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RESEARCH ARTICLE

Biological histories of an elite: Skeletons from the Royal Chapel of Lugo Cathedral (NW Spain)

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Abstract

This study aims to reconstruct the biological histories of the people buried at the Royal Chapel of Lugo Cathedral, an important religious center of NW Spain, by using anthropological, geochemical, and historical perspectives. We conducted a macroscopic and radiographic study on 955 skeletal elements, a multi-isotope ($\delta^{13}C_{col}$, $\delta^{15}N$, $\delta^{34}S_{col}$, $\delta^{13}C_{ap}$, $\delta^{18}O_{ap}$) analysis of human ($n = 12$) and animal ($n = 4$) samples, and the study of 1407 documents from the cathedral archives. There was a minimum of 15 individuals, including six subadults (<7 years), seven mature males, and one possible female. Several traumatic healed injuries, a pelvis osteochondroma, and a case of DISH have been detected. Males were enriched in ^{15}N (up to 15.7‰, $\Delta_{human\text{-}animal\ avg} = 5.1‰$) suggesting consumption of animal protein including freshwater fish. Cathedral documents reflect *fora* payments in the form of rye, eggs, poultry, sheep, pigs, and eels as well as the hiring of two physicians. All individuals, except one, lived between the 14th and the early 15th centuries and show characteristics of high standard of living. Males were likely members of the cathedral—chaplains, administrators, sacristans, but not bishops—or noblemen relatives of the former according to preserved documents. Isotopic and paleopathological study suggest that they had an active and traveling life and at least one of them had connections with Central Spain. Children were local and possibly connected to the nobility. Lugo Cathedral is a prime example about the possibilities of transdisciplinary research in the identification of lifestyle in past populations.

KEYWORDS
apatite, cathedral documents, clergyman, collagen, DISH

1 | INTRODUCTION

The study of human remains from an osteological or anthropological perspective greatly advanced our knowledge of past societies. The main focuses of research include studies such as morphological studies, to approach the biological profile or the analysis of paleopathology as a proxy of paleo-health. Even for periods when written sources are available, human remains produce new data that can highlight issues usually not included in the chronicles, for example, the everyday life of children or women. Osteological studies have come a long way to reconstruct past lifestyle (e.g., Larsen, 2002; López-Costas, Müldner, & Cortizas, 2015). They have progressively moved from the more anecdotal case studies to seeking a comprehensive understanding of populations and societies. Combined works, including studies of bioarcheology/paleopathology and chemical composition of bone, have begun to appear to unravel diet and mobility

on the population level (see, e.g., Curto et al., 2019; López-Costas & Alexander, 2019; Richards & Montgomery, 2012). The endeavor of the combined studies, however, often turned out to be more complex than previously believed because integration is not always easy. It is a great challenge to unify all the data generated by the different methods in order to avoid the mere juxtaposition of results. Paleodiet, as a paradigm of bone chemical analyses, is just starting to meet paleopathology (Katzenberg & Lovell, 1999; López-Costas, Müldner, & Grandal d'Anglade, 2015; Richards & Montgomery, 2012).

Today, there is a new border to cross, namely, the true integration of historical sources. Studies of human remains and archaeological/anthropological findings usually consider historical or archeological literature in their discussion, but with more or less enthusiasm (see for recommendations in López-Costas & Alexander, 2019), just as historical studies only use anthropological or isotopic data to illustrate what is interpreted from the documents (Andrade Cernadas, 2006; Harper, 2017). When concerning a specific site, both types of data can often be found together in books, but normally with low integration among them, i.e. with few exceptions, osteological studies are just appendices (Patrick, 2014). We believe that historical data should be included as part of the results of a necropolis study and not only in the discussion. In this study, we aim to treat historical documents at the same level as other information directly obtained from skeletal remains. Our particular study concerns a period, when documents are especially important, the Late Middle Ages.

During Medieval and post-Medieval times, religious institutions ruled the cultural life in both Christian and Islamic European societies. Religious people were also deeply involved in the economic and social history. Human remains from convents and cathedrals, being important osteological and anthropological records, are also predominantly used in studies to address differences between ecclesiastical and lay people (e.g., DeWitte et al., 2013; Mays, 1997; Müldner & Richards, 2007; Quintelier et al., 2014), diseases (e.g., Judd, 2020; Rogers & Waldron, 2001; Väre et al., 2020), or diet and mobility (e.g., Ahlin Sundman, 2018; Müldner et al., 2009; Sarkic et al., 2019). In the case of Christian Iberian societies, the nature of monastic institutions underwent significant change from the monasteries of the early Middle Ages, often founded by prominent families, and the rich Cathedrals built during the Gothic period. The 14th century was transformative here. Known as the Medieval Crisis, this century saw severe famines and the Black Death. Intermittent poor weather in the first half of the of the century was followed by more general climate deterioration registered from AD 1350 onwards, known as the Little Ice Age (Oliva et al., 2018), causing crop failure and famines. Child mortality was high (Arroñada, 2002a, 2002b). Violence increased with different episodes, such as the civil war in the Castilian kingdom (1351–1369) or various assaults to Jewish quarters. Cities and village councils that had increased their independence during the rich 13th century (López-Costas & Müldner, 2019) were in constant fights with the lay and ecclesiastic nobility, with royalty supporting one or the other (Arquero Caballero, 2016; Lacreu, 1998). Nobility reacted to the loss of wealth and power with excessive taxes and new *fora* (i.e., contractual agrarian documents) leveled on the peasantry (Lacreu, 1998), which in turn led to a series of social conflicts that characterized the 15th century and markedly transformed the way of life of the Castilian and Galician people (Cazón, 2006). Another result of the crisis was that records and accounts kept by monasteries and cathedrals became increasingly detailed and abundant in the Iberian Peninsula (e.g., Portela Silva, 2005, 2007a, 2007b; Risco, 1798). A large body of historic studies have analyzed these sources for reconstructing economic trends as well as the everyday life of monks, chaplains and noble people (e.g., Andrade Cernadas, 2005, 2006, 2009; Arquero Caballero, 2016; Arroñada, 2007; Risco, 1798).

In the history of the medieval kingdom of Castile, the city of Lugo in modern day Galicia (NW Spain) played an important role (Figure 1). Lugo had been a flourishing commercial center since Roman times. Its early evangelization led to the establishment of a Diocese and a small Cathedral from at least the 8th century AD. The Bishopric exercised here a strict control over the village along all the Middle Ages. The fact that Lugo bishops had close connections to the Castilian Crown during Late Medieval times allowed them to maintain this empowerment over the inhabitants (Arquero Caballero, 2016). The Cathedral was rebuilt between AD 1129 and 1273 in Romanesque style and a number of new side chapels were added in the Late Medieval period. The bishop, Pedro López de Aguiar (1315–1400; bishop from 1349 to 1390), acted as patron for the construction of the Royal Chapel in the North side at the end of the 14th century, 1379–1381 (Agrelo, 2001; Porto, 1993). A Royal Chapel was advocated to the Castilian Crown, but as far as we know, it was never used to bury members of the royal family. In 1611, the Royal Chapel was connected to the San Froilán Chapel on its west side, creating a larger chapel called Capela do Pilar, that today can be found as part of the Cathedral (Cazón, 2006; Piñeyro Pérez, 1992). In 2007 Archeological works made on Capela do Pilar discovered several tombs with skeletal remains in them (excavated by the main author of this work) (Álvarez Meraio, 2007) that will, through the analysis of skeletal remains, provide an excellent opportunity to better understand the everyday life of the rich diocese, that controlled the economy of NW Spain during the Late Middle Ages.

