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SKELETAL REMAINS OF RAMÓN ROBERTO PERÉ: A VICTIM OF A DICTATORIAL REGIME IN URUGUAY

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ABSTRACT

Case studies are ideal to test at the ground new forensic anthropology techniques based in a population standard to individual skeletal remains. The increasing role anthropologists have played in forensic sciences has aided the medico-legal disciplines in a number of ways. For example, in the identification of skeletal remains and in many of these cases perpetrators linked to Human Rights have brought to court for justice. The purpose of this paper is to show osteological techniques used to analyze skeletal remains and make a positive identification of them and determine the cause of death. The skeletal remains of the victim were exhumed from a local cemetery in Montevideo City Hill, Uruguay, in September 2010, and carried to the Judicial Morgue to be analyzed by the author. Preliminary analysis indicated that the victim was about 30-year-old, white, male, and about 162 cm tall. Based on preliminary evidence that the victim might be Roberto Peré who was shot in the back in 1973 by a military wearing civilian clothes at the beginning of the last Uruguayan Dictatorial Regime (1973-1984). Digital comparison was made using a victim's photograph and the unknown skull. This examination revealed that the skull corresponded consistently with the individual in the photographs. Dental records showed a congenital absence, which is also present in Pere's daughter. Later, identification`s results were supported by a DNA analysis. Therefore, this case shows how forensic anthropology techniques can be successfully used in cases linked to Human Rights in Uruguay.

Introduction

Forensic anthropologists have developed numerous demographic techniques to understand the biology of people. Many of these techniques derived from skeletal remains of people with known identities or death certificates. But case studies are ideal to test the validity of this concern and forensic anthropology may function as a testing ground for this aspect of biological anthropology (Iscan & Solla, 2000). Along with these changes, many internationally known cases have been studied in Latin America. Some of these include the identification of Joseph Mengele (Eckret & Teixeira, 1984; Curran, 1986; Helmer, 1987), 16th century explorer Francisco Pizarro (Maples, Gatliff, Ludena, Benfer, & Goza, 1989), Eugenio Berríos (Solla & Iscan, 2001), and investigation and identification of the human skeletal remains of the disappeared in Argentina (Snow et al, 1984) and Uruguay (Solla, Iscan, & McCabe, 2005; Solla, Iscan, & McCabe, 2010).

In the last two decades, forensic anthropology has been an active part of the coroner system in Uruguay (Solla, 1994a). The number of cases has increased considerably since the inclusion of a resident forensic anthropologist to the medico-legal team (Solla, 2005). This eventually led to a higher rate of positive identification of skeletal remains (Solla, 2015; Solla, 2016).

On September 6, 2010, several skeletal remain were exhumed from Hill Cemetery of Montevideo City and, after the preliminary observation the remains, were transported to the Judicial Morgue of Montevideo City for an in-depth analysis by the local pathologist and the resident forensic anthropologist, especially to determine the identity and cause of death. The skeletal remains were in an urn rather than a coffin because it is a tradition in Uruguay to exhume the remains of deceased relatives after 2 or 3 years from the coffin and place them in an urn. On the urn, there was a little nameplate that said "Ramón Roberto Peré 6/07/73, indicating the deceased name and date of death. Ramón Roberto Peré was a veterinarian student and one of the first victims of the last Uruguayan dictatorial regime between 1973 and 1984. He was shot in the back on July 6, 1973, in a street near the Veterinarian Faculty while he was protesting against the dictatorial regime by a military wearing civil clothes. Once at the Judicial Morgue, we opened the urn and recognized several human skeletal remains with little soft tissue left. They were in a good stage of preservation and his left hand was completely dissected. We took all the remains from the urn and put them in anatomical position on the autopsy table to be analyzed. The victim was not wearing any clothing. The skull was completely skeletonized and in good stage of preservation showing no injuries. There were several vertebrae bones broken and fractured. No bullets were found with the skeletal remains. The purpose of this paper is to describe anthropological techniques used to analyze the skeletal remains, and especially to determine the cause of death and later identify of one of the first victims of the Uruguayan dictatorial regime.

