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El Collado (Oliva- Valencia)

1. Introduction

Around 9,000 BC, a small group of maybe five or six humans with obvious signs of kinship installed their abode a crag or rock shelter near the present day Oliva, in an area known as El Collado, where they remained for about 3,500 years until the middle of the 6th millennium BC.

After the excavation work, which began in 1987, we were able to complete the subsequent research process with archaeological, anthropological and radiocarbon analyses. The comprehensive anthropological study was led by Dr. Domingo Campillo Valero, Head of the Palaeopathology and Palaeoanthropology Laboratory at the Barcelona Archaeological Museum, and involved a large team of anthropologists, radiologists, restorers and photographers who studied the purely bone-related aspects such as teeth, illness and palaeopathologies, food science/eating habits, etc., using conventional and also advanced methods such as isotopic analysis (VV.AA, 2008: 179-344). The archaeological and historical analysis was conducted by the undersigned (VV.AA, 2008: 28-91 and 347-359).

The chronology defined by archaeological methods was initially backed up by four radiocarbon datings, as well as others. Two important aspects must be noted. Firstly, exploration of the site was not exhausted and much of what remains is still buried under tons of fertile soil dumped there by the property owner, Mr. Bolinches.

Secondly, the site was completely disfigured from its original configuration during the occupation. Weathering processes underway from its abandonment until its discovery certainly altered it, but a much greater impact was undoubtedly caused by subsequent human action including its transforming into cropland with staggered horizontal contoured terraces, and the use of rock from around the site, either loose or dug from limestone outcrops.

On the basis of this assumption and the remains in the vicinity, we believe that this human settlement was established beneath a limestone crag with a shelter-like concavity inside or nearby, with an easterly aspect, i.e. facing the Mediterranean Sea, which during the period was probably slightly higher than its current level, with a marsh, fen or *aigua-moll* covering what is now the coastal plain. The site is on the slope of a terminal elevation of a low-lying mountain range, a few hundred metres above current sea level and about seven kilometres in a straight line from the coast, a little more than one metre above the start of the marsh. A basal concavity in the same place as the site, inside the probable gap in the cliff or shelter, proof of its existence, facilitated their installation on this steep hillside, which ends at a saddle or collado (hence the name) overshadowed by Montanyeta de Santa Ana, a hill between the site and the marsh.

2. Chronology

We shall first clarify the chronology used as the basis for the subsequent considerations.

Long before radiocarbon dating became available, we defined the chronology of this settlement on the sole basis of archaeological data, i.e. derived from the lithic material and on the basis of our own structure of the Mesolithic. Later, following anthropological studies, Dr. Campillo Valero became concerned about this issue and arranged for two radiocarbon analysis to be conducted on human bones from burial site XIII.

More recently, following further dental analyses, further datings were suggested to assist confirmation of the previous dates, which we accepted in order to dispel any shadow of doubt, although it had never crossed our minds to question the authenticity and chronology of the human remains (Tab 1 and 2).

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The subsequent analyses were also conducted in the Radiocarbon Dating Laboratory, Faculty of Chemistry of the University of Barcelona, under Dr. Joan S. Mestres, with the following results:

Burial XIII (Campillo Individual XIII), from layer 4 of LEVEL II, equivalent to layer 3 of the first excavation, was performed between 7649 and

7570 BC. Burial IV, also from layer 3, was around 8690 BC, and burial VI, from the same layer, was from 8080 BC. Given that the grave was accessed from layer 2 or at least the first layers of Level II –due to the dismantling or disturbance of layer 1 and its mixture with other material during the farming and terracing operations, this layer or level can be dated as no earlier than the middle of the 6th to the start of the 7th or the middle of the 8th

	ID	DATACIÓN	INCERTIDUMBRE	CALIBRACIÓN 2 δ cal. A.C
INHUMADO N° XIII	UBAR 280	7570	160	6804-6066
INHUMADO N° XIII	UBAR 281	7649	120	6799-6234

Table 1. Datings for burial XIII

	ID	DATACIÓN	INCERTIDUMBRE	CALIBRACIÓN 2 δ cal. A.C
ENTERRAMIENTO IV	UBAR 927	8690	100	8188-7551
ENTERRAMIENTO VI	UBAR 928	8080	60	7299-6780

