suggests that the burial of human remains in Structure 1 on Calle Trabajadores no. 14-18 would have begun between 2490-2460 cal BC (95% probability), likely 2480-2465 cal BC (68% probability), and would have finished between 2475-2445 cal BC (95% probability), likely 2470-2455 cal BC (68% probability). The burial of human remains in this structure spanned between 1 and 35 years (95% probability), likely 1-15 years (68% probability). It is therefore statistically possible that all the dated individuals died in a single event. This would have significant implications for its social and cultural interpretation (García Sanjuán *et al.* in press).

The excavators highlighted the scarcity of postcranial skeleton elements as well as the near-complete absence of elements in anatomical connection. However, Ana Mercedes Herrero Corral's anthropological study⁸ has revealed a situation somewhat different to that described by excavators based on on-site observations: two further articulations were also documented, one a radiocarpal joint and the other, the talocrural joint. To estimate the MNI we treated the assemblage as if it were a single depositional event. The most frequent anatomical elements, which enabled us to estimate the MNI, were the mandible and upper maxilla. There is a total of four complete upper maxilla bones (along with two right and three left hemi-maxilla bones) and six complete mandibles (and two right and one left hemi-mandibles). After observing the inconsistencies between these, the MNI count in this structure was estimated to be 12, of which three would be adults and nine non-adults.

The only well-preserved human remains from Structure 1 on Calle Trabajadores no. 14-18 belong to Individual 1, represented by a complete skull (Fig. 4) with sutures in a very advanced stage of fusion, nearly practically invisible in some regions of the skull, so it must be aged 8 years \pm 24 months (Ubelaker 1978)

In the remainder of the bone collection, the state of eruption and calcification of the teeth made it possible to distinguish various age groups: one Infant I individual, aged around 3, four Infant II individuals, aged between 6 and 8, and four teenage individuals, of which three would be around 12 years old and the fourth, about 15. One of the teenage individuals is male, to judge by the morphological characteristics of a very well preserved coxal bone.

Pathologies are relatively scarce, except for some non-specific indicators of physiological stress, such as *cribra orbitalia* or enamel hypoplasia, present in individuals 1 and 3 respectively. However, other non-pathological indicators provide information of great interest about the funerary ritual. Several cranial skeletal remains show clear signs of having been in contact with fire, at least partially. The discolorations, which are not uniform, are brown-black in colour which would suggest exposure to fire at a temperature of between 250 and 350°C (Etxeberria Gabilondo 1994: 114). Furthermore, anthropogenic cut marks have been identified on a large number of bone fragments, both on the cranial and postcranial skeleton. They are generally straight, shallow lines, more or less parallel to each other, which appear in varying numbers on ten cranial fragments, from both adults and non-adults (Fig. 5), and on vertebrae and



Fig. 4. Skull of individual I from Calle Trabajadores no. 14-18, sector of Valencina. It belongs to a non-adult with an estimated age of 8 years \pm 24 months. Photograph: Ana Mercedes Herrero Corral.



Fig. 5. Parietal bone with cut marks of a non-adult individual from Calle Trabajadores no. 14-18, sector of Valencina. Photograph: Ana Mercedes Herrero Corral.

⁸ Vide n. 6.

even on a radius. The cuts on the skulls mostly appear on the frontal and temporal bones, and their typology is consistent with so-called scalping marks (Botella López *et al.* 1999: 52; Campillo Valero 2001: 298-299). The cuts on the first cervical vertebrae and the neck of the radius are currently under study, but they could reflect the dismembering and disarticulation of these anatomical units.

Although there were elements of material culture in Structure 1, these have not been identified as grave goods, as it was impossible to associate any of them with the individuals.

4. DISCUSSION

As mentioned above, there are currently 179 individuals at Valencina who have been identified and studied using a standard bioarchaeological method. Of them 134 (74.9%) are adult, 39 (21.8%) non-adults and 6 (3.4%) of undetermined age. Therefore, for the first time, we have a quantitatively robust and methodologically reliable database for the analysis of the non-adult population represented in this Copper Age mega-site.

As shown by the radiocarbon chronological data (Tab. 4) described in the previous section, a first problem to consider is that these 39 non-adult individuals are distributed relatively uniformly across a period of nearly 1000 years, between *c.* 3200 and 2300 cal BC. The 10 non-adult individuals from La Huera correspond to the site's oldest phase of frequentation or occupation, approximately between the 32nd and 29th centuries cal BC, while the 10 individuals accounted for to date in the PP4-Montelirio sector correspond to a more advanced phase (29th-28th centuries cal BC), and the nine individuals from Calle Trabajadores no. 14-18 date to the 25th century cal BC, during the site's most recent phase of activity. The generalisations proposed below in relation to the non-adult population consider the data available to be representative of a global population sample, but in reality many of the individuals discussed here were not contemporaneous. Future research will enable us to make clarifications and refinements with regards to the demographic and social evolution of populations during the Copper Age, but for the time being we shall be content with a degree of global generalisation which treats this period as a single temporal block.

4.1. Demography

A first point of interest is the percentage of the non-adult population in the sample used: 21.8%. In fact, this figure conceals the large variability that this

demographic segment presents when considering the funerary structures one by one. As observed in the previous pages, the percentage of non-adult individuals in Valencina oscillate between 75% documented in Structure 1 of Calle Trabajadores 14-18 or 50% in the artificial cave of La Huera, and 0% in the Montelirio *tholos* (Pecero Espín 2016) and in many other funerary structures.

Although there are not many other Iberian Copper Age settlements which we can compare these percentages against, the data available (Tab. 5) in effect corroborates the large variability of the non-adult population as a fraction of the general population, both in individual funerary structures and settlements. The percentages for the non-adult population vary from 12.9% in Tomb 3 of La Pijotilla (Badajoz) (Díaz-Zorita Bonilla 2017: 53) to 53.35% in Iruaxpe I (Guipúzcoa, Basque Country) (Etxeberria Gabilondo 1987: 78) (Tab. 5), but in general, the known data is between 10 and 50%. A recent study (Cunha *et al.* 2015) centred on non-adult individuals in Late Prehistoric collective tombs in southwest Iberia identified percentages between 10.47% and 58.24% (Cunha *et al.* 2015: 184).

Censuses conducted on hunter-gatherer populations suggest percentages of 51.5% of people aged up to 19 in the case of the Aché (Paraguay), 45.65% in the Agta (Philippines), 48.44% among the Hadza (Tanzania) or 38.46% among the !Kung (South Africa) (Chamberlain 2006: 59). Generically speaking, the estimations for demographically archaic societies situate the percentage of infant mortality between 30% and 70% (Bocquet and Masset 1977). Furthermore, the majority of the individuals comprising this percentage would have been younger than 5 years old (Weiss 1973, cited in Lewis 2007), precisely the least represented age group in Valencina, due to different (or absent) funerary practices for such individuals, taphonomic processes, bad archaeological praxis in the recovery of infant individuals or a combination of all these factors. Other demographic estimations place the percentage of non-adult individuals which would be expected to be found in Prehistory at around 40%-50% (Rinne 2001), never below 20% in relation to the total deaths (Lohrke *et al.* 2002).

