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A Late Pleistocene-Early Holocene archaeological sequence of Portalón de Cueva Mayor (Sierra de Atapuerca, Burgos, Spain)

El Pleistoceno Superior y el Holoceno en la secuencia arqueológica del Portalón de Cueva Mayor (Sierra de Atapuerca, Burgos, España)

KEY WORDS: Iberian Northern Plateau; Radiocarbon datings; Holocene, Upper Pleistocene.

PALABRAS CLAVES: Meseta Norte de la Península ibérica; Dataciones radiocarbónicas; Holoceno; Pleistoceno Superior.

GAKO-HITZAK: Iberiar penintsulako iparraldeko goi-ordokia; datazio erradiokarbonikoak; Holozenoa; Goi Pleistozenoa.

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ABSTRACT

The site of Portalón is not only one of the entries to the Cueva Mayor, of the Sierra de Atapuerca (Burgos, Spain), but it is also an important Holocene archaeological site that was first excavated in the 1970s, although largely unpublished. New excavations by our team starting in 2000 have revealed a stratigraphical sequence starting in the Late Pleistocene and with evidence of human occupations through the Holocene. We present this stratigraphical sequence with a radiocarbon dates ranging from 30.000 BP to 1.000 BP. Two major sedimentary units are observed in the Portalón sequence, the lower unit belongs to the Late Pleistocene and has a significant paleontological record and sparse Upper Palaeolithic human artifacts. The upper unit belongs to the Holocene and is characterized by sedimentary homogeneity and numerous archaeological artifacts. This unit shows occupations in the Mesolithic, Neolithic, Chalcolithic, Early and Middle Bronze Age, Iron Age, Roman and Medieval periods. The Portalón excavations are of great importance because of the scarcity of information of the Upper Palaeolithic, Mesolithic and Neolithic cultural periods in the interior Iberian Peninsula and, in particular, in the Northern Plateau.

RESUMEN

El Portalón de Cueva Mayor es una de las entradas actuales al sistema kárstico de Cueva Mayor-Cueva del Silo, situado en la Sierra de Atapuerca (Burgos, España). Es un importante yacimiento arqueológico del Holoceno excavado durante la década de los 70 y del que apenas se ha publicado nada. Las nuevas intervenciones iniciadas por el equipo de Investigación de Atapuerca en el año 2000 han puesto de manifiesto una secuencia estratigráfica más amplia que la anteriormente conocida. Dicha secuencia comienza a finales del Pleistoceno Superior y contiene evidencias de ocupaciones humanas a lo largo del Holoceno. En este artículo presentamos la secuencia arqueológica con dataciones radiométricas que abarcan desde el 30.000 BP hasta el 1.000 BP. Esta secuencia muestra dos grandes unidades sedimentarias. La inferior es del Pleistoceno Superior y contiene un registro paleontológico significativo y con muy escasos vestigios de actividad humana en forma de pequeñas lascas. La unidad superior pertenece al Holoceno y se caracteriza por un sedimento homogéneo con abundante presencia de restos de cultura material. Esta unidad muestra ocupaciones durante el Mesolítico, Neolítico, Calcolítico, Edad del Bronce Antiguo y Medio, Edad del Hierro, época Romana y época Medieval. La nueva secuencia del Portalón adquiere relevancia debido a la escasa información existente para el Paleolítico Superior, Mesolítico y Neolítico en el interior de la Península Ibérica, y en particular, en la Meseta Norte.

LABURPENA

Cueva Mayorreko Portaloa Atapuercako mendilerroan (Burgos, Espainia) dagoen Cueva Mayor-Cueva de Silo kobako sistema karstikora garamatzen sarbideetako bat da. Holozeno garaiko arkeologia-aztarnategi bat da, 70eko hamarkadan induskatua, baina oso gutxi eman da argitara aztarnategi horri buruz. 2000. urtean Atapuercako ikerketa-taldeak martxan jarritako esku-hartzeei esker, aurretik ezagutzen genuena baino sekuentzia estratigrafiko handiagoa ezagutu dugu. Sekuentzia hori Goi Pleistozenoaren amaieran hasten da, eta Holozeno garaiko gizakien aztarnak ikus ditzakegu. Artikulu honetan, 30000 BPtik 2000 BPraiko sekuentzia arkeologikoa azaltzen da. Sekuentzia horretan bi jalkitze-unitate nagusi bereiz ditzakegu. Azpikoa Goi Pleistozenokoa da eta, bertan, paleontologia-erregistro garrantzitsua ikus daiteke, harri zabal itxurakoa, eta gizakien presentziaren aztarna gutxi dago. Goiko unitatea Holozeno garaikoa da eta, bertan, kultura materialaren hondakinez osatutako jalkin homogeneous aurki dezakegu. Unitate horretan, Mesolitoko, Neolitoko, Kalkolitoko, Brontze Aro Zahar eta Ertaineko, Erromatar garaiko eta Erdi Aroko okupazioen aztarnak aurki ditzakegu. Portaloko sekuentzia berriak garrantzi berezia du, Goi Paleolitoko, Mesolitoko eta Neolitoko oso informazio gutxi baitago Iberiar penintsulan eta bereziki iparraldeko goi-ordokian.

