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HISTORY | RESEARCH ARTICLE

Social elite from the power centre of Late Antique Gallaecia? Revisiting San Bartolomé de Rebordáns (Tui, Spain)

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Abstract: In this paper, we discuss novel and existing archaeological data from the San Bartolomé de Rebordáns site (Tui, Spain) that suggest the importance of Tude as a place of power in the Late Antique Sueve Gallaecia (411–585 CE) and later, in the Iberian Visigoth kingdom (585–711 CE). Here, we apply a combination of complementary techniques: archaeological survey, absolute radiocarbon dating, osteological and stable isotope analyses of the human remains, and the revision of the available contextual information. We recovered the remains of seven individuals with poor preservation and accelerated degradation from the Late Antique necropolis. These individuals were identified here as possible members of the social elite due to their archaeological context, becoming the first-time human remains relative to this social status within this chronology have been detected in NW Iberian

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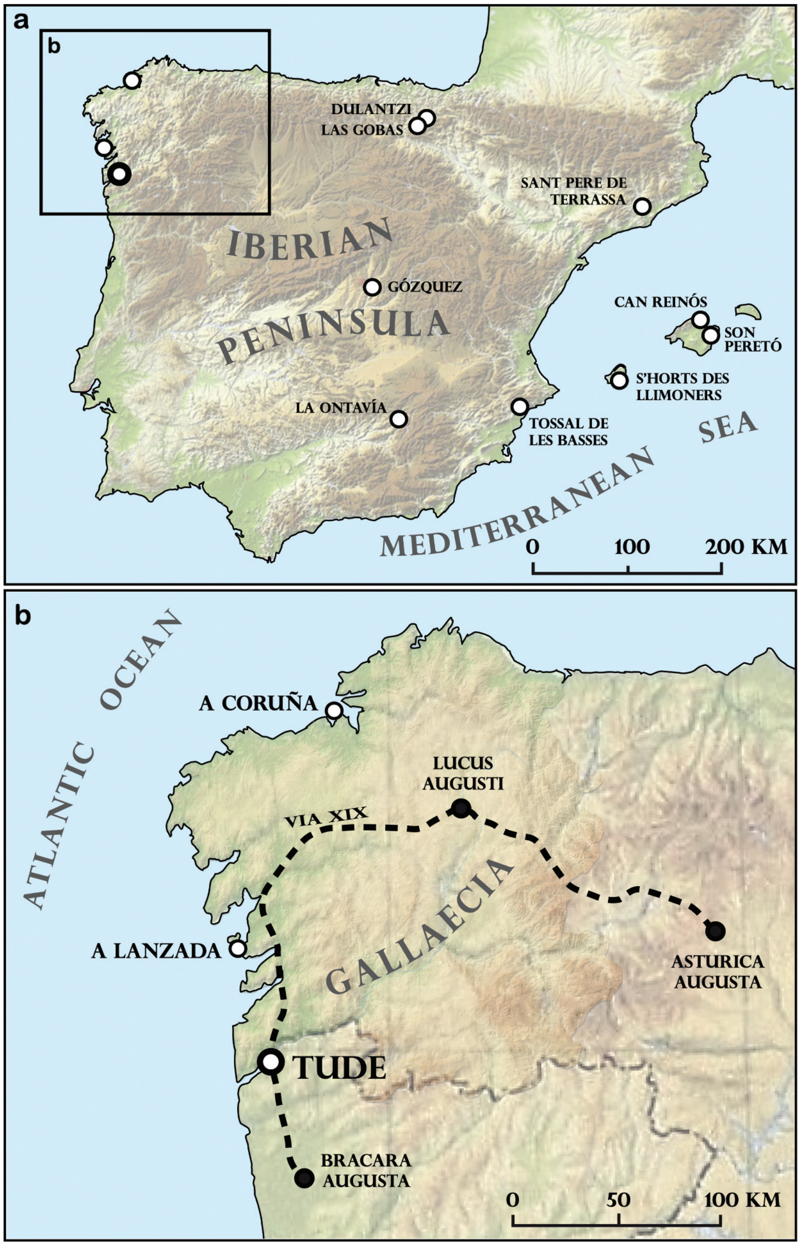


Figure 1. Location of Tudeude, other contemporaneous sites mentioned in the text, and the roman road XIX in the Iberian Peninsula.

Peninsula. The isotopic data obtained is broadly compared with contemporaneous sites along the Iberian Peninsula and the Balearic Islands for a complete interpretation. Additionally, we generate a simple routed and concentration-dependent Bayesian model to predict the source of dietary carbon in consumers, from which we calculate the marine radiocarbon reservoir effect. Despite the low number of individuals analysed, we argue that our results are of great archaeological significance as this represents the first biomolecular approach to the Late Antique (5th–8th centuries CE) social elite individuals from the northwestern and probably the whole Iberian Peninsula.

Subjects: Early Middle Ages; Archaeology

Keywords: stable isotopes; Gallaecia; osteology; early middle ages; social elite

1. Introduction

1.1. Gallaecia after the Roman world

The fall of the Western Roman Empire in the 5th century CE resulted in deep social, economic, cultural, and political changes in Europe (i.e., Ward-Perkins, 2005; Wickham, 2005). During the transition between the last moments of the Roman Empire and the first centuries of the Middle Ages, the regions encompassing the former Roman Empire witnessed a series of migratory movements by different Germanic groups. The Iberian Peninsula, known as *Hispania* by the Romans, was an important economic and cultural area for the Empire, especially during the Late Roman period (Kulikowski, 2010). In the northwest, the area now comprising Galicia, northern Portugal, Asturias, and León, the province *Gallaecia* or *Callaecia* (Figure 1), saw the emergence of the first Germanic kingdom within the bounds of the Roman Empire—The Kingdom of Sueves—in the 5th century CE (409–585 CE) (Díaz Martínez, 2011).

Between the fifth and the eighth centuries CE, people of Central European and North African origin penetrated the Iberian Peninsula (Jordana et al., 2019), imposing their power structures and cultural characteristics across the region. In 585 CE, the Visigoths conquered the Sueve kingdom and remained there until the Muslim incursions in 711 CE. The impact of those migratory movements on the local communities, heirs of a more “Roman” lifestyle, has not been investigated in detail from bioarchaeological perspectives with the exception of some case studies (García-Collado, 2016; García-Moreno et al., 2022; Lubritto et al., 2017; López-Costas & Müldner, 2016; Salazar-García et al., 2016). However, recent research shows that those migratory movements were mainly military actions rather than population migrations, implying that local cultural and political change may have been minimal (Jordana et al., 2019).

The importance of *Gallaecia* as a study area lies in its ability to inform us how the “Transformations of the Roman World” took place in a peripheral area of the Empire. However, archaeological research about the end of the Roman Empire and the first centuries of the Middle Ages in *Gallaecia* still presents significant difficulties. Though some recent advances have been made regarding global synthesis and interpretation of the archaeological record (Fernández Fernández, 2014; López Quiroga, 2004; Rodríguez Resino, 2005; Sánchez Pardo, 2013), very little is known about the material and social transformations that took place in this area between 5th and 8th centuries CE. The main challenge we face in studying this period is the lack of well-documented archaeological sequences, as many of the major sites traditionally attributed to this period were excavated in the 1960s and 1970s, with limited records of the work carried out.