Therefore, a representative sample of the demographic structure of the Copper Age population that frequented or inhabited Valencina should not present proportions of non-adults below 20% of the total buried individuals. But that is clearly not the case: the Montelirio *tholos* is completely lacking in non-adults, for example. Low percentages of non-adults are often identified in the Iberian Copper Age (*e.g.*, Tomb 3 of La Pijotilla [Díaz-Zorita Bonilla 2017: 53] or Cova da Moura [Silva 2003]), not reaching 40% in many other instances.

The data used here (and let us stress again that we only used features for which methodologically sound

SITE	MNI	ADULTS	NON-ADULTS	UND	REFERENCES
Valencina	179	134	39 (21.8%)	6	In this paper
La Pijotilla (Tomb 3)	178	155	23 (12.9%)	0	Díaz-Zorita Bonilla 2017: 53
Iruaxpe I	15	7	8 (53.3%)	0	Etxeberria Gabilondo 1987: 78
Marroquíes Bajos	171	129	42 (24.6%)	0	Martín-Flórez <i>et al.</i> 2011: 595
Urtao II	61	43	18 (29.5%)	0	Etxeberria Gabilondo 1989: 66
Cuevas Norte Alicante	63	27	36 (57.1%)	0	Pérez Villa 2014: 517
Feteira II	68	42	26 (38.2%)	0	Waterman 2012: 122
Bolores	22	11	11 (50%)	0	Waterman 2012: 122
Paimogo I	413	290	123 (29.8%)	0	Silva 2003: 57
Cova da Moura	90	75	15 (16.7%)	0	Silva 2003: 57
Cabeço da Arruda I	19	14	5 (35.7%)	0	Silva 2003: 57
Lapa da Rainha II	6	4	2 (33.3%)	0	Waterman 2012: 122
Zambujal	5	3	2 (40%)	0	Waterman 2012: 122
<i>Tholos</i> da Borracheira	6	3	3 (50%)	0	Waterman 2012: 122

Tab. 5. Demography (age) Iberian Chalcolithic. MNI: minimum number of individuals. UND: undetermined. Source: the authors.

anthropological interpretations exist) suggest a percentage slightly greater than 20% of non-adults for Valencina's burial record. Therefore, it seems reasonable to conclude that non-adult individuals are 'missing' in said record, especially individuals younger than 5. Specifically, a total of 7 individuals younger than 5 or likely so (Tabs. 2 and 3) have been recorded, from the sectors of La Cima, La Huera, PP4-Montelirio (structures 10.031, 10.071 and 10.012) and Calle Trabajadores no. 14-18, accounting for 3.9% of the total, very far from the expected figure for a society with archaic demographic trends and mortality rates.

All this suggests, firstly, that the funerary deposits identified in Valencina (and possibly in other Copper Age settlements) reflect very diverse social circumstances and burial practices. Sometimes they are representative of the patterns of natural mortality of the population (La Huera), while on other occasions, they could represent special, probably exceptional social scenarios (Calle Trabajadores no. 14-18) or specific collectives that, due to their own sociological configuration, would not have included children and juveniles (Montelirio *tholos*). Secondly, the smaller than expected percentage of non-adults at Valencina may reflect differentiated funerary practices between adults and non-adults but, as Beck (2016) points out "issues surrounding the MNI counts of adults and non-adults,

the nature of the specific osteological remains in the record, and the primary or secondary character of the depositions may also affect this disparity".

4.2. Primary vs Secondary Burials

In Valencina, of the 39 non-adult individuals, five are represented by very scarce remains (La Alcazaba, and structures 10.031, 10.042-10.049, 10.035 and 10.080 in PP4-Montelirio sector), and nine by cranial elements and mandibles (Calle Trabajadores no. 14-18). There is no specific information on another seven individuals (Los Cabezuelos and Divina Pastora-Señorío de Guzmán), with the remainder presenting both cranial and postcranial elements. Such scant preservation of the remains must be explained both as a result of post-depositional factors and by the nature of the burials themselves. In our census, and following the assessments undertaken by excavators, there are 19 secondary and 18 primary inhumations of non-adult individuals, with the remaining two (Los Cabezuelos and La Gallega) undetermined, since there is no mention in the available publications of the recorded skeletal position, nor of the burial characteristics.

This data, however, must be interpreted with caution. In some excavation reports a somewhat mechanistic

parallel is drawn between the concepts of “articulation” and “primary burial”, on the one hand, and “absence of articulation” and “secondary burial”, on the other. The decomposition of a corpse in a single phase is not inconsistent with its subsequent disarticulation, whether due to taphonomic or anthropogenic reasons (reuse of the tomb, for example) and, although the bones in anatomical connection generally correspond to a primary deposit, not all primary depositions are found in clear articulation (Boulestin and Duday 2005: 27).

In the instance of the individuals recovered at La Cima and Structure 10.071 (two of three) and 10.005, we cannot be entirely certain that they were secondary burials, as it is possible that the corpses were deposited and decomposed in the same structure where the bones were discovered, with the bones being moved subsequently. However, the absence of numerous bone elements (especially bones of the hands and feet) in all these structures has led us to categorise them as secondary. Lastly, the scarcity of bones in La Alcazaba and in structures 10.042-10.049, 10.012 and 10.080 of the PP4-Montelirio sector, on the one hand, together with the clear selection of anatomical elements in Calle Trabajadores no. 14-18, on the other, are the main reasons behind such deposits being defined as secondary. Something similar occurs in structures 10.005 and 10.012 in the PP4-Montelirio sector, where certain articulations in the adult individuals are observed in the field documentation. It is not possible, however, to see any articulation among the non-adults, so they have been interpreted as secondary deposits.

On the other hand, other collective structures containing non-adults and displaying characteristics similar to those mentioned above are described as primary depositions in excavation reports. In the Divina Pastora/Señorío de Guzmán sector, for example, the absence of certain bone elements was explained as the consequence of “very intense depositional processes” in primary burials (Lacalle Rodríguez *et al.* 2000: 344). Similarly, the non-preservation of bones such as the carpal, metacarpal, tarsal, metatarsal, phalanges, ribs and vertebrae at La Huera has been explained not by the possible secondary nature of the burials, but rather by the sedimentological context of the remains (carbonated limestone), highly aggressive in relation to the preservation of bone material (Méndez Izquierdo 2013: 301).