This study combines (1) osteoarcheological analyses, including paleopathology, to approach the biological profile and health status, (2) stable isotopes analysis, to approach diet and mobility, and (3) analysis of the Cathedral historical documents to approach the characteristics of the individuals and their quality of life; all together will be combined to obtain the biological histories of the people buried in the Capela do Pilar chapel. We will try to better understand who these people were, how they lived, how their diet was, and where they came from by integrating different analytical perspectives.

2 | MATERIAL AND METHODS

2.1 | Archeological background

A total of 955 bone pieces were discovered inside the *Capela do Pilar* chapel during the 2007 archeological survey (Álvarez Meraio, 2007) originating from 15 individuals (see Table 1). The archeological works

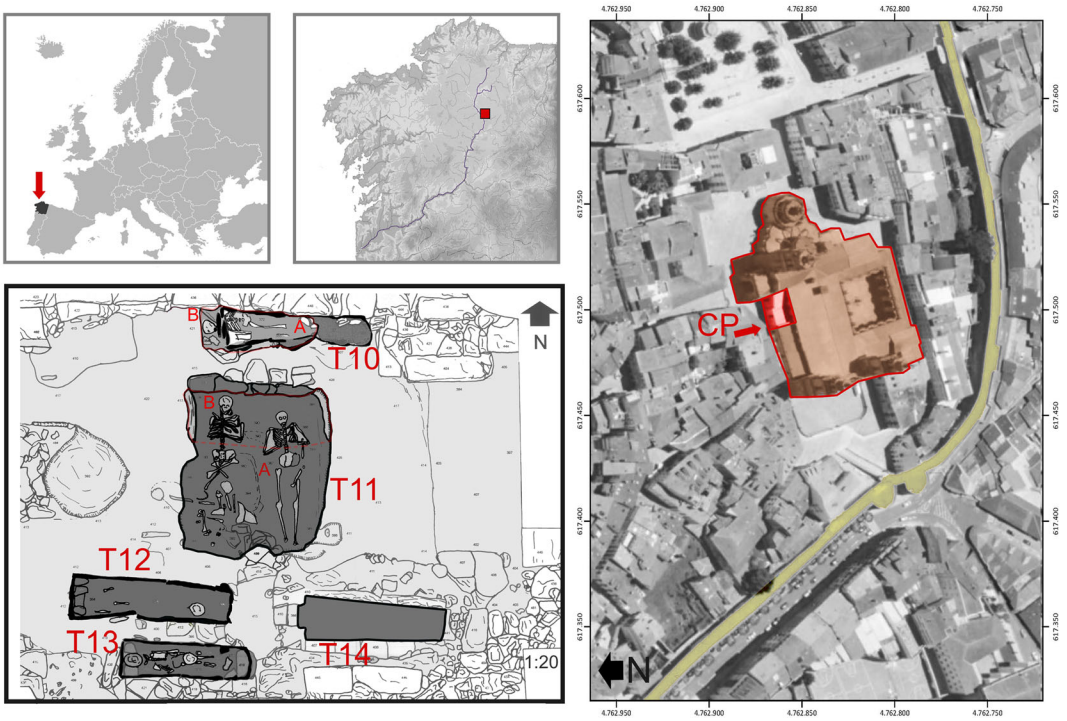

FIGURE 1 Maps indicating the location of Lugo including the cathedral (right-orange), the chapel Capela do Pilar (right-red CP) and the Roman wall (right-yellow). The course of the river Miño is also showed (left, central upper—blue). A 1:20 planimetry of the chapel has been included (left down) where the tombs' numbers are displayed. The map of Lugo was obtained modified from SIXPAC (Visor SigPac V3.3) and the planimetry from the archeological report (Álvarez Meraio, 2007) [Colour figure can be viewed at wileyonlinelibrary.com]

uncovered seven tombs in which the bones were found with and without anatomical connection (Table 1). Nonarticulated individuals were easily identified and individualized according to sex and age criteria (see Table 1). The oldest inhumation, T10B (980–1150 cal AD (2σ)), was placed on the North side of the chapel; it was a simple earthen burial with a single skeleton in a supine position. The other skeletons were found in slate slab burials (T10B, T11A, T11B, T12, and T13). All anatomically intact skeletons and tombs were placed in a West–East direction, except for burial T11A that was placed North–South. T11A was the most recent inhumation and contained two skeletons. Burial T14 was an anthropomorphic stone burial. According to the archeological excavation, it was suggested that T10B may belong to an earlier burial phase that took place before the construction of the chapels in the 14th century (Álvarez Meraio, 2007); this means in the cemetery surrounding the cathedral (i.e., outside the temple). According to the stratigraphy and the orientation, the other burials date to, approximately, when the chapel *Capela dos Reis* was constructed, in the late 14th century. The change in orientation in T11A was probably connected with an early 15th century altar on the South area, facing it (Cazón, 2006; Piñeyro Pérez, 1992).

2.2 | Radiocarbon dating

Two human bones were radiocarbon dated by accelerator mass spectrometry at the SUERC Radiocarbon Laboratory. The bones that were dated were selected from reliable archeological contexts, skeleton CP-703 (995 ± 30BP; lad-code SUERC-27371/GU-20681) from burial T10B, and CP-701 (665 ± 30; lab-code SUERC-27372/GU-20682) from burial T11A; probably the oldest and the most recent burials, respectively. The calibrated (Intcal13 though Oxcal) ages from in CP-703, and from 1270 to 1400 cal AD (2σ), in CP-701. This was interpreted that the earlier phase of skeletons outside the cathedral happened around the 11th century, and the burials at Capela do Pilar finished as latter as early 15th century AD. Thus, radiocarbon dating agrees with historical and archeological records in the dates of the burials. Approximate dating of the skeletal remains can be seen in Table 1.

2.3 | Osteological and paleopathological study

No associated grave goods were found in the burials or with the skeletons. A complete osteological and paleopathological study was performed. It included the minimum number of individuals (NMI) of each burial, sex and age estimation, study of pathological and taphonomic markers. Preservation index, markers for sex and age estimation, and pathological lesions were recorded using the international standards suitable for Spanish populations (see Márquez-Grant et al., 2011). Number of bones preserved was evaluated by the conservation index (IC) (Campillo, 2001) IC = no. bones/200, and preservation index for long bones (IP1) (Safont, 2003) IP1 = no.

TABLE 1 Burial typology and skeletal features of the human remains found during the archeological works inside the chapel Capela do Pilar from Lugo Cathedral

Burial	Burial area	Sample code	Funerary deposit	Dating AD	Or	Sex	Age	CI	IP1	Stature (cm)	OA	Main pathological features
T10	T10B	CP-703	1° supine	10-12th	W/E	M	45–50	54	67	170	Moderate	Ankylosis C2–C3, cyst in T5, emerging DISH, rib fracture
	T10A	CP-712	2°	14th		F?	Adult	3	17			
		CP-714	2°	14th		In	4–7	1	8		-	
T11	T11B	CP-704	1° supine	14th	W/E	M	40–45	69	100	163	Moderate	5 fractures: right maxilla, 2 ribs, T6 vertebra, 1 phalange
	T11A	CP-701	1° supine	15th	N/S	M	50–55	74	100	166	Moderate	Possible DISH, 3 button osteoma
		CP-702	1° supine	15th	N/S	M	45–50	62	100	170	Moderate	Rugosity and bone change at the conoid tubercle
		CP-705	2°	14th		M	40–45	43	83	173	Low	Fracture in right zygomatic bone
		CP-706	2°	14th		M	30–35	42	83	167	Low	Subperiosteal hematoma frontal bone, osteochondritis, osteochondroma right ilium
		CP-707	2°	14th		M	45–50	28	75	164	Low	Necrosis in a foot phalange, periostitis in femurs, tibiae and fibulas
		CP-713	2°	?		In	0.5–1	2	17		-	
T12		CP-710	1° supine	14th	W/E	In	3–4	5	42		-	
		CP-711	2°	14th		In	2–3	16	67		-	
T13		CP-708	1° supine	14th		In	6–8	47	100		-	C2–C3 fusion, periostitis in ribs, greenstick fracture rib
		CP-709	2°	14th	W/E	In	5–6	27	92		-	-
T14		CP-715	2°	?		In	Adult?	16	25			