One of the primary excavations from this period that has yielded significant insights is the necropolis under the church of San Bartolomé de Rebordáns, in Tui (Pontevedra) (Figure 1, and S1-S3), excavated by Manuel Chamoso Lamas in 1970 (Chamoso Lamas, 1976 ,). The Rebordáns site is located in one of the main political nuclei of the peninsular northwest, *Tude* (present-day Tui, Spain), documented as an important military, administrative, and religious centre during the Late Roman Empire and Early Medieval times. Its episcopal see is well documented since the sixth century and its bishops had intense control of the surrounding territory (Díaz Martínez, 2011; Sánchez Pardo, 2014; Vilariño Pintos et al., 2002). With the arrival of the Sueves, *Tude* figures as the capital of the kingdom with king Rekiamundo (458–463 CE) and was certainly one of the three main axes of the Suevic Kingdom along with Braga and Oporto (Díaz Martínez, 2011). The city was also an important mint and between 698 and 700 was the capital of a region of *Hispania* endowed with autonomy and governed by king Witiza (Díaz Martínez, 2011; Vilariño Pintos et al., 2002).

Here, we present the results of a new interdisciplinary project of the classical excavation of San Bartolomé de Rebordáns (Tui, Spain), that combines archaeological survey, novel stratigraphic understanding, radiocarbon dating, and osteological and stable isotope analyses. We pay special attention to a diversity of novel bioarchaeological approaches to identify and analyse potential social elite individuals in Late Antique *Gallaecia*. In order to develop this issue further, our data is compared to that published for contemporaneous sites in *Gallaecia*, the Iberian Peninsula, and the Balearic Islands. Despite the low number of individuals analysed, this study represents the first biomolecular and archaeological approach to investigating the social elite in *Gallaecia*, and probably the whole Iberia Peninsula from between the 5th and 8th centuries CE.

1.2. Stable isotope analysis and human diets in the late Roman and early medieval periods

The human individuals and archaeological traces discovered at the Rebordáns site correspond to the late Roman times and the beginning of the Medieval Ages. Historical records and archaeobotanical data indicate that Iberian diets for most citizens in the Roman Age were likely based on C_3 plants with some intake of direct or indirect products from terrestrial herbivores fed on C_3 plants (García-Moreno et al., 2022). C_4 plants such as common millet (*Panicum miliaceum*) and foxtail millet (*Setaria italica*) were also cultivated, but with different presence across the Iberian Peninsula, with a significant footprint in the north-west of the peninsula (García-Moreno et al., 2022; López-Costas & Alexander, 2019; Peña-Chocarro et al., 2019). However, following the historical and archaeological insights into subsistence, the millet was usually a resource consumed more by lower or poor social status (Gallant, 1991; Garnsey, 1988). In the case of Spain, the consumption of C_4 crops by lower status individuals continued, especially in rural populations, though with a more widespread usage than in the Roman Period (Melisa Alexander et al., 2015; Pérez-Ramallo, Grandal D´anglade, et al., 2022; Weiss Adamson, 2002).

Some potential dietary distinctions are expected for upper social class individuals, notably more protein foods and C_3 plants, with higher consumption of meat and fish in contrast with the lower social classes—especially among those populations without easy access to marine resources. Meat from young and suckling animals was a particularly high-status food in demand on the urban market (Pérez-Ramallo, Grandal D´anglade, et al., 2022), with mutton, lamb, kid, chicken, pork, beef, and rabbits being selected in descending order (Alexander et al., 2015). Freshwater and marine fish also had an important role to the medieval diet, especially in those places located in the coast or next to rivers, as is the case of Rebordáns (Figure 1). The consumption of alternative foods was also promoted by liturgical meat restrictions (Pérez-Ramallo, Grandal D´anglade, et al., 2022). This fomented the consumption of fish or other type of foods such as eggs, legumes, nuts, or vegetables that would have varied in type, quality, and quantity with status and geography (Weiss Adamson, 2004).

Stable carbon ($\delta^{13}C$) and nitrogen ($\delta^{15}N$) measurements of archaeological bone and dentine collagen has provided an efficient way to reconstruct the diet of human and animals from the past (Pérez-Ramallo, Grandal D´anglade, et al., 2022; Rissech et al., 2016). This analysis is based on the existence of light (^{12}C, ^{14}N) and heavy (^{13}C, ^{15}N) isotopes of these elements, which behave differently in physical or chemical processes due to their different masses. The relative abundance of the light and heavy isotope of an element varies between tissues sampled based on different environmental conditions and sources of carbon and nitrogen. In the case of human bone collagen, the primary driver of $\delta^{13}C$ and $\delta^{15}N$ are differences in the $\delta^{13}C$ and $\delta^{15}N$ of dietary sources. The period represented will vary with the type of bone sampledfor example, ribs tend to represent the few years of life while long bones can represent long-term dietary input (Hedges & Reynard, 2007). $\delta^{13}C$ and $\delta^{15}N$ measurements are expressed in parts per mil (‰) relative to international standards (Roberts et al., 2018).

The primary source of $\delta^{13}C$ variation in terrestrial ecosystems are the differences between plants following C_3, C_4 and CAM photosynthetic pathways (Smith & Epstein, 1971). Due to differences in fractionation during the uptake of CO_2, C_3 plants, such as barley, wheat, and most legumes, have $\delta^{13}C$ values between −34 and −21‰ (global mean −26.5‰) while C_4 plants, such as millet, sit in the range of −15 to −8‰ (global mean −12‰). CAM plants show intermediate values though are

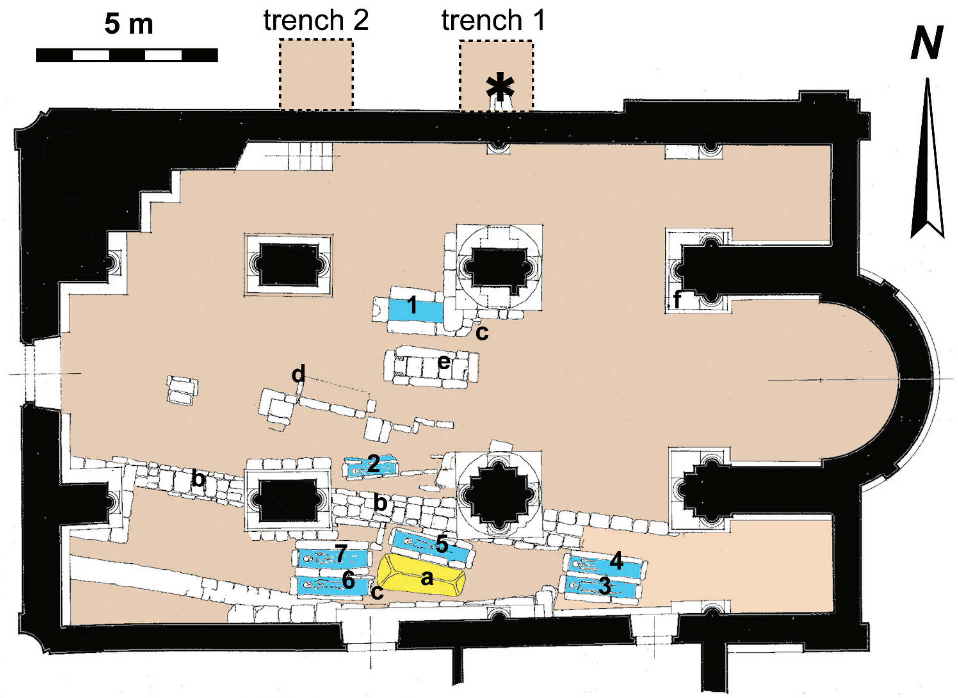


Figure 2. Plan of the old and new excavations at San Bartolomé de Rebordáns. 1 = tomb NSBR16-IND1; 2 = NSBR16-IND2; 3 = NSBR16-IND3; 4 = NSBR16-IND4; 5 = tomb NSBR16-IND5; 6 = NSBR16-IND6; 7 = NSBR16-IND7. Blue = tombs and individuals analysed (blue); Yellow and a = the stone sarcophagus: b = wall with Classical or Late Antique chronology from which the granite blocks were reused for the tombs; c = Romanesque column base over a tomb; d = Roman stele; e = tegula or Roman tile; f = column base resting on classical or late antique remains; trench 1 and trench 2 = areas or trenches of new archaeological excavations. This image was adapted from Chamoso Lamas (1976).