Osteological Analysis

A set of anthropological procedures was followed to analyze the remains. The first procedure was to follow a correct chain of custody and then inventory the bones. Once the inventory was finished, we noted that 64 bones were missing during reduction process. This is because it is a tradition in Uruguay to exhume the remains of deceased relatives from the coffin and place them into an urn after two or three years. This work is done by cemetery workers, and, therefore, it is common that several bones are left in the coffin. In this case, missing bones included the hyoids, the right radio, the right ulna, all right wrist bones, all right hand bones, several right and left foot bones, 2 right ribs, 3 left ribs, 2 thoracic vertebrae (T8 and T11), and the right knee. Several dental pieces, numbers 12, 28, 34, 36, 46 (according to F.D.I. system), were missing ante-mortem, and dental piece number 45 was extracted post-mortem for a DNA analysis before the skeletal remains arrived to the Judicial Morgue. Further examinations revealed no evidence that the remains had been attacked or damaged by predators or scavenging animals. No insects were found and the remains had not been disturbed by any other agent. The first sets of osteological analysis dealt with the determination of sex, race, age at death, and stature of the victim.

Diagnosis of sex was made using the entire skeleton but primarily the skull, pelvis and long bones using both morphological and metric features (Krogman & Iscan, 1986). As is typical for males, the skull was large and rugged with well-developed supraorbital ridges and mastoid processes. The occipital bone showed pronounced nuchal lines and protuberance, small frontal and parietal eminences, and a sloped forehead (Burns, 1999). The pelvis was also of a male type with a narrow subpubic angle, large acetabulum and narrow, deep greater sciatic notch (Burns, 1999). In addition to morphological analysis, determination of sex was made by discriminant function analysis of the skull and long bones using American white based formulae indicated the victim was male (Giles, 1970). Long bones provide probably the highest percentage of sex accuracy with a minimum number of dimensions. It has been the practical experience of the author that Steel's (1972) works based on the St. Bride skeletal series of historical English period have been fairly accurate for Uruguay skeletons. Steel's formulae obtained for the humerus, femur and tibia also determined the sex as male.

From a morphological point, the victim showed a number of white characteristics such as deep nasal depression, a narrow nasal aperture, sharp sills, and a round and high skull (Krogman & Iscan, 1986). To confirm this, cranial and mandibular dimensions were put into discriminant function formulae derived from an American white sample (Giles & Elliot, 1962).

Stature estimation is another way to determine if the victim's body size was within the range of the reported missing people and also to rule possibilities out if there are large discrepancies. There are very few standards to estimate height from the skeleton. The most reliable is obtained from the long bones of the lower and, to a lesser degree, of the upper extremities. The given standard error of estimate can cover a safety range around the mean. In this case the estimation of stature was made using lengths of the femur and tibia and applying them to Trotter's (1970) regression equations for white males. The average stature was found to be 162 cm with about +- 4.0 cm standard error of estimate. Therefore, the range of possible heights was from 158 cm to 166 cm.

