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The 'Prof. Dr. Rómulo Lambre' Collection: An Argentinian sample of modern skeletons

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ABSTRACT

This paper describes the 'Prof. Dr. Rómulo Lambre' skeletal collection. The Lambre Collection is housed in the School of Medical Sciences of the National University of La Plata and it consists of skeletal remains ceded by the Municipal Cemetery of La Plata. The collection has more than four hundred skeletons, with information on age, sex, nationality, date and cause of death. It was created for teaching and research purposes in compliance with current legislation, and its management meets guidelines specified in the Declaration of the Argentinian Association for Biological Anthropology on Research Ethics on Human Remains (2007).

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RESUMEN

En el presente trabajo se describe el estado actual de la Colección Osteológica "Prof. Dr. Rómulo Lambre". La misma se encuentra depositada en la Facultad de Ciencias Médicas de la Universidad Nacional de La Plata y está formada por restos esqueletales, cedidos por el Cementerio Municipal de La Plata. Cuenta con más de cuatrocientos esqueletos, con datos de edad, sexo, nacionalidad, fecha y causa de muerte. La Colección Lambre fue creada con fines científicos y educativos, su formación se enmarca en la legislación vigente y el trabajo sobre la misma es guiado por las directrices

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explicitadas en la Declaración de la Asociación de Antropología Biológica Argentina en relación con la ética del estudio de restos humanos (2007).

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Introduction

Significant advances in the field of bioanthropology have been derived from research carried out on skeletal collections housed in institutional repositories. Traditionally, these collections were created with human skeletal remains acquired through archaeological excavations. Nevertheless, the need for skeletons with associated information, which would allow researchers to develop estimation methods for sex, age or stature (among other characteristics), have originated skeletal collections composed of bones from hospitals or cemeteries where such information could be obtained.

Documented collections have been particularly valuable for scientific progress made throughout the last three decades in the field of osteology and in specific research on growth, nutritional status, palaeodemography and biology of undocumented human populations (Cardoso, 2009; Fazekas and Kósa, 1978; González, 2008; Meindl et al., 1985; Schutkowski, 1993). The most renowned skeletal series with documentary data such as age, sex and ancestry, are the Terry Collection at the Smithsonian Institution, the Hamann-Todd Collection at the Cleveland Museum of Natural History (Hunt and Albanese, 2005) and the Raymond Dart Collection at the University of the Witwatersrand (Dayal et al., 2009).

These collections have mainly been used as a foundation for the development of standardized methods in order to estimate biological characteristics on unknown individuals from their skeletal remains, which is of the utmost importance in both archaeological and forensic contexts (Anderson et al., 2010; Auerbach and Ruff, 2004; Brooks and Suchey, 1990; Loth and Henneberg, 1996; Lovejoy et al., 1985; Meindl and Lovejoy, 1985; Schmitt et al., 2010; Steyn and İşcan, 1997; Todd, 1920; Trotter and Glaser, 1952; Walker, 2005).

However, taking into consideration population heterogeneity, the application of these methods would be more reliable in human groups of similar ancestry, which is the reason why many authors express the need for documented collections of a regional character (Eliopoulos et al., 2007; Ríos Frutos, 2003; Saunders, 2000; Schmitt, 2002; Steyn and İşcan, 1999). Besides, the geographical location of the above-mentioned collections hinders the undertaking of research requiring skeletal material with reliable documentary data in other parts of the world. Within this context, a well-documented contemporary regional skeletal collection was assembled in our country, named after Professor Rómulo Lambre and housed in the School of Medical Sciences (Facultad de Ciencias Médicas) at the National University of La Plata (Universidad Nacional de La Plata, UNLP) (Salceda et al., 2009).

In this contribution, the composition of the collection and the origin of its skeletal material are described, as well as the processing and preservation of the remains, and the current profile of the collection.

The Lambre Collection

According to the regulations of the Municipal Cemetery of La Plata (Cementerio Municipal de La Plata, Ordenanza Municipal 7638/90), and in order to reuse space, individuals that have been buried for 6 years are exhumed by the cemetery personnel. After the exhumation, families have a period to claim the bodies and after such a period the cemetery administration has the authority to decide about the destination of unclaimed remains. This destination is usually a common ossuary or cremation.