not of significant importance to human diets in a European context (Smith & Epstein, 1971; Webb et al., 2014). These distinctions are reflected in the tissues of consumers, with small trophic level effects of 1–2‰ (Ambrose & Norr, 1993)

There is also a δ^{13}C distinction between marine and terrestrial ecosystems, with the former having a different source of CO_2 among its producers than terrestrial plants that results in values more similar to C_4 plants (Schoeninger & DeNiro, 1984). Bone collagen δ^{13}C will be biased towards high-protein parts of the diet due to metabolic routing (Ambrose & Norr, 1993). Bone collagen δ^{15}N primarily reflects the trophic position of an individual, with increases of 3–5‰ being shown between an individual and its food sources (Hedges & Reynard, 2007). The greater number of trophic levels in marine systems mean that humans feeding on marine resources tend to have higher δ^{15}N than humans feeding on terrestrial resources. Environmental conditions, such as temperature, aridity, and rainfall can also influence both δ^{13}C and δ^{15}N, making it important to determine local or regional "baselines" against which human values can be compared (Goude & Fontugne, 2016).

2. The archaeological context

2.1. Previous archaeological works

The present Romanesque church of San Bartolomé de Rebordáns is located at the northern end of the modern town of Tui (Pontevedra, Galicia, Spain), in the heart of the former Roman city of *Tude* (Pérez Losada, 2002) (Figure 1, S1, and S2). It is situated on the route of a Roman road built between the end of the 1st century BCE and the beginning of the 1st century CE, which was reused from the 9th century CE as part of the "Camino de Santiago" (Way of St James). In the temple and the area around the church of San Bartolomé de Rebordáns, several archaeological interventions have been carried out since the 18th century, bringing to light various archaeological materials that show the use of the space since at least the Classical and Late Antique periods. This evidence has underlined the importance of the site as a permanent settlement after the fall of the Roman Empire until at least the 6th and 7th centuries CE. Among the most remarkable remains that have allowed us to establish a fairly accurate relative chronology are a stone sarcophagus that preserved an epigraphic reference dating to the 6th century CE (Núñez Rodríguez, 1979); and nearby, about 600 metres from the church of San Bartolomé de Rebordáns, the remains of another burial but made of tegulae, and dating to the 6th or 7th century CE (Pérez Losada, 2002). Unfortunately, none of the finds from these burial contexts were available for this study.

Regarding the interior of the temple, in 1970, Manuel Chamoso Lamas developed an archaeological work in which were detected at least two moments of occupation: a Roman phase, attested by the presence of a wall that probably was part of a cloister or wide peristyle; followed by a pre-Romanesque phase in which a temple was built, possibly associated with a monastery (Figure 2) (Chamoso Lamas , 1976). The leftovers of a Late Antique or Early Medieval necropolis were also uncovered with a minimum number of 11 graves with no evidence to suggest that these were reused. These tombs were associated with recycled materials from the Classical and/or Late Antique period (e.g., bricks, granite blocks and roof tiles known as tegulae), except for a medieval stone sarcophagus (Figures 2, 3, and S3) (Chamoso Lamas,1976). Classical Roman and medieval pottery vestiges, various examples of numismatics, and a small “Visigothic” pilaster capital have also been discovered (Chamoso Lamas, 1976).

3. Methodology of the study

3.1. New archaeological work

After the previous excavation conducted in 1979, the human skeletal remains were subject to an accelerated degradation process. This prompted a new intervention for their recovery and analysis promoted by the City Council of Tui and the church’s parish priest, Avelino Bouzón. Consequently, in 2016 we carried out a new archaeological intervention to recuperate and analyse the bone remains still preserved in situ, as well as conduct a new archaeological excavation via two trenches or areas on the northern side of the temple (Figure 2 and 4). Most of the tombs are characterised by a similar morphology, with a rectangular shape made of granite blocks reused from an earlier construction, possibly from the Classical or Late Antique period. Except for two graves, they share a wall and are built in pairs, suggesting a planned organisation of the space (Figure 2). All the tombs were made following the Christian burial rite, with an E-W orientation, the deceased in the supine position, and buried without any objects or grave goods (Pérez-Ramallo, Grandal D´anglade, et al., 2022).

A total of 7 individuals from 11 tombs were recovered (Figure 2). Unfortunately, the state of preservation of the remains, as well as the skeletal elements present for each individual, inhibited a homogeneous sampling for subsequent analysis by means of stable carbon ($\delta^{13}C$) and nitrogen isotopes ($\delta^{15}N$). The bone elements corresponded to 4 fragments of long bones from the upper and lower extremities (two femurs, one ulna, and one radius), two metatarsals, and one skull fragment (Table 1). From these, two were selected to be analysed in the Beta Analytics laboratories for radiocarbon dating (C^{14}), corresponding to two metatarsals from the individuals NSBR16-IND3 and NSBR16-IND4 (Table 1). Besides, in order to obtain a chronology for the new structures found in the new archaeological excavated area at the northern side of the temple, three samples were taken for radiocarbon dating (Figure 4; Table 2). One of them came from the remains of the Romanic Church’s wall, a piece of earth mortar from its joints, and two from the organic sediment located in its foundations (Figure 4; Table 2).

3.2. Osteological analysis

Osteological analysis is a non-destructive technique which deals with human skeleton recovery and interpretation. In archaeological contexts, those analysis on human remains helps to explore and estimate the individual characteristics, such as age, sex, stature, as well as it aids to identify traumas or pathologies (White & Folkens, 2005). Preceding investigations conducted seemingly did

Table 1. Osteological, abrasion scale following McKinley (2004), $\delta^{13}C$ and $\delta^{15}N$ stable isotope ratios, collagen quality indicators, location, and chronology from Rebordáns site.*Rejected

