

CASE REPORT

James R. Gill,¹ M.D.; Christopher W. Rainwater,^{1,2} M.S.; and Bradley J. Adams,¹ Ph.D.

Santeria and Palo Mayombe: Skulls, Mercury, and Artifacts

ABSTRACT: Santeria and Palo Mayombe are syncretic religions created in the New World based upon African religious beliefs combined with Christianity. The main worship of Palo Mayombe involves religious receptacles that may contain earth, sticks, varied artifacts, and animal and human remains. Due to the use of human and nonhuman remains, discovery of these items often leads to involvement by the police due to a concern of homicide. We review in detail the medical examiner records of two of these ritualistic cases including the autopsy, anthropology, police, and investigators' reports. For the human remains, careful consideration of the context in which the remains were recovered, their state of preservation, and the associated artifacts (e.g., beads and mercury) are important in determining the appropriate level of forensic significance. Anthropological examination with particular attention to taphonomic characteristics also may help determine the origin and forensic significance.

KEYWORDS: forensic science, forensic pathology, anthropology, Santeria, Palo Mayombe, skull, cranium, mercury

Santeria and Palo Mayombe are Afro-Caribbean religious traditions that have been introduced into the United States by Caribbean immigrants. Much of the symbology, particularly the characterization of deities, is similar between the two groups. Santeria, also known as *La Regla de Lukumi* (Lukumi's Rule), is a syncretic religion created in the New World based upon West African religious beliefs (originating in the Yoruba region of Nigeria) combined with Christianity (1–3). Slaves brought to the Caribbean to work on sugar plantations were subjected to conversion to Christianity. They were, however, able to preserve some of their African traditions by fusing them with Christian elements. The word Santeria (meaning “the Way of the Saints”) was originally a derisive Spanish term to mock these followers. In 2001, there were estimated to be over 20,000 practitioners in the United States (4).

Santeria practices include animal and artifact offerings, dance, sung invocations, and use of elemental mercury (5–7). Various necklaces, symbols, and animal sacrifices characterize the deities of Santeria. Individual Gods possess various functions and powers that correspond to specific symbols and objects. Alternating colored beads and sea shells are common. Animal offerings include roosters, pigeons, goats, lambs, ducks, and turtles. Blood and feathers are commonly used. In addition, cigars, metals, pennies, and elemental mercury have been used. Mercury poisoning due to these customs is a concern among public health practitioners (5,6,8).

Palo Mayombe, a branch of Palo (or *Las Reglas de Congo*), is another group of syncretic denominations developed by slaves from Africa in the Caribbean. Palo has its roots in the Congo basin of Central Africa (Bantu origin). Palo (“stick” in Spanish) was applied to the religion in Cuba due to the use of sticks in ceremonies. The main worship of Palo involves religious receptacles or altars (*Nganga* or *Prenda*) that contain earth, sticks, and human and other

remains. Although Palo Mayombe is distinct from Santeria, it has incorporated much of the symbolism of Santeria. This has led to the use of term “Santeria” to encompass the Afro-Caribbean religious traditions of both Yoruba and Congo origins.

Due to the use of human and nonhuman remains in these practices, discovery of these items often leads to involvement by the police due to a concern of homicide. Medical examiners/coroners and anthropologists may be asked to evaluate these remains. The discovery of human bones does not always equate with foul play. The first determination to be made is whether the remains are human or nonhuman in origin. For the human remains, identification of associated artifacts (e.g., beads and mercury) and taphonomic characteristics that suggest prior burial may alert investigators that the remains are not forensically significant. While it may be determined that the human remains are not associated with a homicide, their origin may come from other illegal avenues, such as the looting of graves.

Materials and Methods

The New York City Office of Chief Medical Examiner (NYC OCME) investigates all unexpected, violent, and suspicious deaths in New York City. By statute, these deaths must be reported to the NYC OCME. The office includes 30 medical examiners and eight anthropologists.

Since 2000, there have been at least 10 instances reported to the NYC OCME that involved the discovery of human remains in a ritualistic context. We review in detail the medical examiner records of two of these ritualistic instances including the autopsy, anthropology, police, and investigators' reports. Of particular interest in both of these instances is the association of elemental mercury with the human remains.

Results

Case 1

In 2005, workmen hired to clean a basement of a Brooklyn three-story walk-up found two human skulls, animal remains, machetes, and ceremonial cast iron cauldrons (Fig. 1). The police

¹New York City Office of Chief Medical Examiner and Department of Forensic Medicine, New York University School of Medicine, New York, NY 10016.

²Department of Anthropology, Center for the Study of Human Origins, New York University and New York Consortium in Evolutionary Primatology, New York, NY 10003.

Received 17 Sept. 2008; and in revised form 24 Nov. 2008; accepted 29 Nov. 2008.