It is important not to lose sight, therefore, of how one archaeological situation can have two very different interpretations. In fact, precisely the absence of elements such as vertebrae, ribs or bones of the hands and feet is normally understood as the result of a secondary deposition (Beck 2016: 62).

In any case, accepting the primary nature of the depositions in Divina Pastora-Señorío de Guzmán and

La Huera, up to 48.7% (MNI=19) of the non-adult individuals would have received secondary deposition. Furthermore, it is important to consider that in certain structures, the representation of non-adults is scarcely evident, especially considering the burial characteristics of the adults. Thus, for example in Structure 10.042-10.049, the most remarkable in the PP4-Montelirio sector and one of the most important in all of Valencina⁹, the remains of the non-adult individual from Structure 10.042 consist merely of a fragment of phalanx and a fragment of an undetermined long bone (Robles Carrasco and Díaz-Zorita Bonilla 2013: 379). On the other hand, the adult discovered in the base layer of Structure 10.049 is fully articulated and has significant grave goods, clearly a primary deposition. Similarly, in Structure 10.035 at PP4-Montelirio the non-adult individual is represented by two teeth, while the adult presents a full complement of partially articulated cranial and postcranial elements. Likewise, at La Alcazaba the Infant I is represented by a single rib fragment.

Although it is true that the sample analysed here is small, the significant differences in quantity and preservation in the adult and non-adult remains do not seem explicable only through taphonomic factors: ideological principles and burial practices also seem to apply. Whether the apparently differentiated depositional practices for adults and non-adults at Valencina is characteristic of the Iberian Copper Age as a whole is a question for further research.

4.3. Living conditions

The data compiled in this study also enable us to evaluate the living conditions of the non-adult population. Pathologies are not specifically alluded to in all the excavation reports that we consulted. In our dataset (Tab. 6), information about pathologies is missing for 16 of the 39 individuals under consideration. In the remaining cases, 10 did not present pathological evidence of any type, while 4 showed signs of tooth wear (La Cima and Structure 10.031), light build up of plaque (Structure 10.005), enamel hypoplasia (Structure 10.035; Calle Trabajadores no. 14-18) and *cribra orbitalia* (Calle Trabajadores no. 14-18). In the case of the remains recovered in Calle Trabajadores no. 14-18, the characteristics of the record, a secondary collection, do not enable them to be differentiated individually.

Individual no. 1 from La Cima (~5 years) presented, according to the authors of its study, considerable tooth wear, the result of chewing food with abrasive

⁹ Vide n. 5.

PATHOLOGY	NO. INDIVIDUALS
Yes	4
No	10
ND	16
TOTAL	30*

Tab. 6. Presence of pathologies in non-adults individuals from Valencina de la Concepción-Castilleja de Guzmán. Source the authors
*Some of the remains from Calle Trabajadores (MNI non adults=9) presents pathologies but it is not possible to associate them to particular individuals.

particles (Alcázar Godoy *et al.* 1992: 22). Likewise, the deciduous upper incisors of individual no. 3 from Structure 10.031 (~6 years) present evidence of relatively pronounced wear considering the age of the individual (Robles Carrasco and Díaz-Zorita Bonilla 2013: 383). Although in principle these two cases do not appear to be of great statistical relevance within the context of the 39 individuals considered here, it is important to note that for many of the remaining 37 infant individuals the published reports make no specific mention to this problem. In addition, that the pathologies present are predominantly dental has to be related to a better preservation of elements belonging to the craniofacial block, particularly the hardness and greater resistance of tooth enamel to taphonomic processes, and not necessarily to a greater prevalence of oral pathologies.

Individual no. 7 from Structure 10.071 presented periostitis in a femur, an inflammation attributable to an infectious process with various possible origins. Within the sample studied here, no clear instances of trauma or violence have been identified, although one of the skull fragments with scraping marks from Structure 1 on Calle Trabajadores no. 14-18 belongs to a child, suggesting that the remains of at least one non-adult individual received this 'special' treatment, like the adults found in this complex structure.

In terms of nonmetric traits, there are three infant subjects with shovel-shaped incisors, specifically one from Structure 10.005 (~8 years) and individual no. 3 (~7 years) and no. 7 (9-11 years) from Structure 10.071 of the PP4-Montelirio sector. This trait is observed in a certain number of adult individuals in Valencina and seems to constitute a recurring characteristic in the population buried at this site¹⁰.

¹⁰ When present, shovel-shaped incisors can indicate correlation with other populations (contact, migration); when prevalent in a community or set of communities they may indicate a trend to in-breeding. They therefore relate to living conditions insofar they inform us about the degree of migration and/or endogamy-exogamy within a given set of communities.

4.4. Context and social dimension

All the known remains corresponding to non-adults in Valencina have appeared in contexts in which adults are also present (Tabs. 2 and 3 and Fig. 6). 20 of the non adults are accompanied by both male and female adults, three by a female (La Cima, La Gallega and PP4-Montelirio Structure 10.080) and 16 either by females and individuals of undetermined sex (Structure 10.071 and Calle Trabajadores no. 14-18) or exclusively by individuals of undetermined sex (Structures 10.005, 10.012 and 10.035). Therefore, it is clear that non-adult individuals were always buried either in the company of adults or in structures in which adults were also buried. In contrast, there are numerous contexts in which there are only adults: Tomb B of Los Cabezuels, Tombs 2 and 4 of Divina Pastora/Señorío de Guzman, Cerro de la Cabeza, La Perrera, the Montelirio *tholos*, El Algarrobilllo, Depósito de Agua and structures 10.073, 10.075-78 and 10.044 of PP4-Montelirio (Tab. 1).

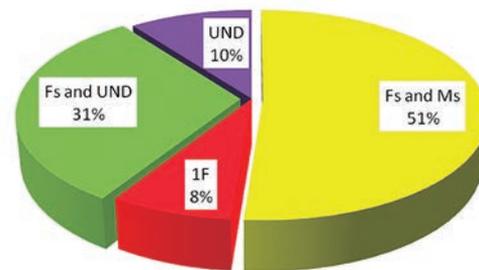


Fig. 6. Association of infant individuals with adult ones. Fs and Ms: females and males; 1 F: one female; 1 M: one male; Fs and UND: females and undetermined; UND: un-determined.