Reference	Sex and Age estimation	Abrasion grade	Bone	Radiocarbon years before present (BP)	Calibrated calendar date (95.4%)	$\delta^{13}C$ (‰)	$\delta^{15}N$ (‰)	%N	%C	Coll. Yield (%)	C/N
NSBR16-IND1*	Indet. Adult	4–5	Femur	-	-	−19.8	10.3	8.5	2.1	4.7	2.2
NSBR16-IND2*	Indet. Adult	3–4	Cranium (parietal)	-	-	-	-	-	-	-	-
NSBR16-IND3	Indet. Adult	3–4	Metatarsal	1570 ± 30	425–565 cal. AD	−18.1	12.2	35.3	13.0	3.2	9.1
NSBR16-IND4	Indet. Adult	3–4	Metatarsal	1410 ± 30	597–664 cal. AD	−18.1	11.5	39.6	14.2	3.2	6.5
NSBR16-IND5	Indet. Adult	3–4	Femur	-	-	−21.1	7.3	38.4	14.0	3.2	8.3
NSBR16-IND6	Female? >45	3–4	Ulna	-	-	−19.0	12.9	39.7	14.4	3.2	8.3
NSBR16-IND7*	Indet.	4–5	Radio	-	-	−22.3	10.9	12.0	2.5	5.7	1.3

Table 2. Radiocarbon determinations calibrated using OxCal. v4.4 (Bronk Ramsey, 2009) and the IntCal20 atmospheric curve (Reimer et al., 2020b)

Laboratory Reference	Reference	Material	Radiocarbon years before present (BP)	Calibrated calendar date (95.4%)
Beta -448,165	MUREB160630U08	Earth mortar	920 ± 30	1035–1210 cal. CE
Beta -448,166	MUREB160630U10	Organic sediment	4920 ± 30	5718–5591 cal. BCE
Beta -448,167	MUREB160630U11	Organic sediment	2450 ± 30	3769–3642 cal. BCE
Beta -501,354	NSBR16-IND3-HS	Bone (metatarsal)	1570 ± 30	425–565 cal. CE
Beta -506,082	NSBR16-IND4-HS	Bone (metatarsal)	1410 ± 30	597–664 cal. CE

not undertake any osteological analysis and/or publication related to previously excavated human skeletons. The human bones were recovered ($n = 7$) and analysed following different osteological methods at the Faculty of Medicine and Nursing of the University of the Basque Country (San Sebastián, Spain). Sex and age estimations of the skeletons were made using the morphological criteria of the skull and pelvis following Buikstra and Ubelaker (1994); Brooks and Suchey (1990); Brothwell (1981); Klales et al. (2012); Mays (2010); Meindl and Lovejoy (1985); Lovejoy et al. (1985), and Walker (2008).

Taphonomic changes, caused by environmental alterations since the first excavation of the necropolis, were assessed on human skeletal. From the moment of burial, bones can also suffer abrasion or erosions caused by roots, fungus, acidic or alkaline soils, as well as by human or animal actions (Buikstra & Ubelaker, 1994). Based on that and following McKinley (2004), all bones were recorder on a scale of abrasion/erosion of 0 to 5 (5 being the worst conserved and more affected).

3.3. Radiocarbon dating

We sent five samples for radiocarbon dating (two human bone, one mortar, and two organic sediment samples) at the Beta Analytics Laboratories, Florida. Before radiocarbon dating, the samples were first gently crushed then dispersed in deionized water. They were then washed with hot HCl acid to eliminate carbonates followed by an alkali wash (NaOH) to remove secondary organic acids. The alkali wash is followed by a final acid rinse to neutralize the solution before drying. After this, the samples for radiocarbon dating were bathed in sodium chlorite (NaClO2) under controlled conditions (pH 3 and temperature at 70°C). The AMS measurement was done on graphite produced by hydrogen reduction of the CO_2 sample over a cobalt catalyst. The CO_2 was obtained from the combustion of the sample at 800°C+ under a 100% oxygen atmosphere. The CO_2 is first dried with methanol/dry ice then collected in liquid nitrogen for the subsequent graphitization reaction. The identical reaction is performed on reference standards, internal QA samples, and backgrounds to ensure systematic chemistry. The analytical results ("BP" or "pMC") were obtained by measuring sample C^{14}/C^{13} relative to the C^{14}/C^{13} in Oxalic Acid II (NIST-4990C) in one of Beta Analytic's multiple in-house particle accelerators using SNICS ion source. Quality assurance samples were measured along with the unknowns and reported separately. The AMS results have been corrected for total fractionation using machine graphite $\delta^{13}C$. The IRMS performs the separation and measurement of the CO_2 masses (44, 45, and 46) and calculation of the sample $\delta^{13}C$. Radiocarbon determinations were calibrated using OxCal v4.4, and the IntCal20 calibration curve (Reimer et al., 2020b).

3.4. The marine radiocarbon reservoir effect

Ocean and freshwater environments are large carbon reservoirs of ^{14}C. This means that in an aquatic environment, ^{14}C concentrations are lower than contemporary atmospheric values, leading to "older" radiocarbon dates in those organisms relying on freshwater or marine systems (R. Fernandes, P. Grootes, M. J. Nadeau, et al.,). The direct or indirect consumption of marine proteins by human beings will thus impact ^{14}C quantification, illustrating inaccuracies in their radiocarbon ages as consequence of the marine reservoir effect (Cook & van der Plicht, 2013; Jull et al., 2013;

Keaveney & Reimer, 2012; Reimer et al., 2013). Thus, before the conversion of the radiocarbon date results to a calendar age, it is important to determine whether there were any dietary offsets that could influence the calibrated ages.

3.5. Methods of the stable isotope analysis

Collagen extraction was performed following the established procedure of Bocherens et al. (1997) at the University of A Coruña (Spain). This consists of removing the surface and all traces of cancellous bone using a dental drill equipped with an abrasive disc. The bone fragments were subjected to successive 5-minute washes in a sonicator, alternating between water and acetone (minimum 6 washes in water and 5 in acetone) until no turbidity was observed. The cleaned samples were dried at room temperature for 48 h and then ground into powder (0.5 mm sieve) with an agate mortar and pestle. As an initial approximation of collagen preservation, we conducted an elemental analysis of C and N proportions in bulk bone powder following Bocherens et al. (2005), except for those cases where the obtained bone powder was too limited. Three hundred milligrams of bone powder were first demineralised in HCl solution (1 M, 20 min, room temperature) and filtered (5 µm). The residue was soaked in NaOH solution (0.125 M, 20 h, room temperature), filtered (5 µm), and solubilised in a weak acid solution (HCl, 0.01 M, 17 h, 100°C). The dissolved collagen solution was filtered (5 µm) and freeze-dried for 48 h.

After calculating the collagen yield, all purified samples (500 µg) were located in tin capsules to be analysed in duplicate at the Instrumental Analysis Techniques Unit (UTIA) of the Research Support Services of the University of A Coruña by the Elemental Analyser Flash EA 1112 (Thermo Finnigan) connected through a Conflo II (Thermo Finnigan) interface to a Delta plus (Thermo Finnigan) isotopic relationship Mass Spectrometer. Accuracy was determined by measurements of international standard reference materials (USGS40, IAEA N2 and IAEA C6) within each analytical run. Standard reference materials. For δ15N: USGS 40 (−4.52‰), USGS41a (+47.55‰), IAEA-N-1 (+0.4‰), IAEA-N-2 (+20.3‰), and USGS-25 (−30.4‰). For δ13C: USGS 40 (−26.39‰), USGS41a (+36.55‰), NBS 22 (−30.031‰), and USGS 24 (−16.049‰). Acetanilide was used as internal standard (10 readings) to evaluate the uncertainty, resulting in ± 0,15 for C and N. The atomic C:N ratio along with the collagen yields were used in order to determine the quality of collagen preservation. Collagen yields over 1 wt% are considered acceptable for carbon and nitrogen values (van Klinken, 1999), while the C:N ratio range between 2.9 and 3.6 (DeNiro, 1985). The factor of uncertainty reported by the instrumental was ± 0.2 for both δ^{13}C and δ^{15}N.