Age at death may be estimated from several methods (Iscan & Loth, 1989). One of the most reliable morphological age estimations is the assessment of the costochondral junction of the ribs (Iscan, Loth, & Wright, 1984). When applied to this case for a white male, it was observed that pit depth is increasing but the shape is still a narrow to moderately wide U. The walls are thinner, but the edges remain rounded. The rim is more irregular with no uniform scalloping pattern remaining. There is some decrease in the weight of the bone; however, the overall quality of the bone is still good. These characteristics indicated that this rib was of young male in phase four, which has a mean age of 29 years with a range from 26 to 32 years (Iscan, Loth & Wright, 1984). Ectocranial suture closure was one of the oldest techniques developed to estimate age at death. In this case the technique development by Meindl & Lovejoy (1985) for the vault indicated an age at death between 20,9 and 40.1 years old. A modification of the technique using a Uruguayan sample showed greater success over others (Solla, 1994b). It is calculated from the total score of each section of suture and applying it to the regression equation: Y = 0:950468x -2:63467. In this case the total score was 33, which made the age about 29 years with a range of 28,5 ± 5 years. The total score was obtained using the traditional 0 (open) to 5 (closed) scale patterns and added up to a maximum score of 95 (Solla, 1994b). Evaluation of the male pubic symphysis pattern was based on Todd´s (1920) studies, but it has been the experience of the author that Snow's (1983) modification has worked better than both the original methods of McKern & Stewart (1957) and Todd (1920), as well as the new one by Suchey, Wisely, and Katz (1986). The total score of Snow´s regression equation provided a mean age of 28.39 years old. The study of the chronological metamorphosis of the auricular surface of the ilium, (Lovejoy, Meindl, Pryzbeck, & Menforth, 1985) indicated an age at death between 25 and 29 years corresponding with phase III of this technique. Age estimation was also made from the size of the medullary canal of the proximal epiphysis of the humerus (Soto, Castellanos, & Toribio, 1989). Results indicated that the victim was about 30 years old with a range of 25 to 35 years using the formula Y = 58:08 +1.47(x-6:03), where x refers to the medullary canal size. This technique was derived from a Cuban sample of 94 males and females. The humerus was first sagitally sectioned in its upper third to determine how far the medullary cavity was advancing into the epiphyseal region. The surgical neck of the bone is taken as a reference point. If the cavity has not reached this point, the metric value is negative, suggesting a young person. If the canal has advanced into the neck and even to the head, the person is in an older age category. However, it is very clear that the rib phase analysis, ectocranial suture closure pattern, pubic symphyseal metamorphosis, chronological metamorphosis of the auricular surface of the ilium and medullary canal enlargement suggested a lower range of 26 and gave an upper range of 32 years old at time of death. Therefore, a mean age of about 29 years was estimated for the remains.

The osteological analysis of the skeleton has shown that these were the remains of an approximately 29-year-old white male who was about 162 cm tall.

Interval Since Death

Determining the interval of time since death is one of the most difficult aspects of forensic assessment (Henssege, Knight, Krompecher, Madea, & Nokes, 1995). In general, the time interval since death is determined by analyzing the remains through external observation, chemical-physical testing, and estimating the deterioration time of artifacts like clothing, shoes, etc. External observation includes factors like temperature, scavening by animals, and insect invasion (Easton & Smith, 1970; Rodriguez & Bass, 1983). The second method includes chronological dating techniques, including the deterioration of various chemical elements and compounds like nitrogen, amino acid and fats (Krogman & Iscan, 1986). The third technique deals with the assessment of deterioration of fabrica, plastics, nylon, and the like (Morse, 1983). The process of decomposition should proceed at a faster rate in cases which are not buried in a coffin, but this was not the situation for the present remains. In general, the decomposition process in Uruguay is slow and may take as long as 2 or 3 years, and later, the remains are exhumed from the coffin and placed into an urn. In this case the body was almost totally skeletonized; there was only little soft tissue in the left hand dissected by natural causes, and there was not any clothing to determine the rate of deterioration (Morse, 1983). Therefore, we determined the interval of time since death according to our forensic experience, the general aspect of the remains, a chemical-physical method and cemetery record-data. Bones showed good aspect and consistency; they were not crisps, and showed very little porosity. There were no adiopocere remains, and the medullar cavity of long bones was empty. These factors indicated that the skeletal remains had at least 20 years since death. The chemical-physical method of the test for carbonate was also used; this is when a piece of bone is exposed to a few drops of 20 percent hydrochloric acid and produce a foam, which indicates the presence of dolomite-petrification. Younger specimens show a weaker reaction to the hydrochloric acid, as in this case, which indicates a time since death of at least 30 years (Krogman & Iscan, 1986). The data of death according with the documentation provided by the Hill Cemetery´s records, this is July 6, 1973 fit with the nameplate data on the urn. Based on the evaluation of these facts, it was estimated that death might have occurred in the date showed in the nameplate on the urn, this is more than 37 years ago on July 6, 1973, because we could not find any contradiction between skeletal examination and data submitted by relatives and Hill Cemetery authorities.