Moreover, as regards the type of funerary container, a total of 11 non-adult individuals (20 if we include Calle Trabajadores no. 14-18) were deposited in negative features, 9 in megalithic structures and 10 in artificial caves (Tab. 7), so that there is no tendency

TYPE OF STRUCTURE	NO. INDIVIDUALS
Negative structure	11 (or 20 with Calle Trabajadores no. 14-18)
<i>Tholos</i> /megalithic structure	9
Artificial cave	10
TOTAL	39

Tab. 7. Distribution of non-adult individuals from Valencina according to the type of container. Source: the authors.

for infants to appear in one type of container over another. If we consider megalithic vs. non-megalithic structures (a potentially significant distinction given that the construction of megalithic structures required higher labour investments), 30 of the 39 non-adults were deposited in non-megalithic contexts, either pits or artificial caves, as opposed to 9 in megalithic burials. On the other hand, 58 of the adults were buried in megalithic structures, in contrast to a total of 76 found in non-megalithic structures. The application of the χ^2 test to the resulting contingency table 8 gives a result rejecting of the null hypothesis at the 99% significance level. Once again, this indicates that, as a general rule, non-adults were afforded funerary treatments that differed from those of adults.

AGE	MEGALITHIC STRUCTURE	NON MEGALITHIC STRUCTURE	TOTAL
ADULTS	58	76	134
NON-ADULTS	9	30	39
TOTAL	67	106	173*

Tab. 8. Contingency table for χ^2 test. Distribution of adults and non-adults individuals in megalithic or non-megalithic structures from Valencina. *6 individuals of undetermined age of Los Cabezuelos and 10.042-10.049 structure have not been included. Source: the authors.

As regards placement of non-adult burials within the settlement, application of Moran's I test to the distribution of localities shown in figure 1 gives a result (1.00017) that reflects a concentrated distribution pattern. This is the result of a greater number of burials in the south-southeast area of the site (27 individuals in La Huera, PP4-Montelirio, Divina Pastora/Señorío de Guzmán and Los Cabezuelos) in contrast to the central-north area (12 individuals in Calle Trabajadores no. 14-18, La Cima, La Gallega and La Alcazaba). Naturally, this result only reflects the aggregate spatial distribution of the infants since, as previously stated, all the contexts involved present disparate chronologies that span from the 32nd century cal BC (La Huera) to the 24th century cal BC (Calle Trabajadores no. 14-18) (Tab. 4).

In terms of social significance, the first point worth highlighting is that none of the non-adult individuals studied here had associated grave goods (Tab. 9). Structures such as La Huera or 10.042-10.049, 10.071 (2 of them), 10.012 and 10.080 present elements of material culture interpreted as grave goods, but except for the male adult individual buried in the lower layer of Structure 10.049, it is not possible to clearly asso-

ciate grave goods with specific individuals, for which reason the material culture in its entirety should be considered to be associated with the social group present in the tomb. For another 17 non-adult individuals (La Alcazaba, La Cima, La Gallega, PP4-Montelirio Structures 10.031, 10.071 —1 of them—, 10.005, 10.035, 10.080 and Calle Trabajadores no. 14-18) no artefacts interpretable as grave goods were recovered, whereas in the remaining seven (Los Cabezuelos and Divina Pastora-Señorío de Guzmán), there is no data in the publications in this respect.

Thus, there is no context in Valencina in which a non-adult individual presents a clear association with individualised grave goods. In some cases we could talk about 'collective' grave goods which would have also been associated with adult as well as non-adult individuals. In contrast, there are clear examples of adult individuals associated with individualised grave goods: the young male from the lower layer of Structure 10.049 is the clearest example¹¹. This suggests that, in Copper Age Valencina, there were no individuals who enjoyed high social statuses ascribed to them by birth, as seems to be the case in some Argaric Bronze Age communities (Contreras Cortés 2000; Contreras Cortés and Cámara Serrano 2002; Lull Santiago *et al.* 2004; Lull Santiago *et al.* 2005). This is quite significant in the context of the debate over the social complexity of Copper Age communities in the lower Guadalquivir valley as it points to the inexistence of social stratification or class organisation among the communities that occupied and/or frequented Valencina.

Overall, the consideration, 'importance' or social 'value' of non-adult subjects at Copper Age Valencina could have been variable. The case of Structure 1 on Calle Trabajadores no. 14-18 stands out in a unique way: (i) Firstly, for its chronology (Tab. 4) which suggests the possibility of a single burial event with the

GRAVE GOODS	NO. INDIVIDUALS
Yes	0
No	17
ND	7
Possible	15
TOTAL	39

Tab. 9. Presence or absence of association of non-adults and grave goods from Valencina. Source: the authors.

¹¹ *Vide n. 5.*

simultaneous death of all the dated individuals; (ii) secondly, for being one of the sectors showing what perhaps was some of the latest activity at the site (25th century cal BC) and for also being associated with one of the largest collections of Beaker pottery in it; (iii) thirdly, for presenting an unusually high proportion of infants reaching 75% (iv) and finally, because a significant quantity of remains, including at least the skull of a child, show evidence of specific treatment, such as burning and scraping. Is it merely a coincidence that the funerary structure with the highest number of non-adult individuals found in Valencina presents all these 'special' traits, as well as a chronology in what seems to be the site's phase of decline?

5. CONCLUSION

This study is the first ever approach to the demography, living conditions and social position of the known non-adult individuals in the Copper Age mega-site of Valencina. Although small, the sample of 39 individuals suggests several highly interesting patterns for furthering our knowledge of Copper Age society.

1) Firstly, the percentage of these individuals seems lower than would be expected according to natural mortality patterns in a demographically archaic population, indicating that not all non-adult subjects ended up in the archaeologically-known burial record. In fact, there are numerous funerary structures in which no non-adult individuals were found. Taken together with other factors, this indicates that funerary deposits reflected varying events and circumstances and corresponded to diverse social groups, some of which may not have included either children or teenage individuals and therefore, not being representative neither of natural mortality patterns nor the social structure. The particularly high number of non-adult individuals in Structure 1 on Calle Trabajadores no. 14-18 could be related to the distinctly unique character of this structure and the fact that it dates to the settlement's phase of decline, which could suggest that under special circumstances, unknown to us, but which appear to indicate a cultural and social crisis, the funerary representation of this segment of the population might have increased.

2) The deposition patterns are evenly distributed, with primary and secondary burial comprising around 50% each. The fundamental problem concerns the interpretation of those remains in collective structures reused over a certain period of time, in which bone elements were moved. There is no doubt that the communities which frequented and/or inhabited Valencina carried out primary burials, as there is evidence of such in Structure 10.049, the Montelirio *tholos*, the Parcela

Municipal, etc. From a methodological perspective, burials in anatomical connection and with the majority of bone elements (including phalanges, ribs, vertebrae and other small bones) would be interpreted as primary depositions, while those deposits with non-articulated bones would have to be considered secondary. Otherwise all depositions of the dead may be interpreted as primary burials without any archaeological evidence. Unfortunately, in the case of Valencina, it is not currently possible to make a detailed comparison of the type of bone elements represented as proposed by Beck (2016), either because the available publications do not provide sufficiently in-depth descriptions or because, in some instances, publications simply do not exist. Furthermore, it is not always possible to individualise the bone remains.