Table 2. Datings for burials IV and VI

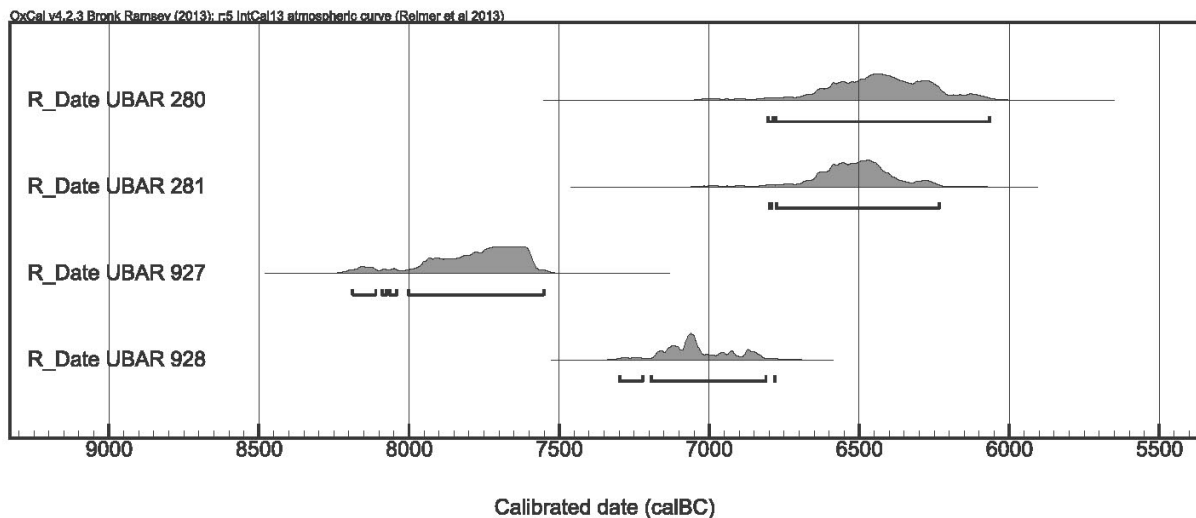


Figure 1. Comparative chart of calibrated dates.

millennium BC. With the 1000 year period from the middle of the 8th to the middle of the 9th millennium BC designated to layer 3 or Level III, the basal m-r or terra rossa layer can be attributed to the previous period, which ended around 8500 BC.

The following graph shows the calibrated datings (Fig. 1)

We shall now see if this chronology is feasible on the basis of the lithic material.

3. Lithic material

Conscientious washing and sieving allowed us retrieve almost all the archaeological material contained in the soil matrix at the site, consisting of

tools, artefacts and lithic remains, just one bone tool, mastological and mollusc fauna, haematites or ochre and ceramics.

The lithic material was essentially flint and stone (see detailed inventory in Table 3).

Accordingly, focusing on the flint material, 11,887 items were found (see table), which may seem large but in our opinion is not so, bearing in mind the volume of sieved earth and that 11,204 are debitage flakes and flakelets, leaving 683 tools as such, including 125 cores and 278 blades and bladelets. Tools thus only comprise 4.98% of the flint material, an obviously low figure which indicates the low specific weight of stone tools in the daily activities at this site, with the exception of a certain type.

This is undoubtedly a microlithic assemblage, despite these being substrate items, sidescrapers, denticulates, retouched flakes, or those of Palaeolithic origin—endscrapers or burins, with the occasional larger format item amongst them. This feature is characteristic of the postulated period.

The stone tools and their grouping, together with the soil features, the anthropological remains with their respective radiocarbon datings and the faunal remains allow us to structure the industrial, environmental and cultural sequence of the site in the following manner.