Note: Anthropological and archeological data were extracted from López Costas thesis (López-Costas, 2012). Key: M = male; F = female. In = indeterminate. 1° primary deposit, 2° secondary deposit. Or orientation. Age expressed in years-old. CI conservation index, IP preservation index. Sin sinusitis. Vertebrae: C cervical T thoracic.

preserved long bones/12, where no. means the number of preserved bones per skeleton. The MNI was estimated using the recommendations by Roberts (2009, p. 12). Sex was estimated through established international markers on the innominate and cranial bones (for a summary, see Buikstra & Ubelaker, 1994) and metric analyses of long bones (Aleman et al., 1997). International methods for innominate bone (auricular surface and pubic symphysis morphology), fourth rib, dental wear, and cranial suture closure were used to estimate age in adults and dental development and epiphyseal fusion in subadults (for a summary see Buikstra & Ubelaker, 1994). Subadult age was assessed using dental development and eruption (Ubelaker, 1989) and the Iberian standards for growth and maturity of postcranial bones (e.g., López-Costas et al., 2012). Stature was estimated by maximum length of humerus and femur, and length in position of the femur (Mendonça, 2000). Pathological features were evaluated macroscopically and by X-ray analysis when needed, recording the presence, appearance and distribution of abnormal bone formation and destruction in each element and compared with international reference books (Aufderheide & Rodríguez-Martín, 1998; Ortner, 2003).

2.4 | Isotopic study

The isotopic study was performed on 16 skeletal samples (see Table 2) of which four were from the local fauna. The faunal remains were found inside the burials and probably belonged to midden deposits. Twelve human bone samples were analyzed in agreement with the NMI; individuals CP-13 and CP-14 were not included due to their low IC indices—there were very few skeletal parts available, so for ethics reasons, we decided not to sample them. Collagen was extracted following the method described by Longin (1971) with modifications recommended by Collins and Galley (1998), at the Department of Archaeology at the University of Reading (UK). Carbon and nitrogen stable isotope ratios were measured in duplicate on a Europa 20-20 isotope ratio mass spectrometer coupled to a Sercon elemental analyzer. Ultrapure collagen samples were analyzed for sulfur stable isotope ratios with a Finnigan Delta Plus connected to a CarloErba NC2500 elemental analyzer through a ConfloII at the Stable Isotope Laboratory in the Department for Geological Sciences, Stockholm University. Bioapatite was extracted in a fine-milled fraction in EcoPast research group's clean-lab at Universidade de Santiago de Compostela, following the pretreatment procedure developed by Garvie-Lok et al. (2004). Here, 200 mg of fined milled bone obtained using a hand-held drill were placed in falcon tubes; 10 ml of 2.5%–3% aqueous sodium hypochlorite was added per sample. Samples were maintained at room temperature and shaken for 8 h. After this, they were centrifuged, and the hypochlorite changed four times after every 8 h. The samples were then rinsed five times with distilled water to completely remove the sodium hypochlorite; 10 ml of 0.1 mg of acetic acid was then added, and the samples left for 4 h at room temperature before the acetic acid was removed, and the samples were rinsed five times again. Samples were then frozen and freeze dried to remove any remaining liquid. The quality of bioapatite as well as absence of organic material was tested using FTIR-ATR (Agilent Cary 630 FTIR Spectrometer)—this means that there were no absorption bands that correspond with Amide I, I, II, A, and B in the samples (see Cortizas & López-Costas, 2020; Prieto Gómez, 2018). Carbon and oxygen isotope ratios in bioapatite were measured at Iso-Analytic Inc by adding phosphoric acid and measuring CO_2 by continuous flow-isotope ratio mass spectrometry (CF-IRMS) coupled to a Europa Scientific 20-20 IRMS. Analytical error was estimated by repeated analyses of internal standards and was ±0.2‰ or less for all elements (1 SD). Following the procedure applied by Dury et al. (2019), $\delta^{18}O_{ap}$ was converted into carbonate, phosphate, and finally bulk precipitation water $\delta^{18}O$ ($\delta^{18}O_{cVSMOW}$, $\delta^{18}O_{pVSMOW}$, $\delta^{18}O_{dwVSMOW}$) (Chenery et al., 2012; Daux et al., 2008).

2.5 | Historical sources

The analysis of the 1407 primary historical documents was based on the transcriptions of the Cathedral *fora* and other documents (in medieval Latin and Galaico-Portuguese languages) under custody in the Cathedral of Lugo, which were published by Portela Silva (2005, 2007a, 2007b). They were mainly *fora* (i.e., contractual agrarian documents between the bishopric and private individuals/families for house or land renting) but also testaments or donations. Special attention was paid to appropriate use of words in the 14th–15th centuries, for example, *físico* meaning medical doctor in Galaico-Portuguese language from these centuries. We analyzed the documents searching for aspects in the financial management of the Cathedral that (1) could sketch the everyday life of the Lugo Cathedral people and could be connected to the analyzed skeletons, (2) could reveal who was buried inside *Capela dos Reis*/Rotal Chapel or the other chapels (e.g., through testaments and last wills), and (3) could help us to understand what was the general access to food items and health care that the members of the Cathedral paid for or obtained. Information about food items was complementary retrieved through the web of *Gallaeciae* Monumenta Historica (http://gmh.consellodacultura.org). We have counted the number of documents where each food item was mentioned in both 14th (a total 894 documents) and 15th (a total 513 documents) century books of transcriptions – and used them as approximations of the availability of this food and its importance in bishopric agrarian renting (i.e., *fora*).

2.6 | Statistical analysis

Statistical analysis of the data was made using the program IBM SPSS Statistics v.24. Basic descriptive statistics were calculated for each group of samples and comparisons within groups were computed by Mann–Whitney *U* test.

TABLE 2 Stable isotope ratios, collagen and apatite quality indicators, and species identification of the nonhuman animals and humans found during the archeological works inside the chapel Capela do Pilar from Lugo Cathedral