Finally, we conducted an archaeological and isotopic comparison with contemporaneous sites from *Gallaecia*, the Iberian Peninsula, and the Balearic Islands available in the literature, aiming to a better understanding of these results in a wider context (Figure 1; Table 3). In total, the data obtained from San Bartolomé de Rebordáns was compared with 14 different late antique archaeological sites available in the literature (Figure 1; Table 3), bypassing infants and subadult individuals to avoid isotopic values affected by breastfeeding (Beaumont, 2014; Beaumont et al., 2015, 2016; Fuller et al., 2010).

3.6. Bayesian modelling of the stable isotope data

In order to better estimate dietary intake and to determine the degree to which marine protein may influence the estimated calibrated ages, the stable carbon and nitrogen isotope measurements of the four individuals from San Bartolomé de Rebordáns were fed into a simple routed and concentration-dependent Bayesian model in FRUITS (Food Reconstruction Using Isotopic Transferred Signals) to predict the source of dietary carbon in individuals (Fernandes, 2016; R. Fernandes, P. Grootes, M. J. Nadeau, et al.,). Controlled feeding experiments on omnivorous animals proved that the nitrogen signal derives 100% from proteins. Nevertheless, carbon signal from bone collagen represents the 74% from proteins and 26% from lipids and carbohydrates (Ambrose & Norr, 1993; Howland et al., 2003; Tieszen & Fagre, 1993; Warinner & Tuross, 2009). These percentage contributions were taken into consideration in our model for a better dietary estimation.

Table 3. Summary statistics of carbon and nitrogen isotope analyses on bone collagen of all human medieval populations from Gallaecia, the Iberian Peninsula and Balearic Island

Archaeological Site	Geographical area	Chronology AD (^{14}C)	Number of individuals	δ^{13}C Mean and ±SD (‰)	δ^{13}C Range (‰)	δ^{15}N Mean and ±SD (‰)	δ^{15}N Range (‰)	Reference
San Bartolomé de Rebordáns, Tui, Pontevedra. Spain.	NW Iberian Peninsula	5th-7th	4	−18.6 ± 1.4	−21.1 to −18.1	11.7 ± 2.5	7.3 to 12.9	Present study
Rúa Real, A Coruña. Spain	NW Iberian Peninsula	5th-7th	2	−17.7	−18.7 to −16.7	12.5	11.8 to 13.1	Kaal et al. (2016)
A Lanzada, O Grove, Pontevedra. Spain	NW Iberian Peninsula	5th-7th	15	−14.0 ± 0.7	−15.1 to −12.8	12.8 ± 0.5	12.0 to 13.8	López-Costas and Müldner (2016)
Casa Martelo, A Coruña. Spain	NW Iberian Peninsula	5th	1	−16.7	-	10.4	-	Grandal D´anglade and Bello-Diéguez ( )
Brigantium, A Coruña, Spain	NW Iberian Peninsula	3rd-6th	2	−17.7	−18.7 and −16.7	10.5	10.2 and 10.8	Grandal D´anglade et al. (2015)
EM Dulantzi 1, Alegría-Dulantzi, Álava. Spain	NE Iberian Peninsula	6th-7th	16	−18.9 ± 1.0	−21.4 to −17.1	9.3 ± 1.1	5.4 to 10.2	Lubritto et al. (2017)
Las Gobas, Treviño, Burgos, Spain.	NE Iberian Peninsula	7th-9th	40	−18.7 ± 0.5	−18.0 to −19.4	8.8 ± 0.6	9.6 to 8.0	Guede et al. (2018)
Gózquez, San Martín de la Vega, Madrid. Spain	Center Iberian Peninsula	6th-8th	25	−18.9 ± 0.7	−20 to −16.2	9.7 ± 0.8	8.6 to 11.2	García-Collado (2016)
Boadilla, Toledo, Spain	Center Iberian Peninsula	5th-8th	49	−18.6 ± 0.6	−21.0 to −17.2	10.3 ± 1.0	6.4 to 12.6	García-Collado et al. (2019)
La Ontavia, Terrinches, Ciudad Real, Spain	Center Iberian Peninsula	5th-9th	24	−19.0 ± 0.3	−19.4 to −18.2	10.9 ± 1.0	8.3 to 12.3	Salazar-García et al. (2014)

(Continued)

Table 3. (*Continued*)

Archaeological Site	Geographical area	Chronology AD (^{14}C)	Number of individuals	$\delta^{13}C$ Mean and ±SD (‰)	$\delta^{13}C$ Range (‰)	$\delta^{15}N$ Mean and ±SD (‰)	$\delta^{15}N$ Range (‰)	Reference
Tossal deles Basses, Alicante, Spain	East Iberian Peninsula	4th-8th	37	−18.3 ± 0.3	−18.7 to −17.7	10.7 ± 0.9	8.4 to 12.2	Salazar-García et al. (2016)
Sant Pere de Terrassa, Barcelona, Spain	East Iberian Peninsula	5th-8th	36	−18.6 ± 0.3	−19.5 to −18.1	9.7 ± 1.0	7.6 to 13	(Jordana et al., 2019)
Can Reinés, Mallorca, Spain	Balearic Islands	7th	31	−18.9 ± 0.6	−20.3 to −17.8	10.0 ± 0.7	7.8 to 11.5	Garcia-Guixé et al. (2009)
Son Peretó, Mallorca, Spain.	Balearic Islands	6th	3	−18.9 ± 0.2	−19.1 to −18.7	9.6 ± 0.2	9.4 to 9.8	Cau et al. (2014)
S'Hort des Limones, Ibiza, Spain.	Balearic Islands	4th-6th	60	−19.0 ± 0.2	−19.9 to −18.0	11.1 ± 1.1	8.3 to 13.6	Fuller et al. (2010)

Table 4. The averages of the measured herbivore and fish-bone collagen isotopic values (data from López-Costas et al. (2016), and Grandal D´anglade and Bello-Diéguez (2018)). The estimated protein and lipids isotopic values, and the macronutrient composition, expressed as dry weight carbon content following Fernandes (2016)

Food	**$\delta^{13}C_{collagen}$ (‰)**	**$\delta^{15}N_{collagen}$ (‰)**	**$\delta^{13}C_{protein}$ (‰)**	**$\delta^{15}N_{protein}$ (‰)**	**$\delta^{13}C_{lipids}$ (‰)**	**Protein (%C)**	**Lipids (% C)**
Herbivores	−20.0 ± 0.8	7.8 ± 1.9	−22.0 ± 1.0	9.8 ± 2.0	−28.0 ± 1.0	30 ± 2.5	70 ± 2.5
Fish	−11.8 ± 0.5	12.1 ± 1.9	−12.8 ± 1.0	14.1 ± 2.0	−18.8 ± 1.0	65 ± 5.0	35 ± 5.0

The isotopic values of herbivore and marine fish protein and lipids were estimated (Table 4), relying on previously reported offsets between macronutrient and collagen isotopic values (Fernandes et al. 2015). The chosen offsets represent consensus values (Herbivores, Δ^{13}C protein—collagen = −2‰, Δ^{13}C lipids—collagen = −8‰, Δ^{15}N protein—collagen = +2‰; Fish, Δ^{13}C protein—collagen = −1‰, Δ^{13}C lipids—collagen = −7‰, Δ^{15}N protein—collagen = +2‰) adding an uncertainty of 1‰. The isotopic offsets between diet and bone collagen for humans have been determined at 4.8 ± 0.5 for the carbon isotope and at 5.5 ± 0.5‰ for the nitrogen one (Dotsika et al., 2018; R. Fernandes, Grootes, Nadeau, et al., 2015). The factor of uncertainty was 0.5, higher that the instrumental reported.