3) As regards social position, non-adult individuals are always with (or associated with) adults and they were never accompanied by individualised grave goods, although there are adult individuals with personalised grave goods (admittedly very few). Both observations suggest that there were no children endowed with an ascribed high social status deserving of individualised and/or 'special' burials, as would be expected in stratified or class-based societies (and as it seemingly occurs in the Argaric Bronze Age). The significance tests indicate that non-adult individuals were preferentially buried in negative, rather than megalithic, structures: although there are child and teenage individuals in megaliths (for example, in Structure 10.042), they reveal a statistically clear difference with adults and, moreover, they do not feature in the record from the great Montelirio *tholos*.

Overall, although arguably limited in scope, these conclusions provide a series of prospects for furthering our knowledge of Copper Age societies. Future studies may corroborate or contradict these evaluations, but in any case, it is of the utmost importance that progress is made in the study of the human bone record of this large settlement, as it holds highly significant keys for a better understanding of this time period.

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BIBLIOGRAPHY

- Alcázar Godoy, J.; Martín Espinosa, A. and Ruiz Moreno, M. T. 1992: "Enterramientos calcólicos en zona de hábitat". *Revista de Arqueología* XII, 137: 18-27.
- Alemán Aguilera, I.; Irurita, J.; Valencia, A. R.; Martínez, A.; López-Lázaro, S.; Viciano, J. and Botella, M. 2012: "Brief communication: the Granada osteological collection of identified infants and young children". *American Journal of Physical Anthropology* 149 (4): 606-610.
- Aliaga Almela, R.; Liesau von Lettow Vorbeck, C.; Blasco Bosqued, C.; Ríos Mendoza, P. and Galindo, L. 2015: "Infant burials during the Copper and Bronze Ages in the Iberian Jarama River Valley: a preliminary study about childhood in the funerary context during III-II millennium BC". In M. Sánchez Romero, E. Alarcón García and G. Aranda Jiménez (eds.): *Children, spaces and identity: Childhood in the past* Monograph Series 4, Oxbow. Oxford: 243-261.
- Arteaga Matute, O. and Cruz-Auñón Briones, R. 1999a: "Una valoración del patrimonio histórico en el campo de silos de la finca El Cuervo-RTVA (Valencina de la Concepción, Sevilla). Excavación de urgencia de 1995". *Anuario Arqueológico de Andalucía/1995*. Junta de Andalucía. Sevilla: 608-616.
- Arteaga Matute, O. and Cruz-Auñón Briones, R. 1999b: "El sector funerario de Los Cabezuelos (Valencina de la Concepción, Sevilla). Resultados preliminares de una excavación de urgencia". *Anuario Arqueológico de Andalucía 1995* III. Junta de Andalucía. Sevilla: 589-600.
- Ayala Juan, M. M.; Alessan, A.; Safont, S.; Jiménez Lorente, S. and Malgosa Morera, A. 1999: "Los enterramientos infantiles en la Prehistoria Reciente del Levante y Sureste Peninsular". *Anales de Prehistoria y Arqueología* 15: 15-28.
- Basabe, J. M. and Benassar, I. 1982: "Restos humanos de los yacimientos de Chichina y Valencina de la Concepción (Sevilla)". *Homenaje a Concepción Fernández Chicarro*. Ministerio de Cultura. Madrid: 75-92.
- Baxter, J. E. 2005: *The Archaeology of Childhood. Children, gender and material culture*. Altamira Press. Walnut Creek.
- Beck, J. 2016: "Part of the family: age, identity and burial in Copper Age Iberia". In A. J. Osterholtz (ed.): *Theoretical approaches to analysis and interpretation of commingled human remains*. Bioarchaeology and Social Theory, Springer. New York: 47-73.
- Bocquet, J. C. and Masset, C. 1977: "Estimateurs en paléodémographie". *Homme* 17 (4): 65-90.
- Botella López, M.; Alemán, I. and Jiménez, S. 1999: *Los huesos humanos. Manipulaciones y alteraciones*. Bellaterra. Barcelona
- Boulestin, B. and Duday, H. 2005: "Ethnologie et Archéologie de la mort: de l'illusion des références a l'emploi d'un vocabulaire". In C. Mordant and G. Depierre (eds.): *Les pratiques funéraires à l'âge du Bronze en France, Actes de la table ronde de Sens-en-Bourgogne (Yonne)*. Éditions du CTHS. Paris: 17-30.
- Buikstra, J. E. and Ubelaker, D. H (eds.) 1994: *Standards for data collection from human skeletal remains: Proceedings of a Seminar at the Field Museum of Natural History*. Arkansas Archeological Survey 44, Fayetteville. Arkansas.
- Campillo Valero, D. 2001: *Introducción a la paleopatología*. Bellaterra. Barcelona.
- Chamberlain, A. T. 2006: *Demography in Archaeology*. Cambridge University Press. Cambridge.
- Contreras Cortés, F. (ed.) 2000: *Proyecto Peñalosa. Análisis histórico de las comunidades de la Edad del Bronce del Piedemonte Meridional de Sierra Morena y Depresión Linares-Bailén*. Arqueología Monografías 10, Junta de Andalucía. Sevilla.