In 2002, and in compliance with the current legislation, the Administration of the Municipal Cemetery of La Plata decided to cede bones to the Faculty of Medicine at the National University of La Plata to be used for research and teaching purposes (Ordenanza Municipal 9471/02).

In 2005, in order to create a reference collection on the basis of the documented skeletal remains mentioned above, a cooperation agreement was signed between the Faculty of Medicine and the School

of Natural Sciences and Museum (Facultad de Ciencias Naturales y Museo, FCNyM) of the National University of La Plata. This agreement involved the Applied Morphological Research Laboratory and the Chair of Cytology, Histology and Embryology 'A' (FCM) and the Chair of Anthropobiological Research Techniques and Methods (FCNyM).

Ever since, but not regularly, skeletal remains have been ceded, thus increasing the size of the collection. Therefore, the inclusion of these materials into the collection requires permanent curation, ranging from the preparation of the material to the compilation of the documentary record.

Death records, located in the cemetery archive, are the source of documentary information. In these records the name, age, sex, nationality, date and cause of death, address, occupation, signature of the medical practitioner that certified the death, location at the cemetery and date of exhumation are registered for each individual. All these details are linked to the skeletal remains available in the collection and can be accessed by using an identification number.

The preparation

The skeletons, which are ceded by the cemetery, are stored in numbered plastic bags. At the Faculty of Medicine the bones are separated from external wrappings and sediments; they are washed under slow flowing water with a soft brush. In order to avoid losing teeth and small bone pieces, the sediments are inspected using a sieve. Subsequently, the bones are labeled and each skeleton, depending on its size, is placed in a box or a plastic container and deposited in the facilities of the Chair of Cytology, Histology and Embryology 'A', Faculty of Medicine (National University of La Plata).

As the skeletons are prepared, the general state of preservation and the presence of cultural material associated (e.g., clothes, coffin plates, rosary beads) and corpse fauna that could be relevant for forensic research are registered in an ad hoc protocol. Finally, all the bone pieces present are registered in the inventory.

As expected, the initial examination of the skeletal material has showed that bigger and denser bones (e.g., femora and humeri) are more frequent than all other bones recovered. This general statement applies to skeletons of adults as well as to sub-adults and to foetal skeletons (García Mancuso, 2008).

Documentary survey

Before the skeletons are sent to the Faculty of Medicine, the cemetery employees assign numbers to the plastic bags in which the skeletons are stored. Each number refers to a single death record from which the documentary information is obtained. This information is checked against the skeletal remains in order to ascertain their reliability. The few cases in which the information was not reliable are separated from the documented collection. The information from the death records made it possible to build the collection's demographic profile described below.

Demographic composition

At the moment, the collection is composed of 420 skeletons and documentary information from the death records is complete in 328 cases. From the documentary records, the sex and age of the individuals and that they died between 1936 and 2001 have been gathered for further analysis.

Out of the 328 documented skeletons available, 60% are males and 40% females. The ages range from stillborn to 101 years, with the most frequent ranges being 0–1 (25%), stillborn (16%) and 70–79 years (16%) (Fig. 1).

The collection's demographic profile agrees with a process of attritional mortality (Fig. 1). The profile is characterized by a differential mortality risk, with different frequencies by age category, and a larger number of newborns and senile adults in relation to other groups.

The extremely high frequency of individuals less than one year old does not agree directly with the birth and death rates in the living population. Instead, this frequency has been determined by the fact that cemetery personnel stored infant skeletons longer than was established at the time when the agreement was signed.

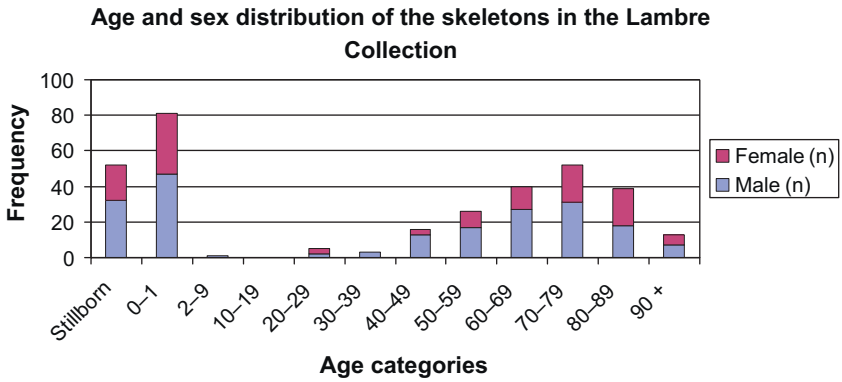

Fig. 1. Sex and age distribution of the Lambre Collection.