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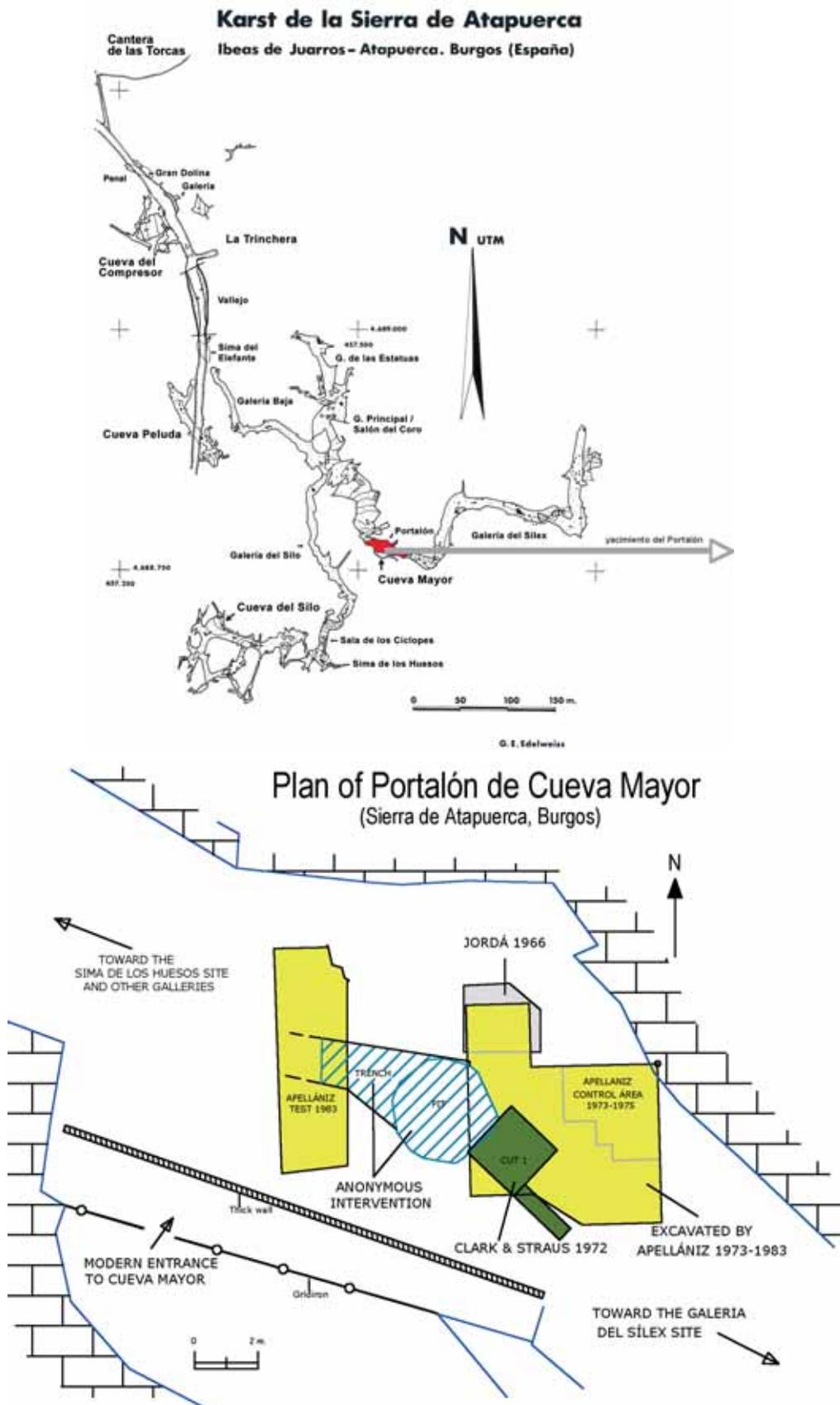


Fig. 3. Portalón scaled-down plan showing the different excavations areas. Plan of the Sierra de Atapuerca cave systems (by G. E. Edelweiss)

1. INTRODUCTION AND PREVIOUS RESEARCH AT PORTALÓN

The Sierra de Atapuerca is located about 15 km east of the city of Burgos on the northeastern edge of the Northern Plateau of the Iberian Peninsula (Figure 1). The location is strategic. North to south lines of communication pass through this region toward the interior of the Iberian Peninsula crossing east to west lines from the basin of the River Duero to the River Ebro basin. The hill range is well known for its numerous Pleistocene hominid sites (ARSUAGA *et alii*, 1997; CARBONELL *et alii*, 1999), and is characterized by an important karst system composed of Cueva Mayor-Cueva del Silo cave systems. The entrance to Cueva Mayor is a large chamber known as the "Portalón de Cueva Mayor" that shows evidence of different human occupations throughout the recent prehistory.

The first scientific study of Cueva Mayor was carried out in the last third of the 19th century (SAMPAYO & ZUAZNAVÁR, 1868) and motivated other researchers who published on the first archaeological remains of Portalón in the early 20th century (CARBALLO, 1910; BREUIL & OBERMAIER, 1913). In 1966, Francisco Jordá (University of Salamanca), conducted the first modern archaeological excavation of Portalón, but his results were not published. In 1972, Geoffrey A.

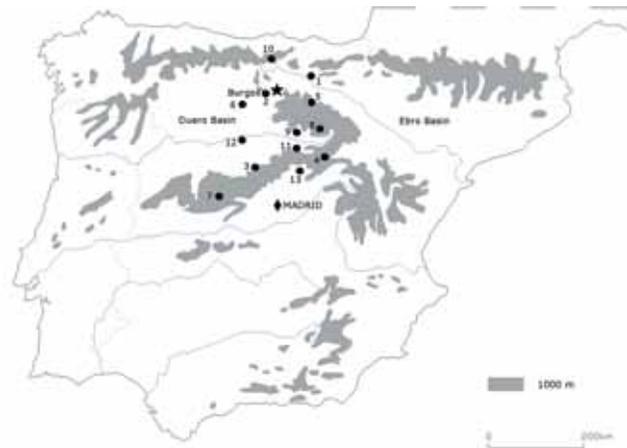


Fig. 1. Geographical situation of the Sierra de Atapuerca (Star) and other sites mentioned in Table 2 and the text. 1 = Mendandia; 2 = Los Cascajos; 3 = La Vaquera; 4 = La Lámpara; 5 = Cueva Lobrega; 6 = La Velilla; 7 = Fuente Lirio; 8 = El Asno; 9 = La Maja; 10 = Ojo Guareña; 11 = Los Tolmos; 12 = Cogeces; 13 = Jarama II. Sierra de Atapuerca include the sites of El Portalón, El Mirador, Galería del Sílex and Cueva de la Revilla.