Level IV and layers 4 and 5 correspond to the initial settlement which left traces, m-r and red



Figure 2. Stratigraphic section

SÍLEX	Sup. Todo	I. Sup. BI-2-T	Iª CAMPAÑA								Iª ALB-T. BI-BIII				IIª N-I	IIª CAMPAÑA. N-II								IIª N-III B-E XIII	IIª N-IV	TOTALES			
			Sup	C1	C2	C3	C4	C5	C1	C2	C3	C4	C1	C2		C3	C4	C5	C6	C7	C8	C9	C10				C11	C12	C13
NÚCLEOS	52	2	6	5	7	5	2	1	15							1	4	5	4	2						2	4	2	125
RASPADORES	2	3	2	4	6				3	2						1	2	3									1	1	30
MICRO RASPADORES	3	1	4	1	5	6			6	2						1	2		2	1						2	1	39	
BURILES	4	4	1	2	3	5	1		4							2	4	1		1						1	2	39	
MICRO BURILES	2		7	1	1	1			5							2												21	
DORSOS Y BORDES REBAIADOS	1					2										1											3	7	
HOJAS/HOJITAS ESTRANGULADAS	1				1				3	1																		6	
GEOMÉTRICOS	3		4		1				4							1		1										14	
PICO ENTRE MUESCAS	2	6	1		1				8							1	2	1	2	1						1	2	30	
RAEDERAS	5	2	10	2	8	3			16							2	3	2		2							1	58	
PERFORADORES/TALADROS	1				1	1										2	1	1									1	12	
HOJAS/HOJITAS	36	17	42	14	40	11			50	2	7	1	6	14	2	4	4	4	4	4	3	8				4	2	11	278
LASCAS	576	980	980	616	1.195	567	15	9	1.702	529	274	205	187	701	366	316	410	48	83	549	167	206	213	310	11.204				
VIARIOS	12		3		2	1					2			3												1		24	
TOTALES	697	1.018	1.060	646	1.271	602	18	10	1.816	537	288	210	204	736	382	328	421	48	89	565	169	217	224	331	11.887				
PIEDRA	1	23	56	38	70	19	5	3	42	34	12	4	1	6	8	4	12	V.	1	2	2	2		2	347				
OCRE				1													7									1	9		
B/C				13						23																		36	
TOTALES	1	23	56	52	70	19	5	3	42	57	12	4	1	6	8	4	19	V.	1	2	2	2		3	392				

LEYENDA: SUP = Superficial T = Talud E = Enterramiento B-E = Bajo enterramiento N = Nivel C = Capa B/C = Barro/Cerámica V = Varios

Table 3. Overview of retrieved material

basal earth, as shown in the stratigraphic section (Fig.2).

This period corresponds to Mesolithic I-B (10,000-8,500 BC), chronologically after Mesolithic I-A which in turn followed the Late Magdalenian. One endscraper, 2 burins, 1 microscraper, 3 blades and backed blades, 1 geometric, 1 point with notches, 1 sidescraper, 3 borers/drills and 12 bladelets confirm the above.

Level III and Layer 3 correspond chronologically to Dyras III, (8,500 – 7,500 BC), while technological and culturally they correspond to the Mesolithic II or “Sauveterre” in our structure. This level has yielded 1 endscraper, 6 micro-endscrapers, 2 microburins, 8 burins, 2 backs and backed blades, 3 points with notches, 3 sidescrapers, 2 borers/drills and 20 blades and bladelets.

The Mesolithic III-A took place between 7500 and 6500 BC, during the Pre-boreal – with a slight increase in cold spells within a general trend of rising temperatures, lower rainfall and more frequent widespread droughts. During this period, snail collection became widespread in the hinterland areas, with snail and shell middens in coastal areas. This period corresponds to Level II and Layer 2, which yielded 13 endscrapers, 9 microscrapers, 8 burins, 1 microburin, 2 blades/bladelets with opposite notches, 2 geometric blades, 2 points with notches, 10 sidescrapers, 3 borers/drills, 44 blades and bladelets and over 2,000 flakes and flakelets. The first dated burial (individual IV) in this period took place around 6,740 BC.

Level I and Layer 1 correspond to the Boreal period, 6,500/6,000 BC and the start of the Atlantic, from 6000 to 5500 BC in this area. The former was accompanied by a considerable rise in the sea level as temperatures rose and the icecaps melted, which triggered a new marine encroachment, the Versilian in the Mediterranean, accompanied by the submergence of coastal areas and changes in the coastline and the landscape, while local rainfall remained low. The coastal wetlands were reactivated and invaded much of the Gulf of Valencia. Individual 6 was buried around 6,130 BC.