- Contreras Cortés, F. and Cámara Serrano J. A. 2002: *La jerarquización social en la Edad del Bronce del Alto Guadalquivir (España). El poblado de Peñalosa (Baños de la Encina, Jaén)*. British Archaeological Reports, International Series 1025, Hadrian Books. Oxford.
- Costa Caramé, M. E.; Díaz-Zorita Bonilla, M.; García Sanjuán, L. and Wheatley, D. 2010: "The Copper Age settlement of Valencina de la Concepción (Seville, Spain): Demography, metallurgy and spatial organization". *Trabajos de Prehistoria* 67 (1): 87-118.
- Cruz-Auñón Briones, R. and Arteaga Matute, O. 2001: "La Alcazaba. Un espacio social aledaño a la periferia del poblado prehistórico de Valencina de la Concepción (Sevilla)". *Anuario Arqueológico de Andalucía* 1996: 701-710.
- Cruz-Auñón Briones, R. and Mejías García, J. C. 2013: "Diversidad de prácticas funerarias e identidades en el asentamiento de Valencina de la Concepción". In L. García Sanjuán, J. M. Vargas Jiménez, V. Hurtado Pérez, T. Ruiz Moreno and R. Cruz-Auñón Briones (ed.): *El asentamiento prehistórico de Valencina de la Concepción (Sevilla): investigación y tutela en el 150 aniversario del descubrimiento de La Pastora*. Universidad de Sevilla. Sevilla: 175-199.
- Cunha, C.; Silva, A. M.; Pereira, D.; Tomé, T., Paredes, J. and Cabrita, C. 2015: "Children of the grave: contribution of non-adult individuals in some human osteological series from collective burials in the late prehistory of the Iberian peninsula". In L. Rocha, P. Bueno Ramírez and G. Branco (eds.): *Death as Archaeology of Transition: thoughts and materials. Papers from the II International Conference of Transition Archaeology: Death Archaeology (Evora, Portugal 2013)*. British Archaeological Reports, International Series 2708, Archaeopress. Oxford: 177-188.
- Díaz-Zorita Bonilla, M. 2013: "Bioarqueología de las prácticas funerarias del yacimiento de la Edad del Cobre de Valencina de la Concepción-Castilleja de Guzmán (Sevilla): revisión de las investigaciones". In L. García Sanjuán, J. M. Vargas Jiménez, V. Hurtado Pérez, T. Ruiz Moreno and R. Cruz-Auñón Briones (ed.): *El asentamiento prehistórico de Valencina de la Concepción (Sevilla): investigación y tutela en el 150 aniversario del descubrimiento de La Pastora*. Universidad de Sevilla. Sevilla: 359-368.
- Díaz-Zorita Bonilla, M. 2017: *The Copper Age in South-West Spain: a bioarchaeological approach to prehistoric social organisation*. British Archaeological Reports International Series S2840, BAR Publishing. Oxford.
- Eerkens, J. W.; Berget, A. G. and Bartelink, E. J. 2011: "Estimating weaning and early childhood diet from serial micro-samples of dentin collagen". *Journal of Archaeological Science* 38: 3101-3111.
- Etxeberría Gabilondo, F. 1989: "Restos humanos de época calcólica procedentes de la cueva sepulcral de Urtao II (Oñati, Guipúzcoa)". *Munibe (Antropología-Arqueología)* 41: 63-70.
- Etxeberría Gabilondo, F. 1994: "Aspectos macroscópicos del hueso sometido al fuego. Revisión de las cremaciones descritas en el País Vasco desde la Arqueología". *Munibe* 46: 111-116.
- Fibiger, L. 2014: "Misplaced childhood? Interpersonal violence and children in Neolithic Europe". In C. Knüsel y M. Smith (eds.): *The Routledge handbook of the bioarchaeology of human conflict*. Routledge. Abingdon: 127-145.
- Fontanals-Coll, M.; Díaz-Zorita Bonilla, M. and Subirá, M. 2016: "A palaeodietary study of stable isotope analysis from a high-status burial in the Copper Age: the Montelirio megalithic structure at Valencina de la Concepción-Castilleja de Guzmán, Spain". *International Journal of Osteoarchaeology* 26 (3): 447-459.
- García Sanjuán, L. 2013: "El asentamiento de la Edad del Cobre de Valencina de la Concepción: estado actual de la investigación, debates y perspectivas". In L. García Sanjuán, J. M. Vargas Jiménez, V. Hurtado Pérez, T. Ruiz Moreno and R. Cruz-Auñón Briones (eds.): *El asentamiento prehistórico de Valencina de la Concepción (Sevilla): investigación y tutela en el 150 aniversario del descubrimiento de La Pastora*. Universidad de Sevilla. Sevilla: 21-59.
- García Sanjuán, L. and Díaz-Zorita Bonilla, M. 2013: "Prácticas funerarias en estructuras negativas en el asentamiento prehistórico de Valencina de la Concepción (Sevilla): análisis contextual y osteoarqueológico". In L. García Sanjuán, J. M. Vargas Jiménez, V. Hurtado Pérez, T. Ruiz Moreno and R. Cruz-Auñón Briones (eds.): *El asentamiento prehistórico de Valencina de la Concepción (Sevilla): investigación y tutela en el 150 aniversario del descubrimiento de La Pastora*. Universidad de Sevilla. Sevilla: 387-404.
- García Sanjuán, L. and Murillo-Barroso, L. 2013: "Social complexity in Copper Age Southern Iberia (c. 3200-2200 cal BC): reviewing the 'state' hypothesis at Valencina de la Concepción (Seville, Spain)". In M. Cruz Berrocal, L. García Sanjuán and A. Gilman (eds.): *The Prehistory of Iberia: debating early social stratification and the state*. Routledge. New York: 119-140.