Clark (University of Arizona), Lawrence G. Straus (University of New Mexico), and José Luis Uribarri (Diputación of Burgos), surveyed the Upper Palaeolithic sites of the Northern Plateau and made two test pits in Portalón that revealed in situ stratifications (2.6 m) and identified three cultural periods in the stratigraphical sequence: Roman, Bronze Age, and phases of the Eneolithic (CLARK *et alii*, 1979 - Figure 2). The discoveries of Clark and co-workers motivated Juan María Apellániz (University of Deusto), to excavate at Portalón from

1973 to 1983. Apellániz defined a series of cultural levels verifying the presence of Medieval and late Roman materials and an important occupation during the Bronze Age. The latter was subdivided into a Final, Middle and Early Bronze Age sequence (APELLÁNIZ & DOMINGO, 1987).

With the goal of more complete understanding of the archaeological potential of Portalón we began a new stage of excavations starting in 2000 as a part of the Atapuerca Research Project. We identified the previous excavations (Figure 3), and noted an area of clandestine excavation in the central

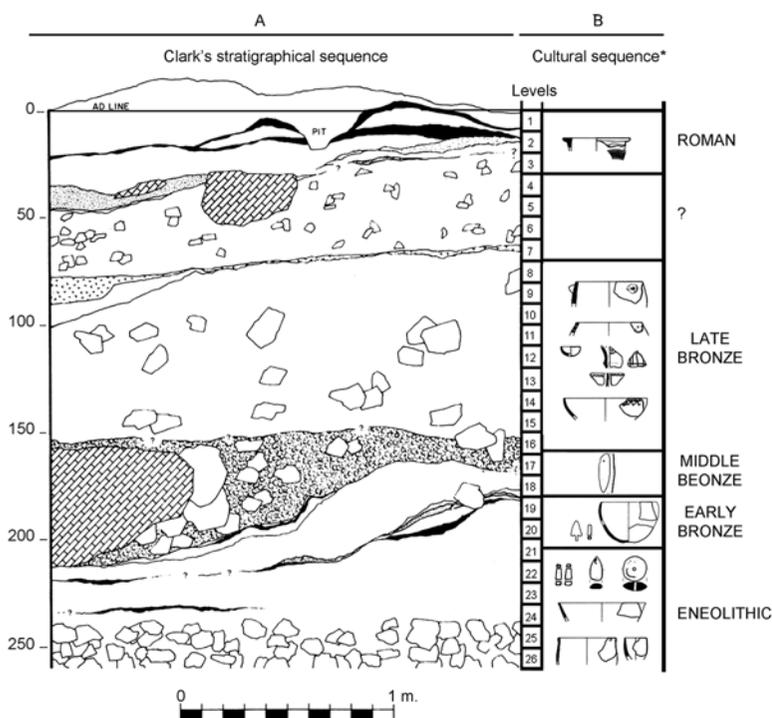


Fig. 2. (A) Scaled-down section of Portalón published by Clark *et alii*. (1979) corresponding to the East wall of their Cut 1. (B) Column with arbitrary 10 cm levels defined by Clark and Straus during their excavation including our cultural assignment based on their descriptions of archaeological materials.

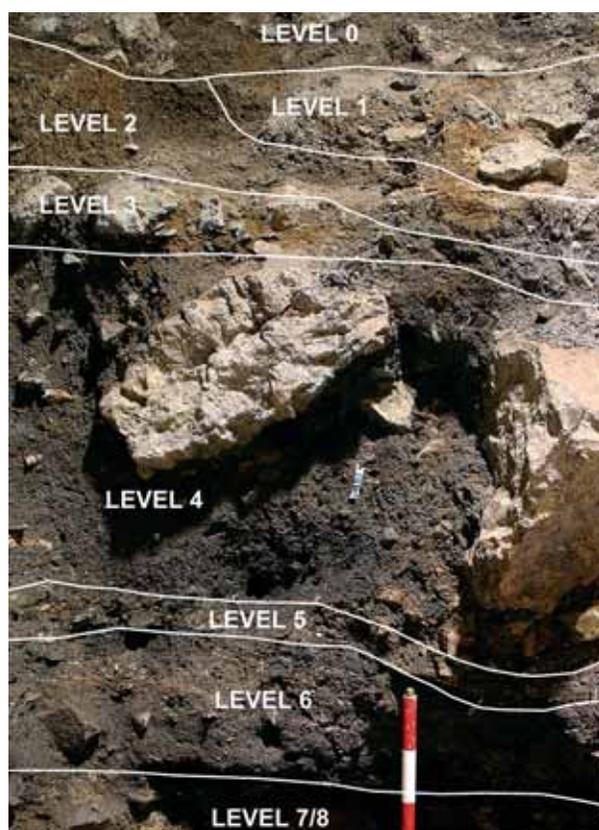


Fig. 5. This is a section detail of Trench A from Clark's excavation of the Southern profile of Portalón. Levels 0 to 7/8 are showed. Big rocks in level 3/4 are blocks which have fallen from the roof of the cave. Stones at the bottom of the picture represent the top of level 7/8. Graphical scale represents 0,5 meters.

part of Portalón carried out by unknown individuals (Figure 4.). From 2001 to 2006 we excavated the disturbed fill of the clandestine excavation, among which we had found some significant archaeological materials although out of their original context. The complete excavation of the clandestine pit revealed a deep stratigraphic sequence that was unrealized until now. Our aim in this facet is only to present this new detected stratigraphical sequence with a complete set of radiocarbon dates and briefly evaluate the potential of the site in a regional context.

2. STRATIGRAPHY AND CHRONOLOGY

We have characterized the stratigraphic sequence of Portalón in the North and South profiles of the site and we have divided it into 11 levels from 0 to 10 (Figure 4) that are in general better seen in the South than in the North profile (Figure 5). Radiocarbon dates, which are in uncalibrated radiocarbon years, for the 11 levels of the Portalón sequence are given in Table I.