The nationality and cause of death are also stated in most of the individual death records. All of the sub-adults are Argentinian, whereas among the adults, although the most highly represented nationality is Argentinian (58.5%), there are also individuals of other nationalities such as Italian (4.6%), Spanish (2.6%), Uruguayan (1%), Paraguayan (0.5%), Chilean (0.5%), Portuguese (0.5%) and Bolivian (0.5%). In the remaining 31%, this information is not recorded. Concerning the cause of death, 'non-traumatic foetal asphyxia in utero' (14.3%) and 'non-traumatic cardiac arrest' (43.3%) are the most common.

Discussion

The composition of the Lambre Collection is in keeping with similar initiatives, which are currently developed and maintained in several countries worldwide, as reported in the international literature (Cardoso, 2006; Eliopoulos et al., 2007; L'Abbé et al., 2005; Paredes et al., 1997; Rühli et al., 2003) (Table 1). Likewise, in South America there are other projects involving the analysis of skeletal remains with documentary information (Bosio et al., 2009; Paredes et al., 1997).

This collection has arisen as a result of the necessity to address typical problems that the field of biological anthropology and its applications (e.g., bioarchaeology, forensic anthropology) are confronted with. It has also given rise to research projects related to individual biological characterization recognized by institutions of the national scientific research system, such as the National Scientific and Technical Research Council (Consejo Nacional de Investigaciones Científicas y Técnicas, CONICET) and the National University of La Plata.

Due to the ethical dilemmas inherent in the research on human skeletal remains, the Lambre Collection is in compliance with the current legislation (Ordenanza Municipal 7638/90) and its management meets the guidelines specified in the Declaration of the Argentinian Association for Biological Anthropology (Asociación de Antropología Biológica Argentina) on Research Ethics on Human Remains (2007).

The osteopathological analysis developed on the basis of the skeletal collections provides information about the health status of the population, and contributes towards establishing markers of occupational stress based on specific skeletal features (Plischuk, 2009). Also, comparison of morphoscopic and morphometric information about individuals makes it possible to analyze intra- and inter-population variability.

As outlined above, these documented collections, with skeletons associated to reliable information about sex and age at death of the individuals, offer the appropriate scenario to test estimation methods for those variables, as well as to generate new reference standards (Desántolo, 2007).

Finally, the integration of these kinds of collections is crucial in the generation of a material base to train students by means of teaching together with the analysis of human skeletal remains.

Table 1
Examples of documented skeletal collections around the world.

Skeletal Collection	Spitalfields (named sample)	St. Bride's Church	Terry	Luís Lopes	Hamann-Todd	Coimbra	Dart	Grant	Lambre	Pretoria	Athens
N	389	244	1728	1692 (699 available)	3713	505	2605	202	420 (328 available)	290 (complete skeletons)	225
Year of death	1646–1844	1666–1850	1822–1943	1880–1975	1900–1955	1904–1938	1921–present	1928–1950	1936–2001	1942–present	1960–1996
Age interval	0–90+	3–91	16–102	0–98	0–105	7–96	0–90+	17–93	0–101	10–100	0–99
Female (*n*)	186	–	715	373	700	239	756	176	130	65	100
Male (*n*)	197	–	1012	326	2979	266	1840	26	198	223	114
Unknown sex (*n*)	6	–	1	–	34	–	–	–	–	2	11
Location	London, UK	London, UK	Washington, EEUU	Lisboa, Portgal	Cleveland, EEUU	Coimbra, Portugal	Johannesburg, South Africa	Toronto, Canada	La Plata, Argentine	Pretoria, South Africa	Athens, Greece
Reference	Molleson and Cox (1993)	Scheuer and Black (1995)	Hunt and Albanese (2005)	Cardoso (2006)	http://www.cmnh.org	Santos (2000)	Dayal et al. (2009)	Albanese (2006)	Salceda et al. (2009)	L'Abbé et al. (2005)	Eliopoulos et al. (2007)

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