Level I and Layer 1 yielded 8 endscrapers, 8 microscrapers, 8 burins, 6 microburins 1 blade/backed blade, 3 flakes/strangled flakelets, 10 points with notches, 20 sidescrapers, 2 borers/drills and 70 blades and bladelets. The superfi-

cial Atlantic layer yielded 2 endscrapers, 4 microscrapers, 1 burin, 7 microburins, 4 geometric, 1 point with notches, 10 sidescrapers 42 blades and bladelets. Individual XIII lived during the Atlantic.

4. Human remains

We have reached the following conclusions from a study by Dr. Campillo Valero (Aparicio, 2008) and his team: 15 individuals were located in the excavated material. It is unlikely that all of them were buried, as we do not know if the zone marked as the perimeter of the site includes the entire original site area or whether part of it was either removed by erosion or the above-mentioned farmwork, and also because ultimately it became impossible to fully excavate the subsoil.

However, it is reasonable to assume that not all those who lived at this site were buried here, even if we accept that the earliest date corresponds to the first burial, i.e. from the 2nd century of the 7th millennium BC. Considering that during the 1,300 year period, assuming that the occupation was seasonal and that the group or community was small, at least 200 or 250 people may well have died here in this period, which begs the question what happened to the rest? This issue is impossible to resolve on the basis of the data at hand. Perhaps in the future, if a full excavation of the subsoil can be completed, the permanent or seasonal nature of the site will be ascertained and, if others are found nearby, we might be able to find an answer.

From the first layers of level II, either above or within level III, and on level II, the corpses were placed in shallow graves, with dimensions that matched the volume of the remains. In the case of 1, the volume was quite small as it was a bundle of bones; even smaller in the case of X where only a skull and a few bones were buried. In conjunction with the discovery of other remains scattered across the site, this suggests that some of the buried remains were disintegrated when the graves were opened or stumbled on, or the floor was dug up for some purpose. Their shallow nature was presumably due to crushing by the inhabitants and their continuous heavy pressure on the floor.

A large rock with a sloping lateral surface was used in the burial of Individual 11, discovered

when the pit was opened. The corpse had been placed leaning against this rock and was thus in a near-vertical position.

The lack of several bones in the case of skeletons still in anatomical connection is not easy to explain, with the exception of number XIII, which lay beneath an olive tree which we had to remove to excavate the area beneath. When digging the hole for this tree, the bones of a lower limb were scattered across the terrace and then disappeared as a result of crushing or weathering.

Some of the skeletons were deliberately protected by stones on or around them, as in the case of II, III and IV, VI, XIII and large rocks in the case of XIV. Almost all were laid on their left side except for VI and V and possibly III, which were lying on the right. In all cases, the legs were folded, the hands were placed together with the arms placed on the upper or lower chest.

Perhaps the most noteworthy aspects of the anthropological analysis are the following: The disinterred individuals or graves revealed: one 9 month old perinatal; 2 sub-adult juveniles aged 15-18; 1 young adult aged 18-20; 6 adults, 3 of them aged 20-25, 1 aged 30-35, and 2 aged 35-40; and 2 mature individuals over 45 years of age. The average age of death is thus 29 years, with 58.33% to 66.66% in the 20 to 40 year range. We may thus conclude that neither infancy nor puberty were the most critical period, in this case situated between 15 and 25 years– the average age amongst the prehistoric populations of the time. The exact causes of death could not be determined, however we did detect few cases of caries and frequent –but resolved– injuries.

We were able to determine the sex of 6 males and 3 females, with another 2 doubtful. The average male height was 1636 cm and 1554 cm for women, quite tall in comparison with contemporary and later data, particularly in the case of the females.

The anthropological features include a mesocephalic component with brachycephaly, quite rare in Spain and absent in compared series which are later in most cases, with a doubtful evolutionary process. Differences also occur in the skull, which is more robust in this case, accentuating the head. These individuals have low eye sockets and broad faces, suggesting a link to the Central European Mesolithic and subsequent remains from

the Valencia region, an aspect which should be considered in studies of a possible indigenous evolution.