2.1. The stratigraphical cultural sequence

Level 0 (Medieval). - It corresponds to an irregular alteration of the first 15 to 68 cm of the top of the sequence and is composed of brown deposits with organic materials, charcoal, faunal remains, and ceramics.

Level 1 (Roman). - Is an ashy layer with dispersed charcoal in dark grey clays, with small limestone clasts, and a maximum thickness of 40 cm. Artifacts include ceramics and Roman terra sigillata.

Level 2 (Iron Age I). - It consists of organic sediments of anthropogenic origin with abundant ash and dark clay that reach a maximum depth of 30 cm. Hand made ceramics were recovered in this level (CLARK *et alii*, 1979).

Level 3 (Middle Bronze Age). - It consists of a thin collection of dark sandy-clayey layers of some 16 cm in thickness. Organic material is abundant with numerous charcoal grains, fragments of hand-made ceramics, and domestic and wild fauna remains (CLARK *et alii*, 1979 for a list of the fauna material from the Bronze Age levels).

Level 4 (Early Bronze Age). - It corresponds to a homogeneous layer of sandy-clayey of between 70 and 150 cm in thickness, increasing in depth toward the west or interior of Cueva Mayor. This level is rich in organic and charcoal material, with numerous stones and large limestone blocks originating from collapse of the cave. Abundant hand-made potsherds, lithics, bone industry and fauna remains are found in this level.

Level 5 (Early Bronze Age). - It consists of sandy-clayey of grayish tones with an average thickness of about 35 cm and abundant charcoal and ash in its base. There are abundant sherds and domestic faunal remains. The excavation of J.M. Apellániz ended in this level (Figure 6), documenting one bell beaker sherd typical of the Early Bronze Age.

Level 6 (Bronze Age-Chalcolithic transition). - It consists a 30-35 cm of sandy-clayey with abundant organic material and charcoal with grayish color. A lens of ash has been documented 22 cm towards its base lenses of ash are documented. Sherds and animal bone were recovered from this level. The excavation of Clark and Straus terminated in this unit (Figure 6).

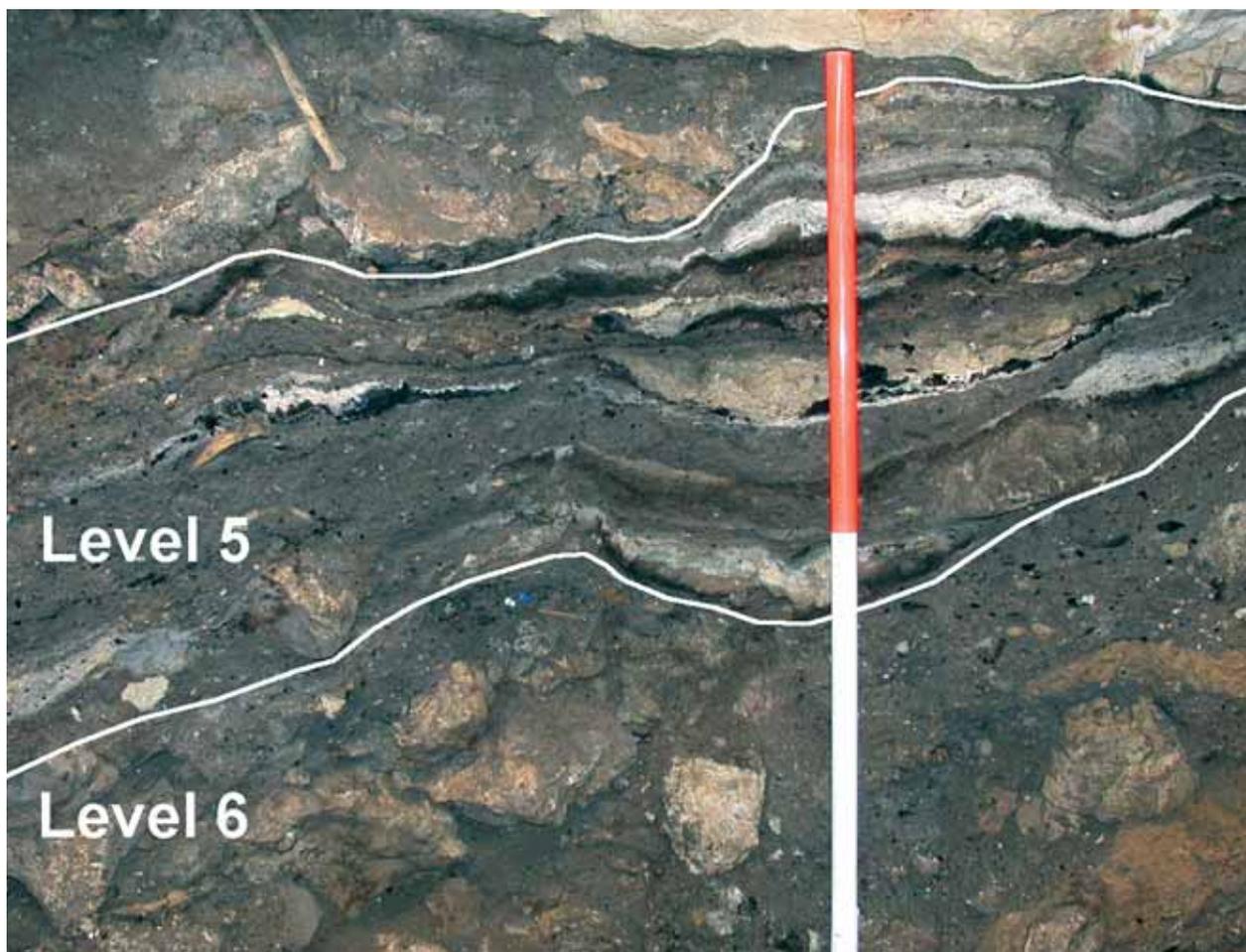


Fig. 6. Detail of levels 5 and 6 in the North profile of Portalón just below the boulder in the North section. The abundance in ash and charcoal layers within Level 5 contains fragments of hand-made pottery and domestic fauna remains. Level 6 is stonier. Graphical scale represents 1 meter.