Cause of Death

At the Judicial Morgue of Montevideo City, the skeletal remains were taken out from the urn and put on the autopsy table. It was immediately obvious that the skull did not show any trauma and was in good stage of preservation. In general, all the bones were in good stage of preservation. But a detailed examination showed gunshot trauma on the superior surface of the 12th thoracic vertebrae without any sign of reparation, indicating that it was an antemortem or perimortem wound. Indeed, it seems to be one bullet entrance, just to the right lateral superior surface of the center of vertebrae body (Fig.1). Other broken areas included part of the right frontal body of this vertebrae, showing the typical radial lines produced by a gunshot (Fig.2). The beveling pattern of gunshot wounds is one of the best indicators of the direction of a bullet (Quatrehomme & Iscan, 1997; Quatrehomme & Iscan, 1998). Examination of the beveling and fractures suggested that this hole was entrance and exit wounds made by only one bullet. The frontal region of the 12th vertebrae also showed a massive fracture with lineal traces with external beveling which indicated that this was the exit for the bullet. The conclusion reached was that the victim was killed with only one bullet of little caliber; it seems to be a 0.22 bullet (Quatrehomme & Iscan, 1997), that entered from his back, shattering the 12th vertebrae and exiting through his chest, causing severe injuries that caused his death almost instantly. The rest of the skeletal remains showed no discernable antemortem health problems. Dental health was also good, and the teeth well cared for, suggesting a person with an average socioeconomic status.

Identification

One of the most challenging aspects of the forensic sciences is the identification of the victim from the remains. As long as the osteological characteristics do not exclude the victim, factors of individualization are needed to make a positive identification (Krogman & Iscan, 1986). The aim of individualization is to make sure that the victim can only match one individual. We made a complete forensic anthropological report on age, sex, race, stature, cause of death, and time since death in September 2010. As the analysis of the skeletal remains showed, the victim was a white male, about 29 years old and 162 cm tall, who was murdered by one gunshot of .22 caliber in his back more than 30 years ago. As a positive identification was needed, a number of procedures were put together to make it. These included skeletal characteristics, digital skull-photo superimposition, and dental evidence. It was suspected that skeletal remains might have belonged to Ramón Roberto Peré, who was 30 years old and 162 cm tall. Upon the suspicion that the victim was Ramón Roberto Peré, it was decided that positive identification could be made by comparing the skull with a good quality picture by superimposition technique. This technique has been a commonly used procedure to assist in identification and has been accepted in the courts of a number of countries (Glaister & Brash, 1937; Basauri, 1967; Helmer, 1987; Soto & Barcos, 1989; Ivanov & Abramov, 1995; Ubelaker, 1996; Solla & Iscan, 2001; Patińo, 2004: Solla, 2005; Humpire, Solla, & Zarate, 2010; Solla, Iscan & Mc Cabe, 2010, Solla, Iscan, & McCabe, 2013). This may be done according with the classic method (Glaister and Brash, 1937; Chandra Sekharan, 1971; Dorion, 1983; McKenna , Jablonski, & Fearnhead, 1984; Cai, Lan,Tao, Gui, Mu, Feng, Zhu, 1989; Lan & Cai, 1993; Seta & Yoshino, 1993; Cai & Lan, 1993, Ubelaker, 1994) or using a video camera, a high resolution monitor, and a digital mixer to superimpose both images, skull and photograph (Chandra Sekharan, 1971; Colonna, Pesce, & Introna, 1980; Koelmeyer, 1982; Hagemeier, 1983; McKenna, Jablonski & Fearnhead, 1984; Bastian, Dalitz, & Woodward, 1986; Iten, 1987; Helmer, Schimmler & Rieger, 1989 ; Lan & Cai, 1993; Seta & Yoshino, 1993). Computer aided superimposition is also being pursued by other forensic experts. The use of computer has a number of advantages as well, one of which is that the whole process can be accomplished by one person, and there is also less equipment failure (Pesce Delfino, Colonna, Vacca, Potente & Introina, 1986; Nickerson, Fitzhorn, Koch, & Charney,, 1991; Ubelaker, 1992; Pesce Delfino, Vacca, Potente, Lettini & Colonna, 1993; Bajinoczky & Kiralyfalvi, 1995; Shahrom, Vanezis, Chapman, Gonzales, Blenkinshop & Rossi, 1996; Smeets & De Valck, 1996; Yoshino, Matsuda, Kubota, Imaizumi, Miyasaka & Seta, 1997; Marks, Bennet & Wilson, 1997; Quatrehomme & Iscan, 2000; Iscan & Loots, 2000; Jayaprakash, Srinivasan, & Amravaneswaran, 2001; Humpire & Soto, 2013). A computer superimposition system was used in this case. The apparatus utilized was standard equipment and consisted of one digital camera, a personal computer, and adequate software to make the superimposition. The photograph and skull were placed under the digital camera and illuminated by white fluorescent lamps, then we took several full-face photographs of the skull and the face in the photograph submitted for comparison. These images were then digitized and stored in the computer. In the next step, several key anatomical landmarks, as well as tissue thickness, were marked on the skull and photograph using an adequate software. After the skull had been correctly oriented and adjusted so that it was as close as possible to that of the individual in the victim's photograph, both images (photo and skull) were then superimposed for detailed comparison. The software allows any desired combinations of photo-skull comparison, including removing the soft tissue to view the underlying skeletal structures such as auditory canal, eye sockets, cheekbones, jawbones, root of nose, teeth, chin, skull contours, and so forth.