The mandible is narrower than might be expected, especially considering the large, robust teeth which in the anthropological study seem reminiscent of Neanderthals. This would be consistent with the sub-nasal prominence, interpreted as a persistent archaic feature which underscores the possible Neanderthal lineage and also opens up a suggestive line of research which we wish to begin immediately. The large number of Wormian bones points to probable consanguinity, and endogamy as a useful social aspect.

Dental features and other elements found at the sites lead to the conclusion that plants formed a minor part of the diet while there was a high consumption of animal protein, either marine or terrestrial. Analysis of middens Cuerda and Gasull has led to the suggestion that shells were consumed as well.

On the other hand, after the initial anthropological studies, Dr. Subirà –an efficient and constant collaborator with a highly skilled team of collaborators– studied the diet on the basis of stable isotopes (Subirà *et al.*, 2003, García, E. *et al.*, 2006). These studies concluded that protein intake of animal origin, both marine and terrestrial, only formed 25% of the diet, with little difference between sexes –both were omnivores– although there were some differences in minor dietary preferences amongst individuals (Chimeno, E. *et al.*, 1992). However, this begs the question that, if animal protein intake was only 25%, there is no evidence of other products which increased it and plant intake was low, what was the food source which completed the rest of their diet? This is a very difficult question which remains in the air.

A list of species which formed the terrestrial meat diet has been published elsewhere (VV. AA., 2008). This list reflects the range available in this area according to other studies. The aquatic species certainly included turtles, whose shells were found in abundance on all levels at the site.

5. Conclusion

The following historic reconstruction is based on the aforementioned details: Around

9,000 BC, a small group of people, probably five or six, moved from a relatively close settlement to what was probably a shelter or recess at the foot of a limestone cliff on a hillside near the modern day town of Oliva. Their aim was to exploit the surrounding territory which included marine resources –the coastline was quite nearby at this time– and land resources as well –in the surrounding plains and mountains there were herds of different quadrupeds, despite the deleterious effects of environmental changes caused by the Interglacial. The sea at the time was a source of fish, *Cardium edule* and some other species, while the coastal plain was not yet a swamp. Their lithic technology was inherited from the Magdalenian but limited to common types– scrapers, burins, backs and backed blades. The use of bone had been abandoned.

These individuals may have arrived from one of the other sites nearby which were abandoned in this period, such as Cova Foradà or El Capurri, both in the Oliva municipality, or from the site in Camp de Sant Antoni, barely 500m away in a straight line.

Between 8,500 and 7,500 BC, their stone tools underwent technological changes, gradually incorporating geometric items for hunting or fishing –arrows or spears in the former case, harpoons in the latter.

After 7,500 BC, geometric items became widespread and something extraordinary happened: they begin to bury their dead, in the case

of these small communities, perhaps amongst individuals who had close blood or kinship ties. The dead had to be protected– they were no longer regarded as inert, worthless refuse but the remains of loved ones. Society became humanised and anthropocentrism began– human beings –men and women– were now at the centre of their world and indeed the world of all, by now a widespread concept and sentiment. This conceptual progression was also linked to human representations in the local Levantine prehistoric art, where it first appeared, coinciding with the burial phenomenon. This small human group did not consume large amounts of seafood or animal products, nor did they need many stone tools for hunting or fishing, reflected in the items accumulated found throughout the occupations of the site.

Around 6500 BC, the sea level began to rise slowly and flooded the entire coastal area up to the base of the slope at the foot of the cave, transforming the area into a great marsh or fen that contained abundant lagoon molluscs and turtles. The geometric tools became diversified and new types appeared.

In the middle of the 6th millennium, higher –now intense– rainfall probably forced the occupants to abandon the site and search for a new cave or perhaps huts on the plain. We believe they moved to the foot of the slope alongside the marshy plain, as a Neolithic or perhaps Protoneolithic site containing a midden and hand-made pottery has been excavated recently in this area, now in the urban heart of Oliva.