Level 7 / 8 (Chalcolithic). - It consists of angular and subangular limestone rocks (15-20 cm) without matrix that increase in size within depth. In the base of this level large limestone blocks appear, among which two flat stones of around 70 cm high by 60 cm wide stand out. Abundant human remains have been documented at this level, such as pottery and fauna remains. The remains of a large ceramic vessel with decorations of pellets, a copper awl and the presence of two goats in anatomical articulation on the two large flat stones at the base, point to the use of this cavity during the Chalcolithic for mortuary purpose. As a whole the level may be a funerary tumulus or burial mound, although future excavations are necessary to confirm this hypothesis. The level reaches a maximum thickness of 200 cm in the South profile, while thinning toward the North.(Figure 7.)

Level 9 (Neolithic and Mesolithic.) - Is the bottom part of the Holocene sequence and is composed of a very homogenous layer of anthropic origin characterized by clayey-sandy deposits with blackish tones, with numerous organic material and rich in charcoal fragments. In this unit sub-angular limestone clasts and small calcareous blocks (10-20 cm) are observed, together with some rounded quartzite clasts. It has an average thickness of 125 cm in its southern profile that thickens toward the North to 170 cm. The base of this large layer is broken by an intrusive silo with a depth of about 75-80 cm and a diameter of 130 cm that has in turn affected the lower levels (9a and 10, see below). We have distinguished two very different chronological zones within this level. Most of level 9 corresponds clearly to Neolithic with handmade sherds ceramic, macrofauna remains, lithics and bone tools. A bone awl of



Fig. 7. This is a top view of Level 7/8 of Portalón seen from the North of exposed area in the anonymous area of the excavation (Pit in Figure 4) and related with a burial tumulus. Level composed of a thin layer of small size stones (not visible in the picture) covering a thick layer of medium size limestone blocks, which is covering a level of big limestone blocks.

clearly Neolithic typology was recovered in situ in the North profile beside a charcoal with a Neolithic chronology. And at the base of the level we have detected a Mesolithic occupation of the site, without finding any handmade sherds ceramic in this layer. The dates (Table I) indicate a large occupation situated fully within the Neolithic (4990 ± 40 to 6100 ± 50 and 6270 ± 40 BP), and another during the Mesolithic (7790 ± 40 BP) but with a temporal hiatus of 1720 years between both occupations.

Level 9a (Holocene-Pleistocene transition).
- It consists of a small layer of bat guano 5 to 8 cm thick characterized by sterile muddy-sand. It represents a transition between the Holocene (Levels 0 to 9) and Pleistocene (Level 10).

Level 10 (Upper Pleistocene). - Is the deepest sedimentary unit and it is in turn divided into 12 sub-levels from P1 to P12. It is characterized by an alternation of angular limestone clasts of more than 1 cm originating from debris flow, containing a brownish muddy-sandy-clay matrix inserted between levels of clays and sandy-clays which show a near absence of clasts. This level is more than 360 cm thick and has abundant microfaunal remains along with a small amount of macrofauna. Four small blades of flint (BP1G type) were recovered in the P8 sub-level. There is a date of 16980 ± 80 BP for P1 sub-level (60 cm deep) and another one of 30300 ± 190 BP for P11 sub-level (335 cm deep).

3. DISCUSSION

The Portalón sequence is of great importance because of the scarcity of archaeological record of the late Upper Palaeolithic, Mesolithic and Neolithic cultural periods in the interior Iberian Peninsula and, in particular, in the Northern

Plateau (BERNALDO DE QUIRÓS & NEIRA, 1991; FABIÁN, 1997; CORCHÓN, 2002; DELIBES & DÍEZ, 2006; UTRILLA *et alii*, 2006).

Although Epipaleolithic and final Upper Palaeolithic sites have been found in the Northern Plateau recently, their rarity suggests low-intensity

	Section	Sample	Material	Analysis	Lab. No.	Dates BP	Dates cal BC (2 σ)
Level 1	North	I.1	Bone	AMS	Beta-224081	1000 \pm 40	980 AD to 1060 1080 AD to 1150
	South	I.2	Charcoal	AMS	Beta-212187	1980 \pm 40	50 BC to 100 AD
	South	I.3	Charcoal	Radiometric	Beta-153359	2040 \pm 100	370 BC to 150 AD
	South	I.4	Charcoal	AMS	Beta-161192	2050 \pm 40	170 BC to 50 AD
Level 1/2	North	II.1	Charcoal	AMS	Beta-201763	2490 \pm 40	790 to 420
Level 2	South	II.1	Bone	AMS	Beta-222335	2490 \pm 40	790 to 420
	South	II.2	Charcoal	AMS	Beta-197388	2510 \pm 40	790 to 500 460 to 430
Level 3	South	III.1	Organic sediment	Radiometric	Beta-153360	3330 \pm 70	1760 to 1440
	South	III.2	Bone	AMS	Beta-222336	3560 \pm 50	2030 to 1750
Level 3/4	North	III/IV.1	Charcoal	AMS	Beta-201761	3330 \pm 60	1750 to 1490
	North	III/IV.2	Charcoal	AMS	Beta-184840	3560 \pm 40	2010 to 1760
Level 4	South	IV.1	Charcoal	AMS	Beta-212188	3490 \pm 40	1910 to 1700
	South	IV.2	Charcoal	AMS	Beta-153361	3680 \pm 40	2190 to 2170 2150 to 1940
Level 5	South	V.1	Charcoal	AMS	Beta-153362	3630 \pm 40	2130 to 2080 2060 to 1890
	South	V.2	Tooth	AMS	Beta-224079	3670 \pm 40	2190 to 2180 2140 to 1940
	South	V.3	Charcoal	Radiometric	Beta-184843	3700 \pm 70	2290 to 1900
	North	V.4	Charcoal	AMS	Beta-184839	3740 \pm 40	2280 to 2030
	North	V.5	Tooth	AMS	Beta-184838	3760 \pm 40	2290 to 2040
Level 6	South	VI.1	Organic sediment	Radiometric	Beta-153363	3910 \pm 70	2580 to 2200
Level 7/8	South	VIII.1	Tooth	AMS	Beta-197389	4440 \pm 50	3340 to 2920
Level 9	South	IX.1	Charcoal	AMS	Beta-184841	4990 \pm 40	3930 to 3860 3810 to 3670
	South	IX.2	Charcoal	AMS	Beta-184842	5230 \pm 40	4150 to 4120 4070 to 3960
	North	IX.3	Charcoal	Radiometric	Beta-201762	6070 \pm 110	5290 to 4710
	North	IX.4	Bones	AMS	Beta-222339	6100 \pm 50	5210 to 5160 5150 to 4840
	North	IX.5	Charcoal	AMS	Beta-197387	7790 \pm 40	6680 to 6500
	South	IX.6	Organic sediment	AMS	Beta-222340	6270 \pm 40	5320 to 5210 5170 to 5080
Level 10	South	X-P1.2	Bone	AMS	Beta-209452	16980 \pm 80	18770 to 17780
	South	X-P11.3	Bone	AMS	Beta-212190	30300 \pm 190	-