4. Results

4.1. The archaeological excavation

Our 2016 excavations also included the excavation of two trenches of 2 × 2 meters in the north outside part of the church (Figures 2, 4, and S2). In trench 1, the remains of a medieval structure, as well as different tombs superimposed with an intensive use of space and destruction of anterior tombs, were discovered (Figure 4). The different typology of these tombs as well as the different use of the funerary space between this area and the interior of the church (Figures 2 and 3), where the tombs were not altered neither reused.

4.2. Osteological analysis results

The scarcity of bone elements found, and their poor state of conservation, is probably due to the granitic nature of the substrate, which does not favour the preservation of bone phosphate (López-Costas et al., 2016). There is also abrasion or erosion that affected the bone surface to varying degrees, illustrating taphonomic alterations between the levels 3 and 4 of erosion/abrasion (Figure 5; Table 1). These preservation conditions limited the degree of detail available from osteological analysis. From the 7 individuals recovered, only 6 could be age-estimated as adults (5 indeterminate and one indeterminate/female over 45 years old) (Table 1).

4.3. Radiocarbon dating results

A total of five radiocarbon dates were carried out in the laboratories of Beta Analytics (Miami, USA). Of these, two correspond to bone elements from a pair of individuals analysed in the necropolis, and three correspond to sediment and mortar from the structures discovered in the excavation carried out on the northern exterior of the church of San Bartolomé de Rebordáns. In total, two human bones (two metatarsals), one earth mortar, and two organic sediments were dated. The results are exposed in Tables 1 and 2.

4.4. Carbon ($\delta^{13}C$) and nitrogen ($\delta^{15}N$) stable isotope analysis results

From the seven individuals analysed, we were able to extract collagen for six individuals. From those, four of them provided collagen with a good enough quality of preservation (Table 1). The results obtained from these individuals illustrate a range of δ^{13}C collagen values between −21.1‰ and −18.1‰, and δ^{15}N values between 7.3‰ and 12.9‰ (Figure 6; Table 1). Isotopic analysis

Figure 3. Tombs at the necropolis of San Bartolomé de Rebordáns, Tui, Pontevedra. A = remains of individual NSBR16-IND6, which was the most completed and well preserved; B = interior tomb individual NSBR16-IND4; C = interior tomb individual NSBR16-IND5.

Figure 4. Picture of the excavation at trench 1 in 2016 with indication of the places where samples for radiocarbon dating were collected.

shows that the individuals analysed from San Bartolomé de Rebordáns had a diet based mainly on C_3 terrestrial sources with low amounts of marine protein, with the exception of individual NSBR16-IND5, which has low levels of marine and animal protein in its diet.

4.5. Bayesian modelling and the Marine radiocarbon reservoir effect

We generated a simple routed and concentration-dependent Bayesian model to predict the source of dietary carbon in individuals through the Bayesian mixing model FRUITS (Fernandes, 2016; R. Fernandes, P. Grootes, M. J. Nadeau, et al., ; Fernandes et al., 2014), which was at the same

Figure 5. Detail photographs of bone elements recovered from the necropolis of San Bartolomé de Rebordáns (Tui, Pontevedra). A = fragment of the skull of individual NSBR16-IND6 relating to both parietal bones and the frontal bone. The metopic suture (metopism) can be seen; B = left third metatarsal of individual NSBR16-IND4 where a foramen or hole can be seen which could have been caused by an infection; C = fragment of left tibia of individual NSBR16-IND3 altered by taphonomic changes; D = fragment of the base of the proximal articular zone of the right proximal

time useful to estimate the Radiocarbon Reservoir Effect (RRE) (Tables 1 and 4). Figure S4 illustrate the data provided by the FRUITS model.

The values from the individuals NSBR16/IND3, NSBR16/IND4, and NSBR16/IND6 probably correspond to a diet mostly based on C_3 terrestrial sources, with slight presence of marine foods (between 1.4 ± 1 and 7.9%), and/or a small contribution of C_4 plants. Individual NSBR16/IND5 is best interpreted as having a diet rich in C_3 sources, with small amounts of terrestrial fauna and marine foods in addition (around 5%).

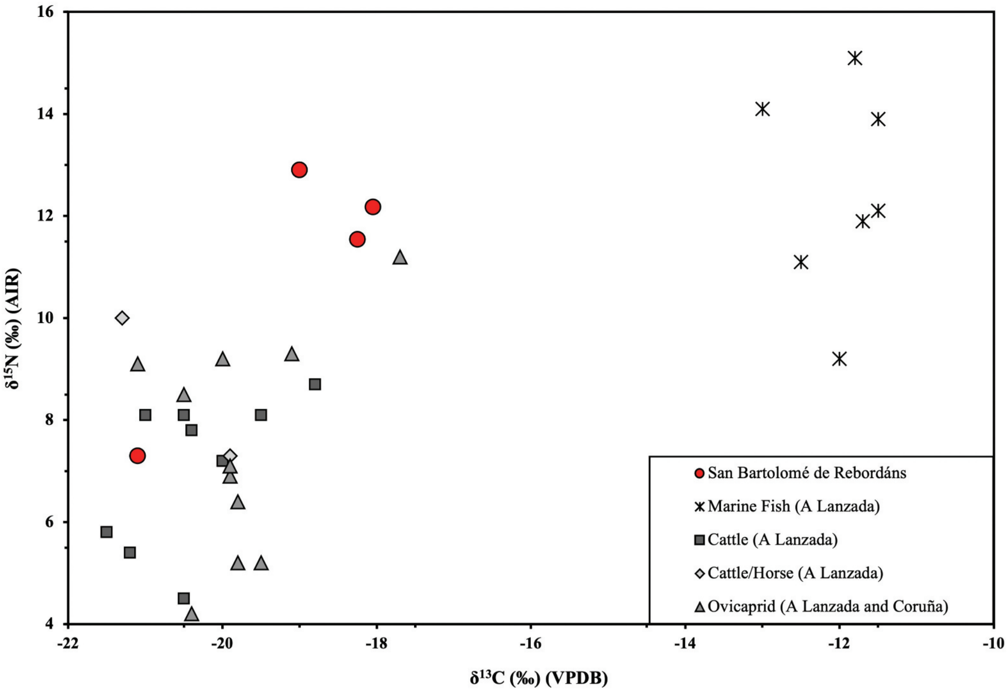


Figure 6. $\delta^{13}C$ and $\delta^{15}N$ of humans analysed in the present study and data from marine and terrestrial fauna collected from a Lanzada (López-Costas & Müldner, 2016).