The analysis showed that conformity was found between skull image and all recognizable proportions of head, face, eyes, nose, and mouth on the photograph submitted for comparison. Also, the outline of the soft tissue on the skull was congruent with the facial contours lying in the photograph. The comparison revealed a full match of photograph and underlying skeletal structures (Fig.3). Further, another very important factor of individualization was taken into account, when Peré's daughter saw his dental pieces. She had no doubts they were the skeletal remains of her father because she recognized the congenital absence of both lateral superior incisors pieces 12 and 22 according to the FDI system. I could also see Pere´s daughter's teeth, and I can ascertain the same. Then, a complete report was elaborated, indicating without any doubts that the remains analyzed belonged to Ramón Roberto Peré. Regardless these proofs of identification, the Uruguayan judge in charge of the case wanted further evidence to support identification by digital skull-photo and dental record comparison. Therefore, a DNA analysis was requested using dental piece number 25 (according to F.D.I system). On the middle of 2011 DNA evidence supported the original identification made by digital skull-photo superimposition and dental record comparison, that the remains belonged without any doubt to Ramón Roberto Peré. Finally, the judge in charge of the case accepted that the remains were those of Ramón Roberto Peré, who was killed by a gunshot in his back. The murderer was convicted and the case was officially closed. The cause of death and identification aspects of case were also closed.

Discussion and Conclusions

One of the important aspects of forensic sciences is to test scientific standards based on a large sample (Iscan, 1988; Iscan, 1995). Tests as such can only come from case studies as presented in this paper. Identifications of skeletal remains are very complex and require careful assessment of both skeletal remains and personal belongings. If possible, additional techniques should be incorporated in the final decision. As was done in this study, dental comparison and DNA analysis added further assurance that the deceased person was Ramón Roberto Peré. The investigation started with the initial observation about sex, age, race and stature, cause of death and time since death. These techniques seemed to have worked well in this case. It was confirmed that the remains belong to a healthy white man who was about 30 years old and 162 cm tall. It was estimated that the time of death was about more than 37 years ago before the remains were exhumed, in September 2010 and carried out to the Judicial Morgue to be analyzed. The victim was murdered with a .22 caliber bullet that entered his back, destroyed the body of vertebrae number 12, and exited through his chest in an ascending way to damage the heart and caused his death suddenly. To obtain a positive identification, skull-photo digital comparison techniques were designed for the case. The superimposition techniques as a means of identification has a long history (Grüner, 1993; Solla, 1999). Digital and video superimposition has proven to be very successful in the investigation of identities. Many identifications made this way were accepted by the courts around the world as was in this case. With the availability of current technology, the whole process takes about one hour and demonstrates effectively consistencies between the skull and the facial photograph of the victim. However, success in identification depends upon the quality of the submitted photograph, as well as correct orientation and articulation of the skull and mandible. Although the remains were identified by skull-photo digital comparison, all available evidence should also be incorporated as dental congenital absence of lateral superior incisors was later found to be in agreement with the identification based on digital skull-photo superimposition and DNA analysis. In conclusion, this study shows that a positive identification can be made using traditional osteological techniques and digital skull-photo comparison technique. It is, therefore, highly recommended that coroners and law enforcement agents obtain anthropological opinions when they are dealing with remains extensively decomposed or skeletonized to analyze and eventually identify them.

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