Sample code	Burial	Animal group	Sample area	Col yield	Ap yield	% C_{col}	% N_{col}	% S_{col}	% C_{ap}	C/N	C/S	N/S	$\delta^{13}C_{col}$	$\delta^{15}N$	$\delta^{34}S$	$\delta^{13}C_{ap}$	$\delta^{18}O_{ap}$	Sex	Age group
CP-971	T12	Cattle	Skull	1.2	29.0	40.9	14.4		5.5	3.3			−22.06	6.97		−12.7	−4.3	-	Adult
CP-919	T10A	Pig	Tooth	12.7	50.5	41.6	15.0	0.3	6.7	3.2	389	120	−21.42	7.14	12.7	−11.7	−2.8	-	Adult
CP-920a	T10A	Caprine	Humerus	4.8		38.9	14.1			3.2			−22.62	11.21				-	Adult
CP-920b	T10A	Caprine	Humerus	11.4		38.9	14.0	0.2		3.2	416	128	−20.80	7.76	12.7			-	Adult
CP-701	T11A	Human	Rib	8.5	59.2	33.5	11.8		7.2	3.3			−18.38	15.66		−13.5	−2.2	M	Old adult
CP-702	T11A	Human	Rib	11.0	39.5	41.9	15.2	0.3	7.9	3.2	406	126	−18.27	14.02	13.5	−14.6	−2.7	M	Mature adult
CP-703	T10B	Human	Rib	12.1	36.6	42.3	15.1	0.3	8.9	3.3	403	124	−18.91	13.16	13.8	−14.9	−4.1	M	Mature adult
CP-704	T11B	Human	Rib	9.1	47.8	35.9	12.8		7.3	3.3			−19.40	12.87		−15.1	−5.6	M	Mature adult
CP-705	T11A	Human	Femur	6.3	53.9	17.9	6.1		6.9	3.4			−17.92	14.42		−11.8	−2.7	M	Mature adult
CP-706	T11A	Human	Femur	9.8	50.2	41.9	15.1		6.4	3.2			−18.38	14.00		−12.2	−2.8	M	Young adult
CP-707	T11A	Human	Fibula	8.0	55.5	30.8	10.9		6.8	3.3			−18.15	14.67		−12.6	−2.3	M	Mature adult
CP-708	T13	Human	Rib	19.5	42.0	41.4	15.2	0.3	7.4	3.2	378	119	−18.90	12.40	12.9	−13.8	−4.8	In	Child
CP-709	T13	Human	Rib	9.4	43.3	42.5	15.4		6.6	3.2			−18.92	12.63		−13.9	−4.5	In	Child
CP-710	T12	Human	Femur	16.0	43.7	42.7	15.5	0.3	7.9	3.2	431	134	−18.64	13.72	13.1	−14.3	−3.7	In	Child
CP-711	T12	Human	Rib	15.1	57.0	43.4	15.9	0.3	7.0	3.2	421	132	−19.11	12.14	14.3	−13.3	−3.5	In	Infant
CP-712	T10A	Human	Skull	12.0	52.6	38.9	14.3	0.3	6.2	3.2	411	130	−18.80	11.30	14.7	−14.1	−4.3	F?	In

Note: Age group classification was done following Buikstra and Ubelaker (1994) criteria. Anthropological and archeological data were extracted from López Costas thesis (López-Costas, 2012). Key: M = male; F = female. In = indeterminate. Empty cells indicate that the analyses failed or the remained bone/collagen sample was not enough to be processed.

3 | RESULTS

3.1 | Anthropological and paleopathological findings

A total of 15 individuals were recovered at the chapel Capela do Pilar. Six of them were found in primary position in the burials T10, T11 ($n = 3$), T12, and T13. Another eight skeletons were found in secondary position and individualized (see Table 1). In addition, T14 was almost empty with the exception of five small bone pieces. Individuals CP-712, CP-713, and CP-704 had low IC and IP1 (see Table 1). The preservation of the skeletal pieces was moderately good in average, IC 34 ± 26 and IP1 66 ± 34. Secondary deposits showed lower preservation indices than primary depositions and subadult individuals (IP1 = 34 ± 35) slightly lower than adults (IP1 = 70 ± 35). Sex and age estimation indicate that all adult individuals were males older than 40 years, but CP-706 was likely in his 30s. The cranium of CP-712 has both male and female characteristics with a female predominance. The six subadults were younger than 7 years. Stature was estimated in seven male individuals obtaining an average of 168 ± 4 cm.

Regarding the main pathological features, osteoarthritis (OA) is present in almost all adult individuals and showing an expected relation with age (Table 1). In the analyzed adults, nearly all joints presented alteration in subchondral bone. Two cervical ankylosis found in individual CP-703 can also be a symptom of intense OA; although no sign of eburnation was found in the entire assemblage. The individual CP-701 displays characteristic bone formation in the spine. Ossifications in the form of bridges affect the right side of the anterior longitudinal ligament of the thoracic bodies (T2–T12; Figure 2), with severe ankylosis between T4 and T10. There is no involvement of the articular surfaces or the intervertebral spaces. Similar ossification can be found in the lumbar area with discontinuous alterations. Cervical vertebrae are not affected. The skeleton also shows ossifications in humerus ligaments, a bony spur on the right ulna where the triceps brachii muscle was inserted, hyperostosis at the iliac crest, pubis symphysis, trochanters and *linea aspera* of both femurs, osteophytes at the patellae, and strong bone spurs in both calcanea at the insertion of Achilles tendon (Figure 2). The description and symmetry of the lesions are strongly compatible with a case of diffuse idiopathic skeletal hyperostosis (DISH) including the pathognomonic features in the spine (see similar description and differential diagnosis in Reale et al., 1999). Individual CP-703 has a lower level of hyperostosis and ossifications in ulna and ilia and incipient bone bridges in T9-T11 that could be interpreted as an early case of DISH, following criteria described by Castells Navarro (2018). However, this individual also shows several features in his spine including moderate OA, the C2–C3 ankylosis (with extensive OA that points to a degenerative cause rather than a congenital one; see Figure 3) and an important defect in T5 in form of cyst at the internal-inferior part of the right pedicle, which challenge the previous diagnosis.

Trauma is well represented (Table 1). CP-704 has at least four healed fractures and an unhealed fracture in the upper vertebral body of T6 with signs of bone remodeling (active after death). The right maxilla and zygomatic bone show sign of a blunt force trauma that caused subsiding of the maxilla and a bony spur at the insertion of the muscle *levator labii*, a depressed fracture. The individual CP-705 shows also a well-healed fracture in the zygomatic bone. CP-706 shows signs of a subperiosteal hematoma in the left side of the frontal bone derived from blunt force contusion that depressed the area but did not cause a fracture (Figure 3). This individual also shows a large lobulated bone projection of 2.5 cm in the right anterior inferior iliac spine (Figure 3). In Figure 3, a continuity of trabecular and cortical bone with that of the surrounding bony part can be seen, which is a key sign for differential diagnosis of osteochondroma (Aufderheide & Rodríguez-Martín, 1998). The skeleton also has two small focal necrosis in the first right metatarsal and right calcaneus that are compatible with osteochondritis dissecans, and a bony spur (0.5 cm) in the right femur where the medial collateral ligament is attached.

There were no lesions compatible with specific infectious diseases in adults. However, CP-707 has active lamellar osteitis covering both lower limbs and lytic lesion in two foot-phalanges (distal area). These could be caused by a systemic unspecific infection, but the necrosis is compatible with erosive lesions observed in cases of gout (uric arthritis) (Fornaciari et al., 2009; Rothschild & Heathcote, 1995). Regarding subadults, only CP-708 shows paleopathological features (Figure 4). This child had a greenstick fracture on a rib with signs of healing and two ribs with active periostitis in their internal face; in addition, the axis and C3 vertebra were partially fused. The two first features can be related to a chronic infection of the lungs including bronchitis or tuberculosis; in the case of the

FIGURE 2 Pictures of several paleopathological features in the skeleton CP-701. The spine shows hypertrophic bone formation on the right side of the thoracic (2nd to 11th) vertebral bodies (lateral and anterior view). The left innominate and right ulna have bone formation at joint margins (acetabulum) and the entheses [Colour figure can be viewed at wileyonlinelibrary.com]

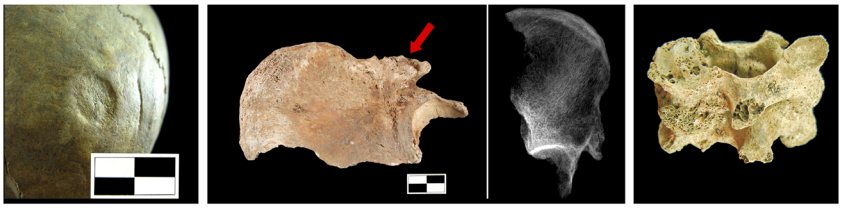

FIGURE 3 Pictures of the pathological features observed in individual CP-706. Left, subperiosteal hematoma in frontal bone. In the middle, photograph and radiograph of the osteochondroma in the right ilium (read arrow) where the continuation of cancellous bone trabeculae is visible. Right, ankylosis of C2/C3 in CP-703 [Colour figure can be viewed at wileyonlinelibrary.com]