5. Interpretation

5.1. A planned necropolis reserved for the elite?

The new fieldwork at the Rebordáns site, together with the revision of the old excavation materials, revealed that the necropolis was bigger than traditionally believed, as it extended outside the limits of the current church building. It also showed that part of the necropolis (the tombs made of stone blocks) was planned in a unique moment, and tombs were used only once, unlike another Early Medieval Galician necropolis like the Cathedral of Santiago de Compostela Compostela or Adro Vello (Pérez-Ramallo, Grandal D´anglade, et al., 2022). Radiocarbon dating revealed that the necropolis was in use at least between 5th to 7th centuries CE (Figure 7; Tables 1 and 2). This is coherent with the proposed chronology for the "*tegulae*" tombs in other parts of Galicia (Grandal D´anglade & Bello-Diéguez, 2018). All tombs were made of reused material, with the exception of the sarcophagus, which was specifically made for burial purposes. "Architectural tombs" and the sarcophagus seem to be the most important part of the necropolis, in contrast with the tombs discovered outside the church (Figures 2 and 3). This seems to support the hypothesis that the necropolis was divided into different areas according to the members of the society, with the interior of the temple being reserved for individuals of a certain status within Late Antique/Early Medieval *Gallaecian* society.

5.2. Chronology and reservoir effect

The two dated human individuals (NSBR16-IND3 and NSBR16-IND4) gave a calibrated result of 425–565 cal. CE and 597–664 cal. CE respectively (Figure 7; Tables 1 and 2). This confirms their Late Antique and Early Medieval chronology. Regarding the radiocarbon dating of samples taken from the newly discovered structures (Figures 4 and 7; Table 2), the earth mortar (MUREB160630U08) provided a coherent date for the construction of the Romanesque church (1035–1210 cal. CE). This indicates that the Romanesque church probably had a cruciform layout. However, the two samples corresponding to the organic sediment (MUREB160630U10 and MUREB160630U11) provided a calibrated chronology from 3769 to 3642 cal. BCE and between 754 and 412 cal. BCE, respectively. Unfortunately, these results suggest that both organic sediments could not date the time of their construction.

The employment of FRUITS to generate a Bayesian model, allowed us to better estimate those amounts of dietary sources mentioned above, and from where we were able to calculate a Radiocarbon Reservoir Effect (RRE) through the percentage of marine protein. Soares and Dias (2007) established, based on several Galician archaeological contexts from the Iron Age to Medieval times, a marine radiocarbon reservoir effect of 220 ± 28 for the area including San Bartolomé de Rebordáns. Both samples that were analysed by radiocarbon AMS yielded approximately the same amount of marine protein (Fig. S4). Consequently, we believe that this RRE slightly

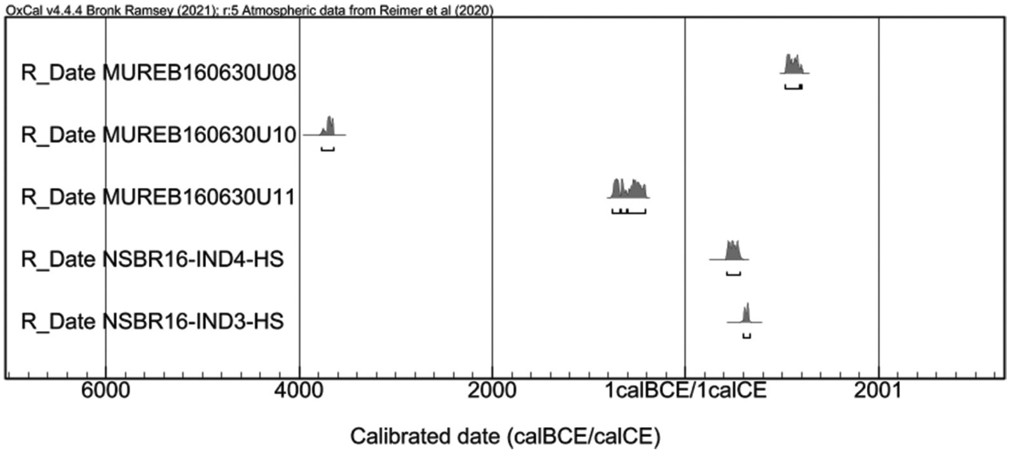


Figure 7. Radiocarbon determinations calibrated using OxCal. V4.4 (Bronk Ramsey, 2021) and the IntCal20 atmospheric curve (Reimer et al., 2020b).

altered the chronology obtained by the ^{14}C. However, we cannot ignore a certain influence on the chronologies that must be taken into consideration.

5.3. Rebordáns, *Tude* and the higher social class of Suevic-Visigothic *Gallaecia*

Despite the small percentage of individuals belonging to the Late Antique and Early Medieval social or religious elite, interpretations of social status based on the archaeological context and the osteological and stable isotope analysis of only seven individuals studied here must be treated with caution. Although this tomb typology has been observed elsewhere in the northwest of the Iberian Peninsula (e.g., Blanco-Torrejón et al., 2021; Valle Abad, 2020), the fact that some graves were placed in a preferred location seems to indicate that those buried inside the church were privileged individuals who probably enjoyed a higher social status than those burial outside. In this sense, it is also noteworthy to note that this central area of the necropolis seems to have been planned in one a single moment, with tombs sharing part of their walls (e.g., NSBR16-IND3 and NSBR16-IND4).

Interestingly, both NSBR16-IND3 and NSBR16-IND4 have near identical isotopic signals (NSBR16-IND4 died between 32 and 239 years later than NSBR16-IND3), and their tombs remained respected and undisturbed in the following centuries. This fact, together with the possible existence of an important Early Medieval church in this place, seem to suggest that those individuals were ecclesiastical aristocracies and perhaps part of the original monastic community which founded that church. The discovery of late antique aristocracies at Rebordáns further confirms the political importance of this site. Placed in the heart of what once was the ancient city of *Tude*, which enjoyed a major role in the geo-political map of late Antique *Gallaecia*, the site had a strategic position on the right bank of the Miño river, the main navigable river in NW Iberia, which offered easy access to river and maritime routes. Furthermore, *Tude* was also well connected inland to other main late antique cities in NW Iberia *Bracara Augusta* and *Lucus Augusti* (nowadays known as Braga and Lugo) by means of an important terrestrial roman road (*"via XIX"*). Recent archaeological works are proving that the political and economic role of the late-antique *Tude* was much more important than traditionally thought, especially after the verification of a dense network of fortifications around its nucleus (Fernández Pereiro, 2017). This undoubtedly reflects the existence of a supra-local power capable of organising military control in the area.

It is also worth mentioning the evidence of an important long-distance trade in the nearby port of Vigo (Pontevedra, Spain), which endured until at least the first half of the 7th century CE. It was the first late Antique port on the entire Atlantic facade of the Iberian Peninsula and, according to the volume of imported pottery identified, the only one that continued to receive imported vessels after the first half of the 6th century CE (Fernández Fernández, 2014). Recent work has also demonstrated the importance of the richness and homogeneity of the Visigoth coins minted in Tui between the end of the 6th century and the 7th century CE. The quantity of coins minted in *Tude* probably competed with the capital of the *Gallaecia*, Braga, and were even better in terms of quality, reflecting a good and more homogeneous mint, characteristic of a stable workshop, as well as a dynamic economic and political city life (Bartlett, 2005).