Table I: Radiocarbon dating of Portalón

human occupation (FABIÁN, 1997; RIPOLL, CACHO & MUNICIO, 1997; DELIBES & DíEZ, 2006; UTRILLA *et alii*, 2006). There is a dearth of information regarding inhabitants prior to the introduction of pottery, agriculture and livestock as a result of a lack of archaeological evidence in the presence of a hunting economy in the Duero Basin and other regions of the Plateau at the beginning of the Holocene (ZILHÃO, 1993 and 2000; IGLESIAS *et alii*, 1996; DELIBES & FERNÁNDEZ, 2000; ESTREMER, 2003). Discoveries over the last two decades confirm the existence of an early Neolithic population in the Northern Plateau, of which the oldest dates come from sites such as La Vaquera (Segovia; ESTREMER, 2003), La Velilla (Palencia; DELIBES & ZAPATERO, 1996) and La Lámpara (Soria; ROJO & KUNST, 1999) (Figure 1) during the second half of the fifth millennium BC: 6.500-6.000 BP; Table II). ESTREMER (2003 and 2005), DELIBES & FERNÁNDEZ (2000) and KUNST & ROJO (1999) have suggested that a varied scenario in which the new Neolithic lifeways in the Duero region should be a result of a colonization of uninhabited territory by small groups of immigrants bringing with them pottery, polished stone, agriculture, livestock management, and new social structures. This colonization was formed not only by a uniform, continuous wave, but also by a small scale, been irregular and selective in the expansion of farming groups with livestock herders displaced from the diverse peripheral regions of the Peninsula (Mediterranean and Atlantic Portuguese coasts). Later in time, the Neolithic of the Plateau becomes a single cultural group which culminates in the almost simultaneous adoption of megalithic rituals in the majority of communities (DELIBES *et alii*, 1992; ESTREMER, 2003;). Other researchers see the Neolithization of the Plateau by indirect indigenous acculturation from the diffusion of new technology and ideas from the Mediterranean regions (HERNANDO, 1999; JIMÉNEZ, 1999). In this context, the Mesolithic human settlement in Portalón is of great interest for understanding the transition to the Neolithic in this region. In this sense it is interesting to note the presence of very old pottery (7.210 ± 50 BP, ALDAY, 2005) in Mendandia (Saseta-Treviño, Burgos), a Mesolithic rock-shelter site in the Upper-Middle drainage basin of the Ebro river and around 100 km straight line to the Sierra de Atapuerca (Figure 1; Table II).

This ancient Neolithic pottery has reopened the debate among the archaeologist of the Iberian Peninsula regarding the Neolithization in the region (ESTREMER, 2003; ALDAY, 2005).

Recent archaeological remains corroborate the existence of an early Neolithic settlement in the Plateau, which always appears as a culturally advanced Neolithic. At La Vaquera, La Lámpara, La Velilla, and Cueva Lóbrega (La Rioja; BARRIOS, 2004) (Figure 1) the Neolithic is dated between 6.000 and 6.400 BP (Table II). Level 9 of Portalón falls in this range (Table I) (ORTEGA *et alii*, 2008), and may be contemporary with those of the sites of the immediate surroundings like Galería del Sílex (APELLÁNIZ & URIBARRI, 1976; APELLÁNIZ & DOMINGO, 1987) and Mirador rock-shelter (also in Sierra de Atapuerca - VERGÉS *et alii*, 2008-) and with the Cascajos nearby site, 4 km Northwest the city of Burgos (MARTÍNEZ, 1989 -Table II-). Especially noteworthy is the absence of dates and records of the earliest Neolithic, between 7.200 and 6.500 BP in the Plateau (ALDAY, 2005) and Portalón is not an exception, where there is a hiatus of almost two millennia between the dates of the Mesolithic and the full Neolithic in Level 9 (Figure 5, Table I). This hiatus is not represented by a sedimentological change in Portalón. At the Portalón there were Neolithic occupations throughout the end of the 5th millennium B.C. and the 4th millennium B.C.. It is shown by the dates in Level 9: 6.100, 6.070, 5.230 and 4.990 B.P. (Figure 5, Table I) which stand out for their continuity and situation inside a cave since in most places the full Neolithic is found in open-air sites (ALDAY, 2005).