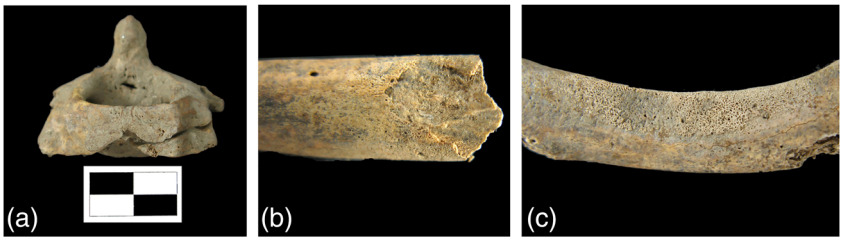

FIGURE 4 Pictures of several paleopathological features in the subadult skeleton CP-708: (a) cervical fusion (C2–C3), (b) greenstick fracture in a rib, (c) periostitis in another rib [Colour figure can be viewed at wileyonlinelibrary.com]

cervical fusion (Figure 4), it can be both congenital or caused by vertebral tuberculosis, but the latter is less frequent (Aufderheide & Rodríguez-Martín, 1998). Given the age of the individual, the most suitable explanation is a type II of Klippel–Feil syndrome—a congenital disorder resulting from the segmentation failure of one or two vertebrae during embryogenesis (see a detailed review in Hukeľová & Krošláková, 2021).

3.2 | Isotope analysis

All samples fulfilled the established quality criteria for well-preserved collagen for carbon, nitrogen, and sulfur ratios and bioapatite (according to Cortizas & López-Costas, 2020; Garvie-Lok et al., 2004; Nehlich 2015; Nehlich & Richards, 2009; Van Klinken, 1999). In addition to the standard quality indicators, pyrolysis GC/MS was used to assess the preservation of the extracted collagen in two samples showing no exogenous material (e.g., humic acids), published elsewhere (Kaal et al., 2016). Individual data and summary statistics are given in Table 2 and Figures 5–7.

Domestic faunal (cattle, pig, caprine) samples have averages of −21.7 ± 0.8‰ and 8.3 ± 2.0‰ for $\delta^{13}C_{col}$ and $\delta^{15}N$, respectively, which is lower than those found in the humans ($\delta^{13}C_{col}$ and $\delta^{15}N$, −18.6 ± 0.4‰, max −17.9‰, min −19.4‰; $\delta^{15}N$ 13.4 ± 1.2‰, max 15.7‰, min 11.3‰). The $\Delta_{human\text{-}animal}$ ($\Delta_{h\text{-}a}$) is 5.1‰ for $\delta^{15}N$, and 3.1‰ for $\delta^{13}C_{col}$. The oldest individual in age-at-death (with DISH), CP-701, presents the highest $\delta^{15}N$, while the possible female, CP-712, has the lowest (Figure 5). No significant differences were observed between adult and subadult humans ($\delta^{13}C_{col}$ $U = 7.000$, $p = 0.13$; $\delta^{15}N$ $U = 6.000$, $p = 0.11$); however, subadults tend to have lower $\delta^{13}C_{col}$ and $\delta^{15}N$ ratios, together with the possible female CP-712 and the males CP-703 and CP-704. The other males (CP-701, CP702, CP705, CP-706, CP-707) group together in higher $\delta^{13}C_{col}$ and $\delta^{15}N$.

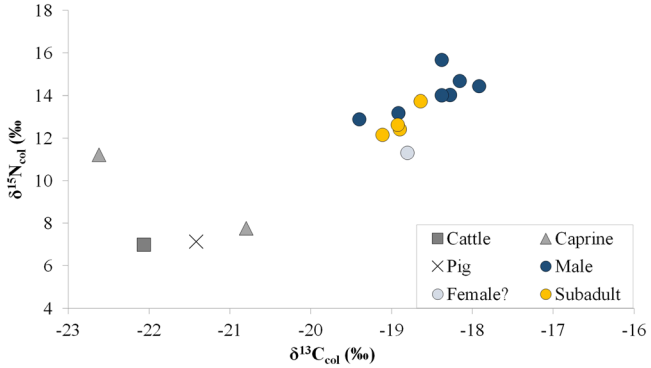

FIGURE 5 Bone collagen $\delta^{13}C$ and $\delta^{15}N$ values of animal and human samples from Capela do Pilar [Colour figure can be viewed at wileyonlinelibrary.com]

The two samples of domestic animals (caprine and pig) analyzed for $\delta^{34}S$ have slightly lower isotopic ratios (12.7‰) than the average of the four humans (13.7 ± 0.7‰) and the range of human variability (12.9–14.7‰). For bioapatite, the two animal samples have $\delta^{13}C_{ap}$ (−12.7‰, −11.7‰) again lower than the human average (−13.7 ± 1.0‰) but in the range of its variability (max −11.8‰, min −15.1‰). The span of human $\delta^{13}C_{ap}$ is moderately wide, 3.3‰, whereas that of $\delta^{34}S$ is small, 1.8‰. For $\delta^{13}C_{ap}$, three groups can be observed: one composed by the mature males CP-702, CP-703, and CP-704, whose values are lower than −14.5‰; another made by all subadults, the possible female CP-712 and the old male CP701, with intermediate values between −13‰ and −14.5‰; and another with the highest values over −13‰, the males found in secondary position in T11A: CP-705, CP706, and CP-707 (Figure 7). Regarding $\delta^{18}O_{ap}$, animal isotopic values (cattle: −4.3‰, pig: −2.8‰) are like human average (−3.6 ± 1.1‰; Max −2.2‰, min − 5.6‰). The range for human $\delta^{18}O_{ap}$ is moderately wide, 3.4‰ and correlates with

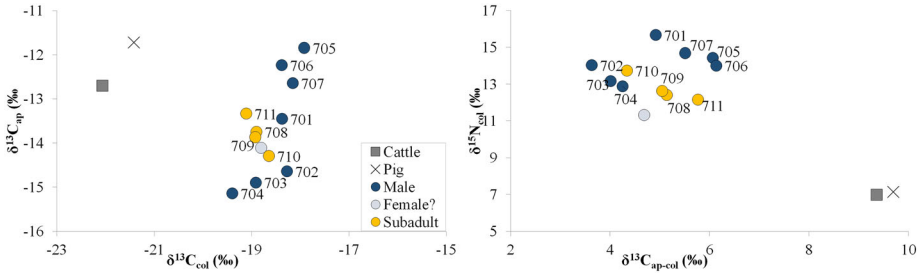

FIGURE 6 Scatterplots showing; (left) the variation in carbon isotopic composition in bone collagen ($\delta^{13}C_{col}$) and bone bioapatite ($\delta^{13}C_{ap}$); and (right) the $\Delta\delta^{13}C_{ap\text{-}col}$ and $\delta^{15}N$, of animal and human samples from Capela do Pilar [Colour figure can be viewed at wileyonlinelibrary.com]