- García Sanjuán, L.; Cáceres Puro, L.; Costa Caramé, M. E.; Díaz-Guardamino-Urbe, M.; Díaz-Zorita Bonilla, M.; Fernández Flores, Á.; Hurtado Pérez, V.; López Aldana, P. M.; Méndez Izquierdo, E.; Pajuelo Pando, A.; Rodríguez Vidal, J.; Vargas Jiménez, J. M.; Wheatley, D.; Delgado-Huertas, A.; Dunbar, E.; Mora González, A.; Bronk Ramsey, C.; Bayliss, A.; Beavan, N.; Hamilton, D. and Whittle, A. in press: "Assembling the dead, gathering the living: radiocarbon dating and Bayesian modeling for Copper Age Valencina de la Concepción (Sevilla, Spain)". *Journal of World Prehistory* 2018.
- Garrido-Pena, R. 2006: "Transegalitarian societies: an ethnoarchaeological model for the analysis of Bell-beaker using groups in Central Iberia". In P. Díaz-Del-Río and L. García Sanjuán (eds.): *Social Inequality in Iberian Late Prehistory*. British Archaeological Reports International Series 1525, Archaeopress. Oxford: 81-96.
- Garrido-Pena, R. and Herrero Corral, A. M. 2015: "Children as potters: apprenticeship patterns from Bell Beaker pottery of Copper Age Inner Iberia (Spain) (c. 2500-2000 cal BC)". In M. Sánchez Romero, E. Alarcón García and G. Aranda Jiménez (eds.): *Children, spaces and identity*. Childhood in the past Monograph Series 4, Oxbow. Oxford: 40-58.
- Gibaja Bao, J. F.; Majo, T.; Chambon, P.; Ruiz, J. and Subirá, M. E. 2010: "Prácticas funerarias durante el Neolítico. Los enterramientos infantiles en el noreste de la Península Ibérica". *Complutum* 21 (2): 15-46.
- González Martín, A. 2008: "Mitos y realidades en torno a la excavación, el tratamiento y el estudio de los restos arqueológicos no-adultos". In F. Gusi, S. Muriel y C. Olaria (eds.): *Nasciturus, infans, puerulus vobis mater terra: la muerte en la infancia*. Diputación de Castellón, Servicio de investigaciones arqueológicas y prehistóricas, serie de prehistoria i arqueología. Castellón: 57-76.
- González, A. and Polo, M. 2005: "Lesiones poróticas en el hueso inmaduro. Nuevas perspectivas del diagnóstico diferencial en Paleopatología". In A. Cañellas Trobat (ed.): *VII Congreso Nacional de Paleopatología (Mahón 2003)*: 585-589. Mahón.
- Guijo Mauri, J. M.; Pecero Espín, J. C. and López Flores, I. 1996: "Traumatismo mandibular en un individuo del tercer milenio BC procedente de Valencina de la Concepción (Sevilla)". *Actas del III Congreso Nacional de Paleopatología (Barcelona 1995)*: 239-243. Barcelona.
- Halcrow, S. and Tayles, N. 2008: "The bioarchaeological investigation of childhood and social age: problems and prospects". *Journal of Archaeological Method and Theory* 15: 190-215.
- Heuzé, Y. and Cardoso, H. F. V. 2008: "Testing the quality of non adult bayesian dental age assessment methods to juvenile skeletal remains: the Lisbon collection children and secular trend effects". *American Journal of Physical Anthropology* 135: 275-283.
- Howcroft, R.; Eriksson, G. and Lidén, K. 2014: "Infant feeding practices at the Pitted Ware Culture site of Ajvide, Gotland". *Journal of Anthropological Archaeology* 34: 42-53.
- Kamp, K. A. 2001: "Where have all the children gone? The archaeology of childhood". *Journal of Archaeological Method and Theory* 8 (1): 1-34.
- Lacalle Rodríguez, R.; Guijo Mauri, J. M. and Cruz-Auñón Briones, R. 2000: "Estudio antropológico de cinco sepulturas prehistóricas de Castilleja de Guzmán (Sevilla)". *Actas do 3º Congresso de Arqueologia Peninsular (Vila-Real, Portugal 1999)* IX: 343-359. Porto.
- Lewis, M. 2000: "Non-adult palaeopathology: current status and future potential". In M. Cox y S. Mays (eds.): *Human Osteology in Archaeology and Forensic Science*. Greenwich Medical Media. Cambridge: 39-57.
- Lewis, M. 2002: "The impact of industrialisation: comparative study of child health in four sites from medieval and post-medieval England (850-1859)". *American Journal of Physical Anthropology* 119 (3): 211-223.
- Lewis, M. 2004: "Endocranial Lesions in Non-adult skeletons: understanding their Aetiology". *International Journal of Osteoarchaeology* 14: 82-97.
- Lewis, M. 2007: *Bioarchaeology of children: perspectives from Biological and Forensic Anthropology*. Cambridge University Press. Cambridge.
- Lewis, M. 2011: "The Osteology of Infancy and Childhood: misconceptions and potential". In M. Lally and A Moore (ed.): *(Re)Thinking the little ancestor: new perspectives on the Archaeology of Infancy and Childhood*. British Archaeological Reports International Series 2271, Archaeopress. Oxford: 1-13.
- Lillehammer, G. 1989: "A child is born. The child's world in an archaeological perspective". *Norwegian Archaeological Review* 22 (2): 89-105.
- Lohrke, B.; Wiedmann, B. and Alt, K. W. 2002: "Determinación antropológica de los restos de esqueletos humanos de la Peña de la Abuela". In M. A. Rojo Guerra, y M. Kunst (eds.): *Sobre el significado del fuego en los rituales funerarios del Neolítico*. Studia Archaeologica, Universidad de Valladolid. Valladolid: 89-98.
- López Aldana, P. M. and Pajuelo Pando, A. 2013: "La secuencia ocupacional durante el III milenio a.n.e en C/Trabajadores 14-18 (Valencina de la Concepción, Sevilla)". In L. García Sanjuán, J. M. Vargas Jiménez, V. Hurtado Pérez, T. Ruiz Moreno and R. Cruz-Auñón Briones (eds.): *El asentamiento prehistórico de Valencina de la Concepción (Sevilla): investigación y tutela en el 150 aniversario del descubrimiento de La Pastora*. Universidad de Sevilla. Sevilla: 157-169.
- Lull Santiago, V.; Micó Pérez, R.; Risch, R. and Rihuete Herrada, C. 2004: "Las relaciones de propiedad en la sociedad argárica. Una aproximación a través del análisis de las tumbas de individuos infantiles". *Mainake* 26: 233-272.
- Lull Santiago, V.; Micó Pérez, R.; Rihuete Herrada, C. and Risch, R. 2005: "Property relations in the Bronze Age of southwestern Europe: An archaeological analysis of infant burials from El Argar (Almería, Spain)". *Proceedings of the Prehistoric Society* 71: 247-268.
- Manifold, B. M. 2012: "Intrinsic and extrinsic factors involved in the preservation of non-adult skeletal remains in Archaeology and Forensic Sciences". *Bulletin of the International Association of Paleodontology* 6 (2): 51-69.
- Martín Espinosa, A. and Ruiz Moreno, T. 1992: "Excavación calcólica de urgencia en la finca 'La Gallega', 1ª fase, Valencina de la Concepción, Sevilla". *Anuario Arqueológico de Andalucía 1990*. Junta de Andalucía. Sevilla: 455-458.
- Martín-Flórez, S.; Laffranchi, Z.; Jiménez-Brobeil, S. A.; García Cuevas, M. F.; Nicas Perales, J.; González Herrera, M. A. and Sánchez, R. 2011: "Aproximación a partir de los restos óseos a la población de Marroquies Bajos. Excavaciones con motivo de la construcción del tranvía de Jaén". In *Memorial Luis Siret. I Congreso de Prehistoria de Andalucía: la tutela del patrimonio prehistórico (Cuevas de Almanzora, Almería 1984)*: 595-598. Sevilla.
- Mejías-García, J. C. 2013: "Análisis espacial en el asentamiento y necrópolis de Valencina (Sevilla): patrones de distribución y sectorización". In J. Jiménez Ávila, M. Bustamente and M. García Cabezas (eds.): *Actas del VI Encuentro de Arqueología del Suroeste Peninsular (Villafranca de los Barros, Badajoz 2012)*: 464-500. Villafranca de los Barros.
- Méndez Izquierdo, E. 2013: "La cueva artificial de La Huera (Castilleja de Guzmán, Sevilla)". In L. García Sanjuán, J. M. Vargas Jiménez, V. Hurtado Pérez, T. Ruiz Moreno and R. Cruz-Auñón Briones (eds.): *El asentamiento prehistórico de Valencina de la Concepción (Sevilla): investigación y tutela en el 150 aniversario del descubrimiento de La Pastora*. Universidad de Sevilla. Sevilla: 293-310.
- Miguel Ibáñez, M. P. de 2010: "La infancia a través del estudio de los restos humanos desde el Neolítico a la Edad del Bronce en Tierras Valencianas". In A. Pérez Fernández and B. Soler Mayor (eds.): *Restos de vida, restos de muerte*. Diputación de Valencia. Valencia: 155-166.
- Mora Molina, C.; García Sanjuán, L.; Peinado Cucarella, J. and Wheatley, D. W. 2013: "Las estructuras de la Edad del Cobre del sector PP4-Montelirio del sitio arqueológico de Valencina de la Concepción-Castilleja de Guzmán (Sevilla)". In L. García Sanjuán, J. M. Vargas Jiménez, V. Hurtado Pérez, T. Ruiz Moreno and R. Cruz-Auñón Briones (eds.): *El asentamiento prehistórico de Valencina de la Concepción (Sevilla): investigación y tutela en el 150 aniversario del descubrimiento de La Pastora*. Universidad de Sevilla. Sevilla: 261-279.
- Nájera Colino, T.; Molina González, F.; Jiménez-Brobeil, S.; Sánchez Romero, M.; Aranda Jiménez, G.; Delgado-Huertas, A. and Laffranchi, Z. 2010: "La población infantil de la Motilla del Azuer: Un estudio bioarqueológico". *Complutum* 21 (2): 69-102.
- Nájera Colino, T.; Molina González, F.; Sánchez Romero, M. and Aranda Jiménez, G. 2006: "Un enterramiento infantil singular en el yacimiento de la Edad del Bronce de la Motilla del Azuer (Daimiel, Ciudad Real)". *Trabajos de Prehistoria* 63 (1): 149-156.