Level 7/8 likely represent a *burial tumulus* which indicates a sepulchral use of the cave during the Chalcolithic, between 4600 and 3950 BP in this region (DELIBES & FERNÁNDEZ, 2000). We associate this tumulus with the megalithic culture that characterizes the end of the Neolithic in the North of the Iberian Peninsula and the Chalcolithic world (DELIBES *et alii*, 1992). The Chalcolithic in this region is characterized by an intensification of the human occupation of the territory and by the end of this period a greater diversity of populations can be verified (SAMANIEGO *et alii*, 2001). At the foot of the Sierra de Atapuerca, in the village of Atapuerca, there are two megalithic dolmens (URIBARRI, 1975; MORENO, 1999), and at the same time, there are

other Neolithic and Bronze Age burials inside the Atapuerca cave system that do not show any sign of megalithic structures as the Galería del Sílex, Cueva de la Revilla (ABARQUERO, PALOMINO & NEGREDO, 2005), Cueva del Mirador and Cueva Ciega (MARTÍN, 1981). The burial tumulus from Portalón is exceptional, because it is the only one known in the Duero Basin inside a cave, and not in open-air, well selected and highly visible points of the land, as the general rule is (DELIBES & FERNÁNDEZ, 2000).

Overlying the burial tumulus, Level 6 represents the transition between the Chalcolithic and the Bronze Age (Figure 5; Table I).

Levels 5 and 4 belong to the Early Bronze Age (Table I; Figure 5). The archaeological record published by CLARK et alii (1979), as well as the pottery from previous excavations confirms the presence of Bell Beakers typical of this period. In the Northern Plateau there was an increase in cave settlement during the Early Bronze Age, and new hamlets appear in small hills of the Iberian and Central Range of the Iberian Peninsula (SAMANIEGO et alii, 2001). This period is well known in the region (Figure 1: cueva del Asno –Soria, EIROA, 1980-, cueva Maja –Soria, SAMANIEGO et alii, 2001-, Galería del Sílex, El Mirador –CACERES et alii, 2007; VERGÉS et alii, 2002, 2008-), but the thickness of Level 4 in Portalón (1 m on average) and its rich archaeological record will add important information about this period.

Level 3 is Middle Bronze Age (Table I), and in the Duero Basin the sites of this phase (3400-3200 BP) are abundant: Los Tolmos, in Soria; Arevalillo, in Segovia; Cogeces, in Valladolid; etc. (JIMENO, 1984; DELIBES & FERNÁNDEZ, 2000). Despite the Late or Final Bronze Age (3200-2900 BP) being a major period of strength and splendour in the inner Iberian Peninsula, we have not found in the sequence of the Portalón any date belonging to this period nor in other sites of the same age around the Sierra de Atapuerca, such as Cueva de El Mirador and Cueva de La Revilla. Late Bronze Age is not present, perhaps, due to the abandonment of the caves in favor of open-air camps.

Finally, the archaeological sequence is capped by the proto-historic (Level 2) and historic

(Level 1) levels, when the cave was utilized, at least in part as a sheepfold.

Although there is a hiatus of 840 years between the Middle Bronze Age and next layer (Level 2: Iron Age I - Table I-), it seems that humans continued using Portalón as a dwelling place during the first millennium B.C. A real break between Final Bronze Age and Iron Age is verified in the Plateau by the drastic changes in the domestic architecture (round houses made of mud and adobe), material culture (sizes, shapes, mainly plain decorative motifs) and funerary spheres (disappearance of grave burials) (DELIBES & FERNÁNDEZ, 2000).

Level 1 at the top of the sequence, is Roman with two dates in the Early Imperial period (2.050 ± 40 and 2.040 ± 100 BP), and another one that indicates the use of the cave in successive years (1.980 ± 40 BP). This occupation might be related with the nearby Tritium Autrigonum castrum at the Monasterio de Rodilla village (CAMPILLO, 1985-1986) and with the Roman villae from Atapuerca, Agés and Villalval villages (1st to 4th centuries A.D.) in the area around the Sierra de Atapuerca.

Finally, Level 0 shows materials that reveal a Medieval occupation from the 10th to 13th centuries A.D., that can be more important than previously it has been thought because of the material recovered. There is a date of this level (1.000 ± 40 BP) that is in accordance with the first documented historical references to the Sierra de Atapuerca found among the documents of the nearby San Pedro de Cardeña Monastery, one in 963 AD (SERRANO, 1910) and another in 1071 AD (SOLANA et alii, 1995). Scattered sherds and coins point to the use of Portalón during the 13th century A.D.

4. CONCLUSIONS

The Portalón excavation is of great importance because of the scarcity of information of the late Upper Palaeolithic, Mesolithic and Neolithic cultural periods in the interior of Iberia and, in particular, in the Northern Plateau. The new sequence has been divided into 11 levels (from 0 to 10), and two contrasting sedimentary units are observed in the sequence (Figure 4). The lower unit (Level 10) belongs to the Upper Pleistocene, between 30.000 and 17.000 B.P., and has sparse human artifacts. A