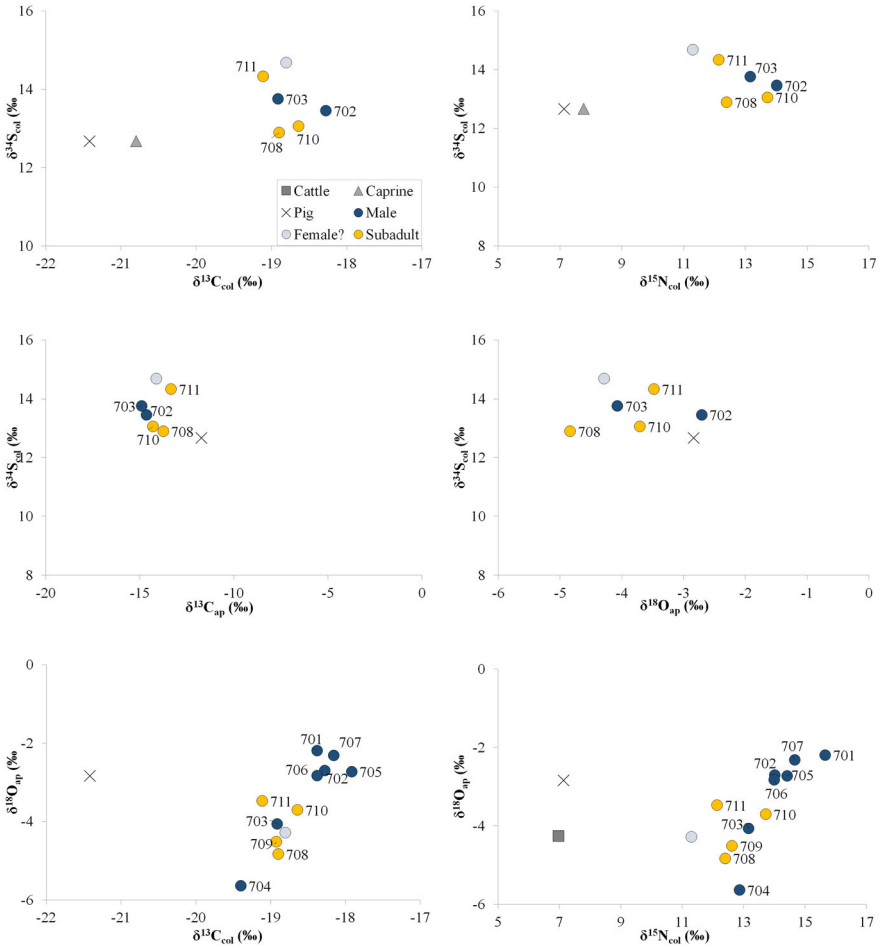

FIGURE 7 Carbon, nitrogen, sulfur, and oxygen isotopic composition of Capela do Pilar samples [Colour figure can be viewed at wileyonlinelibrary.com]

$\delta^{13}C_{col}$ ($r = 0.86$) and $\delta^{15}N$ ($r = 0.76$) reflecting an underlying factor in common that may affect both (probably proximity to the coast). Humans are again divided into three groups: CP-704 is separated from the rest due to his low $\delta^{18}O_{ap}$ (lower than −5‰); subadults, the possible female and the male CP-703 have values in between −3‰ and −5‰; males CP-701, CP702, CP-705, CP-706, and CP-707 show the highest isotopic ratios, over −3‰. Because of this group-based distribution, no significant differences were observed between adults and subadults ($\delta^{34}S$ $U = 2.000$, $p = 0.4$; $\delta^{13}C_{ap}$ $U = 16.00$, $p = 1.0$; $\delta^{18}O_{ap}$ $U = 8.000$, $p = 0.21$). Conversions of $\delta^{18}O_{ap}$ to precipitation water $\delta^{18}O_{dwVSMOW}$ can be observed in Table 3. The ratios detected in all subadults, the female and the male CP-703 (e.g., CP-703 $\delta^{18}O_{dwVSMOW} = -6.2$‰; see Table 3)—probably buried in a cemetery prior to the construction of the chapel—are similar to those observed for rainwater in the Lugo area (approximately −5.5‰ to 6‰) (Capilla et al., 2011; Hatvani et al., 2020). Values for CP-701, CP702, CP-705, CP-706, and CP-707, and the males found in T11A (−3‰ to −5.5‰), are closer to rainwater values from the coastal areas of southern Galicia and Portugal. Finally, a value lower than −8‰ as that of CP-704 can only be found in inland areas, that is, Central Spain (see Table 3).

3.3 | Cathedral documents study

Regarding everyday life, we have found documents indicating violent episodes between the cathedral and the city council. Clear examples are a trial judging the bishop Don Xoán for killing two members of the

TABLE 3 $\delta^{13}C_{ap}$ and $\delta^{18}O_{ap}$ in carbonates values with conversions to drinking water values, using the formulae published by Chenery et al. (2012) and Daux et al. (2008) for animal and human samples from Capela do Pilar

Site	Sample	$\delta^{18}O_{apVPDB}$	$\delta^{18}O_{cVSMOW}$	$\delta^{18}O_{pVSMOW}$	$\delta^{18}O_{dwVSMOW}$
Animals					
CP	971	−4.27	26.5	17.7	−6.5
CP	919	−2.84	28.0	19.2	−4.1
Humans					
CP	701	−2.19	28.6	19.9	−3.1
CP	702	−2.71	28.1	19.3	−3.9
CP	703	−4.07	26.7	17.9	−6.2
CP	704	−5.64	25.1	16.2	−8.7
CP	705	−2.73	28.1	19.3	−4.0
CP	706	−2.83	28.0	19.2	−4.1
CP	707	−2.32	28.5	19.8	−3.3
CP	708	−4.84	25.9	17.1	−7.4
CP	709	−4.52	26.3	17.4	−6.9
CP	710	−3.71	27.1	18.3	−5.6
CP	711	−3.48	27.3	18.5	−5.2
CP	712	−4.29	26.5	17.7	−6.5
Humans	*Avrg*	−3.6	27.2	18.4	−5.4
	SD	1.1	1.1	1.2	1.8

council after they threw stones at him in year 1345 (document 469; Portela Silva, 2007a) as well as the assassination of the bishop Don Lopo by a group of artisans (tailors, strap makers, and furriers) and traders in 1403 (document 902; Portela Silva, 2005). In addition, a document from year 1350 expresses the concern about the *fora* payment by housing renters due to the increase in empty houses by the high mortality related to the Black Death, indicating the convenience to cancel or postpone the debt (document 552; Portela Silva, 2007a). The costliness and number of *fora* as well as the number of people who paid them increased in times of instability, for example, during the Fernandine Wars in the 14th century, and seems to decrease in times of peace (several documents; Portela Silva, 2007a, 2007b).

Most information about who and where people were buried in the cathedral can be found in documents related to testaments. Only one will was by a workman, the shoemaker Roí Dominguez, who commanded his body to be buried at the cemetery outside the cathedral close to the main door "where his father and other God believers were buried" (document 1151; Portela Silva, 2005). The other testaments are related to clerics or lay nobility. In the first case, Xoán Monso de Castro Alfonsin, clergyman of Lugo Cathedral chorus (i.e., part of the dioceses), asked in 1487 that his remains should be placed inside Lugo Cathedral close to the main doors and close to Roi López, a sacristan (document 1369; Portela Silva, 2005). In 1340, Vasco Fernández, who was the father of the Lugo priest, asked to be buried in the chapel where his father and grandfathers were (document 410; Portela Silva, 2007a). Two years later, the dean of the cathedral made a testament expressing his wish to rest at San Miguel chapel (document 430; Portela Silva, 2007a). Also, the Lugo nobility aimed for being buried inside the Cathedral. Noble women seems to have preferred other chapels near St. Mary altar or female-Saints. A testament of a noble woman, Urraca Pérez de Santalla, indicated that her body should be placed close to the altar of Santa Marina (document 194; Portela Silva, 2007a). The testament of the noble woman Maria Eanes also begged for her corpse to be moved close to Santa María inside the Cathedral in the year 1335 (document 326; Portela Silva, 2007a). However, monks from the near St. Francisco monastery agreed with the Cathedral canons in 1326 the right to be buried in tombs that were property of the Cathedral and possibly aside its church; note that the text indicates "[…]predictos fratres recipere sepulturas directe et specialiter pertinentes ad supradictam ecclesiam cathedralem sicut sepulturas[…]" and we translated "ad" as aside (document 218; Portela Silva, 2007a). No child is mentioned in the revised documents.