In this context, it is perhaps not surprising to find aristocratic people buried in Rebordáns site. These individuals had distinctive burials (most of them "architectural tombs" without parallels in the rest of northwest Iberia), access to better food, and were probably part of a monastic community located in the heart of one of the main political and economics centres of Sueve-Visigoth *Gallaecia*. We must not forget that monasteries represented in 6th-7th centuries CE Northwest Iberia real centres of power, acting as social catalysers of the important transformations of this period (Díaz, 2001).

5.4. Rebordáns in the peninsular context

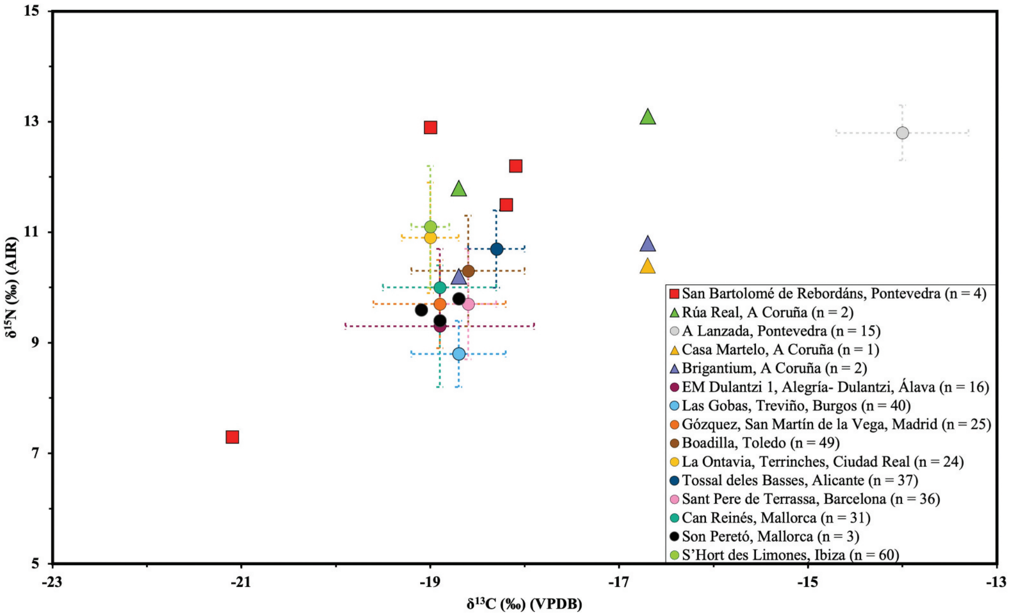
An archaeological and stable isotope comparison with other contemporaneous archaeological sites located also at the Northwest of the Iberian Peninsula—such as A Lanzada in O Grove

(Pontevedra, Spain) (López-Costas & Müldner, 2016); and those from the city of A Coruña (Spain) (Grandal D´anglade & Bello-Diéguez, 2018; Grandal D´anglade et al., 2015; Kaal et al., 2016)—help us to interpretate our results, particularly in the unfortunate absence of faunal remains from our excavations (Figures 1 and 8; Table 3). In contrast to the isotopic values obtained in San Bartolomé de Rebordáns, the individuals from these sites—who were not identified as upper social status, and in the case of A Coruña specifically they were considered to be individuals with a low social status —suggests a significant consumption of C_4 plants and/or marine resources (Grandal D´anglade & Bello-Diéguez, 2018; Grandal D´anglade et al., 2015).

In the interior peninsular sites, isotopic signatures indicate a mixed diet, based on terrestrial sources with some contribution of C_4 plants and a low inputs of animal protein based on relatively low δ^{15}N (Figures 1 and 8; Table 3). Only in Terrinches (Ciudad Real, Spain) the values are close to those of Rebordáns, but this site lacks an animal isotopic baseline and the fact that it is much further south, in a more arid zone, could have led to a "natural" increase in $\delta^{15}N$ values of plants, animals, and humans in this region (Goude & Fontugne, 2016). The consumption of marine foodstuffs is also obvious among most northwester Iberian sites in the comparison, where their geographic locations allowed easy access to the marine resources (e.g., Rúa Real, A Coruña; and A Lanzada, in Pontevedra) (López-Costas & Alexander, 2019) (Figures 1 and 8; Table 3). Individuals from Rebordáns, located on the shore of the river Miño, one of the main navigable rivers of northwest Iberia, which facilitated a fast and easy access to the coast, did not show such a strong input of fresh water and marine proteins as was expected (Figure 1). On the contrary, and according to their isotopic signatures and the Bayesian modelling conducted, three of the individuals from Rebordáns show a high input of terrestrial animal protein while the fourth one showed isotopic values indistinguishable from those of domestic herbivorous ungulates (Figures 6 and 8; Tables 1 and 3).

The archaeological and historical context, together with the high consumption of terrestrial animal protein and the scarcity of C_4 plants and/or marine foods, in contrast to other contemporaneous archaeological sites analysed from the Iberian Peninsula and the Balearic Islands (Figures 1 and 8; Table 3), suggests that we may be in the presence of some individuals who may belong to what we understand as a privileged social status of *Gallaecia* between the 6th and 7th centuries CE. The archaeological context suggests that

Figure 8. δ^{13}C and δ^{15}N (Mean ± SD) humans analysed in the present study compared to compiled literature data from the Iberian Peninsula and the Balearic Islands.



these individuals would be associated with the now-defunct monastery, which may help us to better interpret their diet and radiocarbon dating results (Figure 2; Table 2). Until the second half of the 9th century CE, when the Benedictine practices began to be followed, the monastic rules lacked homogeneity (Andrade Cernadas, 2009). The rule of St. Fructuous was established in *Gallaecia* in the mid-7th century CE and defined the monks' diet in a binomial based on bread and wine, accompanied by vegetables, legumes, and fruits (Andrade Cernadas, 2009). Unlike the aristocracy, their avoided meat consumption, especially of quadruped animals (Andrade Cernadas, 2009). This may explain the values observed in individual NSBR16-IND5, with remarkably low $\delta^{13}C$ and $\delta^{15}N$ values as opposed to individuals NSBR16-IND3 and NSBR16-IND4 (Figure 6).

This suggests that perhaps these two individuals (NSBR16-IND3 and NSBR16-IND4) may have been members of the lay aristocracy or monks who lived prior the establishment of the St. Fructuous rule. Belonging to a monastic order could also explain the differences observed after comparing our data with the available literature (Figure 8 and Table 3). Unfortunately, we must remain cautious in our interpretations due to the small number of individuals recovered and analysed.

6. Conclusions

Despite the small number of individuals analysed from Rebordáns site, this is the first time that human remains potentially relative to social elite with this chronology have been detected in NW Iberian Peninsula. Despite their poor state of preservation, stable isotope analyses have allowed us to obtain information about their way of life before the threat of total loss of the remains. This was done comparing the data with contemporaneous sites, dated with precision and interpreted using a Bayesian model. The use of multidisciplinary toolkits has allowed us to demonstrate the importance of their application to revisiting sites, providing extra information from which we could change their perception and interpretation. The relevance of these data increase if we consider the small number of archaeological sites studied now in the area and throughout the Iberian Peninsula with these techniques and chronology. Although this material must be treated with caution due to the number of individuals and their state of preservation, it will be important for future studies focusing on the transition from Late Antiquity to the Early Middle Ages in the Iberian Peninsula, especially those that focus on the distinction between social status, a topic that has never been studied in detail.

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