	Site	Level	Dates BP	Lab. No.	Reference
Early Neolithic	Mendandia - Burgos - (fig.1:1)	III-sup.	7210 ± 80	GrN-19658	ALDAY, 2005
		III-sup.	7180 ± 45	GrN-22742	
		II	6540 ± 70	GrN-22741	
		I	6440 ± 40	GrN-22740	
	Cueva El Mirador - Burgos - Sierra de Atapuerca	MIR-21	6380±40	Beta-197385	VERGÉS <i>et alii</i> , 2008
		MIR-23	6320±50	Beta-208134	
		MIR-22	6150±40	Beta-208133	
		MIR-19	6130±50	Beta-182040	
		MIR-18	6120±40	Beta-208132	
		MIR-24	6110±40	Beta-220914	
Los Cascajos - El Blanquillo - Burgos - (fig.1:2)	II	6760 ± 130	Gr-14106	MARTÍNEZ, 1989	
Cueva de La Vaquera - Segovia - (fig.1:3)	94	6440 ± 50	GrA-9226	ESTREMER, 2003	
	92	6170 ± 60	GrN-22930		
	104	6120 ±120	GrN-22932		
	98	6080 ± 70	GrA-8241		
	105	6050 ±140	GrN-22933		
	104	5920 ± 50	GrA-9228		
La Lámpara – Soria - (fig.1:4)	Burial	6390 ± 60	KIA-4780	ROJO & KUNTS, 1999	
	Burial	6144 ± 46	KIA-6790		
Cueva Lóbrega -La Rioja- (fig.1:5)	3-Inf.	6055 ± 34	KIA-6789	BARRIOS, 2004	
La Velilla -Palencia- (fig.1:6)	Inf. habitat	6220 ±110	GrN-16110	DELIBES & ZAPATERO, 1996	
Final Neolithic	Cueva de La Vaquera - Segovia - (fig.1:3)	90	5800 ± 30	GrN-22929	ESTREMER, 2003
		80	4850 ± 80	GrN-23560	
		85	4670 ± 90	GrN-23561	
	Cueva El Mirador - Burgos - Sierra de Atapuerca	MIR-16	5700±70	Beta-181088	VERGÉS <i>et alii</i> , 2008
		MIR-14	5480±40	Beta-220913	
		MIR-13	5470±40	Beta-208131	
		MIR-11	5360 ± 50	Beta-181087	
		MIR-9	5090 ± 40	Beta-220912	
		MIR-8	4970 ± 40	Beta-181086	
	La Veilla - Palencia - (fig.1:6)	MIR-6	4780 ± 40	Beta-153367	DELIBES & ZAPATERO, 1996
Inf. infratumular		5250 ± 50	GrN-17166		
Inf. infratumular		5200 ± 55	GrN-17167		
Inf. infratumular		5195 ±155	GrN-18487		
Inf. infratumular		5070 ±175	GrN-18486		
Ojo Guareña-Sala de la Fuente - Burgos - (fig.1:10)	Superior-B	4810 ± 120	GrN-16295		
Calcolithic	Fuente Lirio -Ávila - (fig.1:7)	Charcoal-painted figures	4920 ± 50	GX-24826	GÓMEZ-BARRERA <i>et alii</i> , 2003
		Habitat	4260 ± 60	Beta- 93012	
	Jarama II -Guadalajara - (fig.1:13)	Habitat	3910 ± 100	Beta- 93031	FABIÁN, 2003
	Ojo Guareña-Sala de la Fuente -Burgos-(fig.1:10)	Burial	4185 ± 50	UBAR-571	JORDÁ & MESTRES, 1999
Charcoal-painted figures		3920 ± 50	GX-24824	GÓMEZ-BARRERA <i>et alii</i> , 2003	
Early Bronze Age	Galería del Silex - Burgos - Sierra de Atapuerca	Charcoal-painted figures	3880 ±50		GX-24825
		Charcoal-painted figures	3670 ± 40	GX-27853	
	Cueva El Mirador - Burgos - Sierra de Atapuerca	Charcoal-painted figures	3530 ±110	GX-27852	CÁCERES <i>et alii</i> , 2007
		MIR-4	3900 ± 40	Beta-182041	
MIR-4		3830 ± 40	Beta-182042		
Cueva del Asno - Soria - (fig.1:8)	MIR-4	3670 ± 40	Beta-153365	VERGES <i>et alii</i> , 2002	
Middle Bronze Age	Cueva del Asno - Soria - (fig.1:8)	b Sector A	3860 ± 80	CSIC.341	EIROA, 1980
	Cueva Maja - Soria - (fig.1:9)	Cámara	3680 ± 40	GrN-18066	SAMANIEGO <i>et alii</i> , 2001
		Sala	3665 ± 40	GrN-18067	
Cueva El Mirador - Burgos - Sierra de Atapuerca	MIR-4 base	3400 ± 40	Beta-153366	VERGÉS <i>et alii</i> , 2008	
Middle Bronze Age	Cueva del Asno - Soria - (fig.1:8)	a Sector B	3380 ± 50	CSIC.340	EIROA, 1980
	Los Tolmos (Soria) (fig.1:11)	II - Sector B	3380 ± 50	CSIC.442	JIMENO, 1984
		II - Sector A	3380 ± 50	CSIC.480	
		II - Sector A	3370 ± 50	CSIC.408	
		II - Sector A	3360 ± 50	CSIC.409 & 443	
Cogeces - Valladolid - (fig.1:12)	-	3275 ± 30	Gr-N-10617	DELIBES & FERNÁNDEZ, 2000	

Tabla II: Radiocarbon dating of other sites mentioned in the text

5-8 cm level 9a of bat guano lies on the lower unit and separates it from the Holocene upper unit, representing a hiatus in deposition. The upper unit (Levels 9 to 0) with a maximum depth of 630 cm belongs to the Holocene. It is characterized by sedimentary homogeneity and thousands of archaeological artifacts as for wild and domestic animal bone remains which are an indicative of human activity. This unit is subdivided into two phases. The first one is Mesolithic to the Middle Bronze Age. There is a dearth of information regarding inhabitants prior to the introduction of pottery, agriculture, and livestock at the beginning of the Holocene. Therefore, the Mesolithic human settlement in Portalón is of great interest for the phases preceding the Neolithic in this region. The sepulchral nature of the site at the end of the Neolithic and Chalcolithic is noteworthy because represents one of the few tumulus burial in a cave known in Spain and the only one in the northern region. Although the Bronze Age period is well known in the region (cueva del Asno, cueva Maja, Galería del Sílex, El Mirador; Figure1), the thickness of Level 4 in Portalón (1 m on average) and its richness and well preserved archaeological record will add important information about different aspects of the lifestyle of these humans such as instruments, decorative style, social organization, economic activities, etc. The second cultural stage of this upper unit is interpreted as a period of sparse occupation during Iron Age and Roman and Medieval periods with some evidence of use as a livestock pen. In sum, the new Holocene stratigraphic sequence of the Portalón de Cueva Mayor is one of the most complete in the Spanish Northern Plateau.

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