The payment of *fora* in terms of food is shown in Table 4. Payments in rye and barley are frequently mentioned. In 1401, a long sentence confirmed that vassals from 30 parishes must continue paying a certain amount of pigs, cockerels, young goats, rams, and eggs, as well as enough wood to the cathedral every year (document 896; Portela Silva, 2005). There is only one specific mention of fish; in 1353, a document confirms that members of three parishes close to the Miño river should still pay rye and more than 120 eels per year to the bishopric; the debt was inherited by their descendants (document 595; Portela Silva, 2007b). There is an interesting document signed in 1337 in which the physician called Mestre Xoán swears to help the members of the cathedral and their relatives through his treatments and medicines. Two years later, the bishop also commanded to contract another physician and grammarian, Mestre Martiño; according to the document, the main reasons were that he was local and the

TABLE 4 Number of documents where food items are mentioned divided between 14th (894 documents) and 15th (513 documents) centuries

Material	14th century	15th century	Material	14th century	15th century
Wheat	7	13	Sheep	1	11
Rye	25	82	Goat	2	9
Barley	29	3	Pig	32	17
Millet	4	2	Bacon, ham	2	15
Wine	57	36	Ox	36	4
Fava bean	7	2	Cow	37	7
Fruits	7	15	Chicken	7	18
Salt	1	4	Capon	10	18
Eels	6	7	Eggs	1	8

Note: Data were obtained through the web *Gallaeciae Monumenta Historica* (http://gmh.consellodacultura.org).

bishopric priests talked highly about "his science" (document 339; Portela Silva, 2007a).

4 | DISCUSSION

The three levels of information, anthropological, geochemical, and documentary, are discussed together in order to answer biographic questions.

4.1 | Who were they?

According to our results, the studied individuals recovered in Capela do Pilar were buried in the Royal Chapel and died between late 14th and early 15th century, except for CP-703, who lived a couple of centuries earlier. The demographic profile is "U-shaped" with mature males buried at the North end of the chapel and young children in the South (see Figure 1 and Table 1). According to Agrelo (2001), bishop Pedro López de Aguiar—who was confessor to King Pedro I and in the royal circle of kings Enrique II and Juan I—used his privileges to transform his family chapel into the Royal Chapel of Lugo Cathedral (Risco, 1798, p. 124). To our knowledge, no member of the royal family was entombed there. The new chapel had an independent rule with associated lands, *fora* and its own chaplain. Besides chaplains and sacristans, any member of the bishop family could be buried here—but not the bishop, because he was buried in the Santo Domingo convent (Porto, 1993). Most bishops did not end their career in Lugo and were buried elsewhere (Risco, 1798), or they have well-recognized sepulchers (Andrade Cernadas, 2005; Piñeyro Pérez, 1992). Documents seem to indicate that noble women preferred tombs near St. Mary or different female saints. Several 14th century Galician testaments suggest the same: women often chose to be buried close to their female relatives and men to their male relatives (Andrade Cernadas, 2005). The absence of grave goods does not enable us to differentiate bishops from laymen and churchmen, contrary to the findings in Whithorn Cathedral (Müldner et al., 2009). Members of the cathedral could have lived longer than the rest of the population if we consider the mature age of some of the bishops (e.g., Pedro Lopez de Aguiar died in his 85th year) (Risco, 1798). Few data are preserved about the elder of the nobility because chronicles tended to hide events that happened during old age (Andrade Cernadas, 2006). However, a change in the way of living is detected during 14th century: old nobles did not withdraw to monasteries and they stayed in their family home (Andrade Cernadas, 2006). This movement made more likely they were buried in a cathedral instead of in a monastery. Note that Lugo bishops were connected to the Castilian royal family by being their confessors but not by blood of kinship. In summary, the analyzed adults were more likely incumbents of the cathedral in low or medium hierarchy level or male members of the Aguiar family (since the bishop Pedro López de Aguiar built the chapel).

The presence of children in the chapel is relatively surprising. Children could be both young members of the noble family/families or be involved in cathedral life (e.g., being tutored here and members of cathedral school). During the 14th and 15th centuries, there was a high mortality in the first years of life due to the lack of pediatric knowledge in medieval medicine (Arroñada, 2007; Cabrera, 2011). For example, respiratory diseases such as that found in CP-708 were treated with oil, flax seeds, and honey (Cabrera, 2011). Children from noble families received religious education from their early years and were commonly sent away to be tutored by godfathers or patrons (Arroñada, 2007). They could be also descendant of churchmen. Between 1496 and 1499, a strong reform in religious Galician communities took place to stop the birth of children from prioress and chaplains (Arroñada, 2002b; Pascual, 1999). The relative homogeneity in the age-at-death (<7 years) suggests the South area of the chapel was devoted to children's funerary rites. Seven to 10 years were the age for children living in religious communities to start working (Arroñada, 2002a, 2002b). According to St. Isidoro de Sevilla, infancy ends at the age of seven (Blanco, 1994). The lack of mention of children in the cathedral documents could be explained by the high mortality together with an early death, before developing active working roles (Arroñada, 2007).

4.2 | How did they live?

The members of the cathedral clergy had apparently an active life that agrees with the high frequency of OA observed in the studied assemblage. During the 14th century, at least three bishops had strong problems with the city council regarding Lugo's keys (Risco, 1798). Rebellions took place in those years including the siege of the city in 1366 by King Enrique II in a civil war against his brother Pedro I supported by the Lugo Cathedral council, whose members participated actively in the defense (Risco, 1798). Violent acts against the bishopric have been recorded, to the bishops themselves (the assassination of bishop Don Lope, document 902), and their assistants, such as the murder of the administrator by a noble women María Castaña in her rebellion for the excessive payments to the cathedral that Pedro de Aguiar ruled (Arquero Caballero, 2016; Risco, 1798). Trauma found in the skeletons could also be caused by everyday activities (e.g., rib and phalange fractures), but cranial trauma is more likely related to interpersonal violence. Cranial depressed fractures are the most common type of head injury (Roberts & Manchester, 2005), and they have been related to accidents during rural activities (Djurić et al., 2006). However, the number of individuals affected by cranial trauma is here higher (3/7; 43%) than in other sites such as the Islamic Medieval necropolis of La Torrecilla (30% for males) (Jiménez-Brobeil et al., 2009) or Serbian Late Medieval populations (1.3%–6.7%) (Djurić et al., 2006), and clearly higher than other Galician necropoleis (López-Costas, 2012). The fact that trauma and other pathologies had a good healing could be related to the medical treatment that we know these churchmen and their relatives could access (i.e., documents contracting physicians). Solitary pelvis osteochondroma is a rare pathology (see Figure 3). A very similar case described in clinic orthopedic was reported to cause snapping hip syndrome and cursed with hip pain and restriction of activity (Chun et al., 2016). Similar symptoms could have affected individual CP-706, limiting some activities such as horse riding. The fact that this individual shows similar diet than the other analyzed ones and was buried in such a privileged place suggests (medical) health care, although he died the youngest. Subadult individuals have few pathological markers except for CP-708, who showed a possible chronic lung infection.

4.3 | What did they eat?