- Ortiz del Cueto, J. R. y López Covacho, L. 1997: "El yacimiento de la Edad del Bronce Príncipe 11: ritual de inhumación infantil (Aranjuez, Madrid)". In R. de Balbín Behrman y P. Bueno Ramírez (eds.): *II Congreso de Arqueología Peninsular (Zamora 1996) II Neolítico, Calcolítico y Bronce*. Zamora: 633-646.
- Pecero Espín, J. C. 2016: "Caracterización antropológica de los restos óseos humanos del tholos de Montelirio". In A. Fernández Flores, L. García Sanjuán and M. Díaz-Zorita Bonilla (eds.): *Montelirio. Un gran monumento megalítico de la Edad del Cobre*. Junta de Andalucía. Sevilla: 409-442.
- Ramey Burns, K. 2008: *Manual de Antropología Forense*. Bellaterra. Barcelona.
- Rinne, C. 2001: "Kollektivgrab odagsen - kleinkinderdefizit und paläodemographie-". *Nachrichten aus Niedersachsens Urgeschichte* 70: 175-187.
- Robles Carrasco, S. and Díaz-Zorita Bonilla, M. 2013: "Análisis bioarqueológico de tres contextos-estructuras funerarias del sector PP4-Montelirio del yacimiento de Valencina de la Concepción-Castilleja de Guzmán (Sevilla)". In L. García Sanjuán, J. M. Vargas Jiménez, V. Hurtado Pérez, T. Ruíz Moreno and R. Cruz-Auñón Briones (eds.): *El asentamiento prehistórico de Valencina de la Concepción (Sevilla): investigación y tutela en el 150 aniversario del descubrimiento de La Pastora*. Universidad de Sevilla. Sevilla: 369-386.
- Robles Carrasco, S.; Díaz-Zorita Bonilla, M.; Fuentes Mateo, V. and García Sanjuán, L. 2017: "Bioarchaeological analysis at the Copper Age Site of Valencina de la Concepción (Seville, Spain): The PP4-Montelirio Sector". In T. Tomé, M. Díaz-Zorita Bonilla, A. Silva, R. Boaventura and C. Cunha (eds.): *Current approaches to collective burials in the Late European Prehistory. Proceedings of the UISPP Conference (Burgos, Spain 2014) Volume 14/Session A25b*. Archaeopress. Oxford: 103-118.
- Ruiz Moreno, M. T. 1991: "Excavación arqueológica de urgencia en Valencina de la Concepción 'Urbanización La Cima' (Sevilla), 1989-1990". *Anuario Arqueológico de Andalucía 1989*: 461-464.
- Sánchez Romero, M. 2004: "Children in southeast of Iberian Peninsula during Bronze Age". *Ethnographisch-Archäologische Zeitschrift* 45: 377-387.
- Sánchez Romero, M. 2007: "Actividades de mantenimiento en la Edad del Bronce del Sur peninsular. El cuidado y la socialización de individuos infantiles". *Complutum* 18: 185-194.
- Scheuer, L. and Black, S. 2000: "Development and ageing of the juvenile skeleton". In M. Cox and S. Mays (eds.): *Human osteology in Archaeology and Forensic Science*. Greenwich Medical Media. London: 9-21.
- Silva, A. M. 2003: "Portuguese populations of Late Neolithic and Chalcolithic periods exhumed from collective burials: an overview". *Anthropologie* 1-2: 55-64.
- Sofaer, J. 2000: "Material cultural shock: confronting expectations in the material culture of children". In J. Sofaer (ed.): *Children and material culture*. Routledge. London: 3-16.
- Ubelaker, D. H. 1978: *Human skeletal remains*. Taraxacum. Washington.
- Valiente Malla, J. 1991: "Sobre enterramientos infantiles de la Edad del Bronce". *Cuadernos de Prehistoria y Arqueología Castellonense* 15: 143-155.
- Vargas Jiménez, J. M. 2004a: *Carta Arqueológica Municipal de Valencina de la Concepción*. Junta de Andalucía. Sevilla.
- Vargas Jiménez, J. M. 2004b: "Elementos para la definición territorial del yacimiento prehistórico de Valencina de la Concepción (Sevilla)". *Spal. Revista de Prehistoria y Arqueología* 12: 125-144.
- Waterman, A. J. 2012: *Marked in life and death: identifying biological markers of social differentiation in Late Prehistoric Portugal*. PhD (Doctor of Philosophy) thesis, University of Iowa. <http://ir.uiowa.edu/etd/3007>
- Waterman, A. J. and Thomas, J. 2011: "When the bough breaks: childhood mortality and burial practice in Late Neolithic Atlantic Europe". *Oxford Journal of Archaeology* 30 (2): 165-183.
- Wileman, J. 2005: *Hide and seek: the Archaeology of Childhood*. Tempus. Stroud.
- Wright, L. E. and Schwarcz, H. P. 1998: "Stable carbon and oxygen isotopes in human tooth enamel: identifying breastfeeding and weaning in Prehistory". *American Journal of Physical Anthropology* 106: 1-18.