Isotopic data indicate that their diet was mainly based on animal products from a C_3 plant food chain. The $\delta^{15}N$ value (13.4 ± 1.2‰) is elevated compared with contemporary populations representing the middle class in coastal Galicia (12.6 ± 1.2‰), even though the latter consumed a significant amount of fish (López-Costas & Müldner, 2019). In fact, Capela do Pilar male individuals have the highest in $\delta^{15}N$ values in NW Spain, including all Galician and Asturias populations analyzed until today (Figure 8) (Kaal et al., 2016; López-Costas, 2012; López-Costas & Müldner, 2016, 2019; López-Costas, Müldner, & Cortizas, 2015; López-Costas,

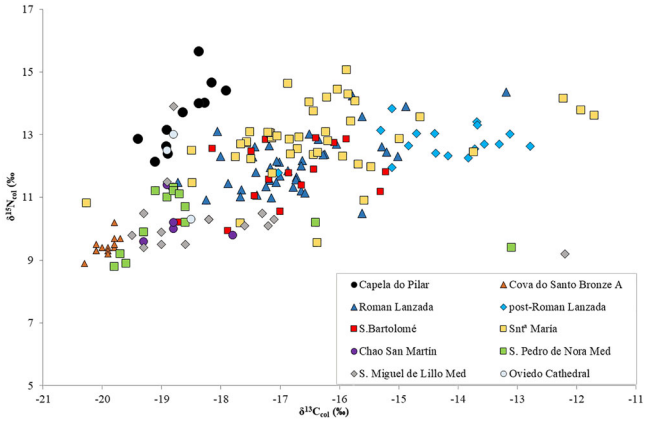

FIGURE 8 Bone collagen $\delta^{13}C$ and $\delta^{15}N$ values of human from Capela do Pilar and other sites from Galicia and Asturias [Colour figure can be viewed at wileyonlinelibrary.com]

Müldner, & Grandal d'Anglade, 2015; MacKinnon et al., 2019). MacKinnon et al. (2019) related the elevated $\delta^{15}N$ value and relatively low $\delta^{13}C_{col}$ value observed in individual 112 from San Miguel de Lillo in Oviedo with fasting and consumption of freshwater fish. Capela do Pilar data are also comparable with two of the three skeletons found inside the Oviedo Cathedral (see Figure 8). Documents indicate that members of the cathedral had plenty of access to freshwater fish (eels) but also to dairy and meat. Note that longer eels have been reported to have higher nitrogen isotope values (Robson et al., 2012). High consumption of animal products agrees with the possible case of gout (CP-707) and DISH (CP-701; highest $\delta^{15}N$). DISH is an idiopathic disease related to obesity and diabetes (Hajkova et al., 1965; Julkunen et al., 1971), which has been related to high meat consumption in monasteries (Rogers & Waldron, 2001), but these differences were not always observed in the isotopic data (Quintelier et al., 2014). The isotopic signal in the subadults was influenced (elevated) by breastfeeding. Interestingly, the female (CP-712) and male CP-703, buried outside the church, had lower animal protein consumption.

The $\delta^{34}S$ and $\delta^{13}C_{ap}$ values in individuals CP-704 and CP-703 suggest consumption of small amounts of marine resources and in the adults CP-705, CP-706, and CP-707 and subadult CP-711 a consumption of C_4 plants (probably millet) or animal fed by C_4 plants. We see no clear evidence of any input of C_4 plants rich in polysaccharides, such as sugar cane, which has been evidenced in a South Spain Islamic population (Inskip et al., 2019). Historic sources indicates that sugar cane was incorporated quite late in NW Spain and despite their privileged position, it is likely that the members of the cathedral had no access to this product (Andrade Cernadas, 2009). Note that Islamic minorities (Mudejares) were integrated in Iberian Christian societies such as the Aragon Kingdom (Flores, 2018). Both the $\delta^{13}C_{ap}$ values and the $\delta^{13}C_{ap\text{-}col}$ values are similar to those observed in a 7th century inland population from Monte da Cegonha in South Portugal (Saragoça et al., 2016) but with lower $\delta^{15}N$. Here, the historical documents hardly mention any payments in the form of C_4 plants (Table 4),

which contrasts to the large amount of millets cultivated and consumed in close coastal areas (López-Costas & Müldner, 2019). This fact supports the hypothesis about the extreme historic differences in diet between coastal and inland Galicia (López-Costas, 2012). Inland Galicia was dedicated to rye and barley (Peña-Chocarro et al., 2019). Many members of the Lugo Cathedral spent part of their life in monasteries (Risco, 1798), where we know the diet was based on bread and wine, rye being the most mentioned cereal in all monasteries' documents (Andrade Cernadas, 2009). Meat, on the other hand, was consumed specially by noble churchmen living in large villages (Andrade Cernadas, 2009). Most monasteries had *fora* from coastal settlements for the supply of dry or salted conger, hake, and many sardines that were used for Lent, as well as many freshwater fish (Andrade Cernadas, 2009; Ferreira Priegue, 1987). Cheese and honey were also highly consumed in Galician monasteries (Andrade Cernadas, 2009), but they are not mentioned in the Lugo Cathedral documents.

4.4 | Where did they come from?

According to the $\delta^{18}O_{ap}$ values, both the subadults (CP-708, 709, 710, 711), the possible female (CP-712), and male buried outside the church (CP-703; before the construction of the chapel) were locals. Four males have a signal compatible with having spent part of their life near the coast; however, there are no mentions in historical texts of trips to the South coast of Galicia or coastal Portugal. But because $\delta^{18}O$ is related to the water/liquids intake, it is a mixture of the water in food and the beverages consumed, a large consumption of wine produced in coastal areas could influence the isotopic signal (see Table 4). We know from the historical records that the basic diet of monks (and chaplains or bishops for extension) consisted of bread and wine (Andrade Cernadas, 2009). A high consumption of wine is also supported by the possible cases of gout and DISH (Choi & Curhan, 2007; Schröder et al., 2007).

Documents indicate that the cathedral received both people and food from diverse surrounding areas. Whereas it was seen a preference to hire more or less local workers, no information could be found about the chaplains' and sacristans' origin. Arquero Caballero (2016) suggests that bishops and royal confessors were selected among the families belonging to the lower social strata; therefore, the members of the cathedral from the lower social strata are more likely local. Locals or no-locals at birth, the majority of the 11 bishops that commanded the Lugo church from 1300 to 1450 spent a good part of their life traveling or working abroad (Risco, 1798). At least three of them were royal confessors (Arquero Caballero, 2016) and lived part of their life in Madrid and Central Spain. During 14th and 15th centuries, Lugo was well considered in Castilian economy and was the most influential village of NW Spain (Risco, 1798). One of the analyzed individuals, CP-704, seems to have spent some of his life in Central Spain before he died (based on $\delta^{18}O_{ap}$). According to the documents of the bishopric economy, the foreign connections of the Lugo Cathedral were mainly with the Castilian plateau, which where the individual CP-704 seems to have had more relation than the others.

5 | CONCLUSIONS

Biography or the story of a person's life written by somebody else is a compilation of events that define our years in life. In this study, a group of at least 15 unknown individuals were found inside the Royal Chapel of the Lugo Cathedral, today called Capela do Pilar. The goal of this study was to reconstruct part of their forgotten story. Most of them lived in the 14th–15th century and probably belonged to a medium to high social strata closely related to the cathedral bishopric. Our research has shown that the Royal Chapel of Lugo hosted the burial of preferentially mature-age males, placed in its North side, and young children placed in its South area. Males were likely to be related to the cathedral clergy—possibly chaplains, administrators or sacristans, but not bishops—or noblemen relatives of the former. They had an active and traveling life with plenty of food resources available, including meat, eggs, cheese, and eels. Wine was possibly highly consumed, as well as rye or wheat bread, but not millet. At least one of them had connections with Central Spain. Subadults seem to have spent all, or a large part of their life, in the Lugo area. All of them died as infants (<7 years old). Despite the high mortality in these centuries, they were treated with care and were buried in a privileged area.

The lack of archeological items associated with the skeletons is here substituted by a complex three level data analysis that enhances our understanding of these individuals' lives. The case of the Capela do Pilar individuals from the Lugo Cathedral is a prime example of the possibilities of transdisciplinary research in identifying the lifestyle of past populations. We are convinced that the obtained detailed information was only possible by equally considering historical texts, paleopathology, and stable isotopes.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that supports the findings of this study are available in the main text and tables of this article.

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