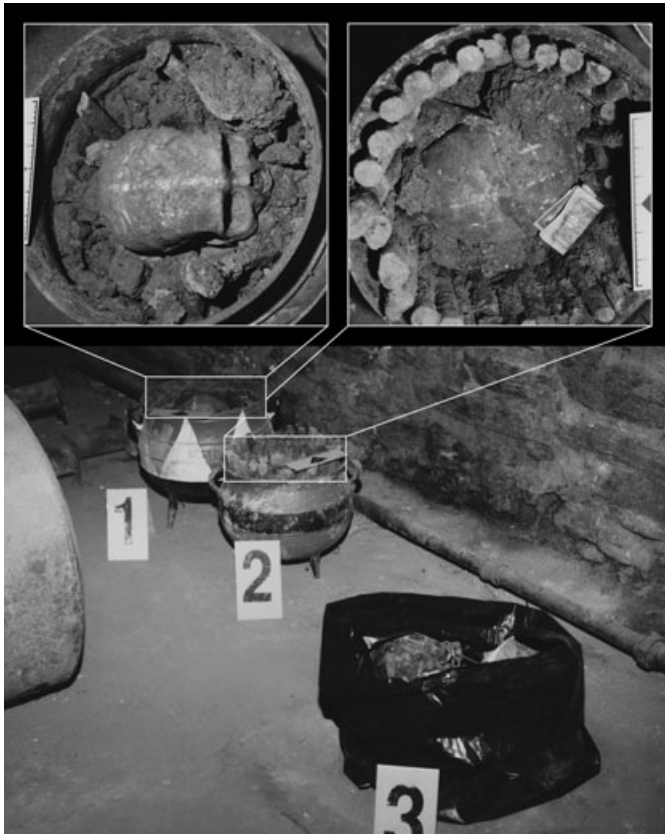


FIG. 1—Ritualistic items (consistent with Palo Mayombe) from case 1 that were discovered in a basement in Brooklyn.

department was notified and an investigator from the NYC OCME also responded. Visible at the scene were two large cauldrons, a smaller cauldron, and various items including sticks, two goat heads (with desiccated skin and fur), a conch shell effigy, deer antlers, and several machetes with painted symbols. The two largest cauldrons, each of which contained a human cranium, were painted with different colors and patterns (Figs. 1 and 2). One cauldron was black on the base with alternating white and red triangles above. The second cauldron was red with a black band painted around the center. The smallest cauldron was painted gold. The

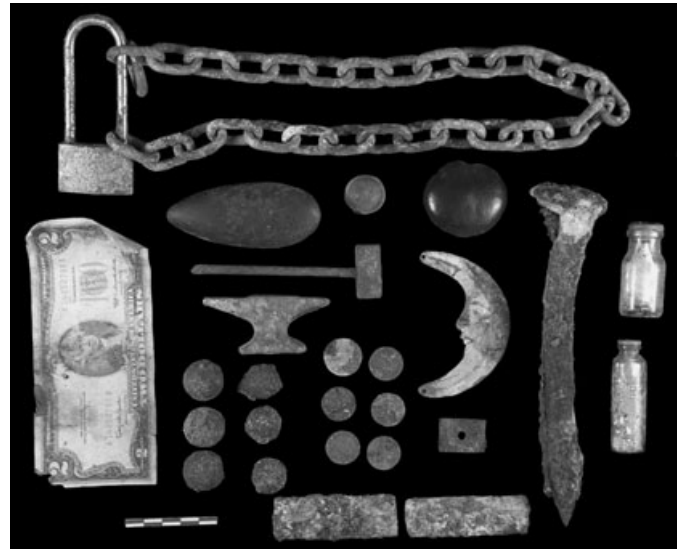


FIG. 3—Miscellaneous artifacts recovered from within the cauldrons associated with case 1.

evidence was transported to the medical examiner’s office in Brooklyn for further examination.

The largest cauldrons were filled with soil and various artifacts. The associated artifacts included numerous metal objects, two bottles containing mercury, several coins, a two-dollar bill, stones, seeds, feathers, round sticks, and paper wrapped in red yarn. A sample of the artifacts is demonstrated in Fig. 3 and a detailed list is in Table 1.

Anthropological analysis indicated that the crania were both adult of indeterminate race/ancestry (one probable male, one probable female). There was no evidence of perimortem trauma with either cranium. Taphonomic indicators strongly suggested that both crania were historic in origin and not likely associated with illegal activities beyond possible grave looting. The taphonomic indicators included: cortical exfoliation and erosion; dry (i.e., nongreasy) and brittle condition of the bone; the presence of dirt within all cranial openings; and extensive soil staining consistent with long-term exposure in a burial environment. There were also recent modifications to both crania consistent with ceremonial usage. For example, both crania had white painted symbols (O’s and +’s) on the vaults,



FIG. 2—Two large cauldrons, animal remains, human remains (case 1), and conch shell effigy.

TABLE 1—List of artifacts recovered from case 1.*

Red and Black Cauldron	Red, White, and Black Cauldron	Trash Bag Associated with Cauldrons
1 glass bottle of mercury and dirt	1 glass bottle of mercury and dirt	2 goat heads
Numerous cylindrical wooden sticks encircling cauldron	4 cylindrical wooden sticks and 2 railroad spikes	1 cow horn filled with dirt (1 metal ball found in horn)
\$2 bill	Tin half-moon stuck on side with a magnet	1 conch shell effigy
4 red yarn wrapped papers	15 red yarn wrapped papers	1 v-shaped stick with white symbolic markings
6 pennies (some found within cranial vault)	2 pennies (1 complete and 1 in pieces)	2 metal disks
3 metal balls	6 metal balls and 2 nuts (1 round and 1 flat)	1 lock and chain painted gold
Bird feathers	1 small nonhuman bone	1 small anvil and 1 small mallet
3 small round stones	1 teardrop-shaped polished stone	1 small iron cauldron painted gold

*Also in the basement were four machetes, a tire iron, and portions of two deer skulls with antlers.

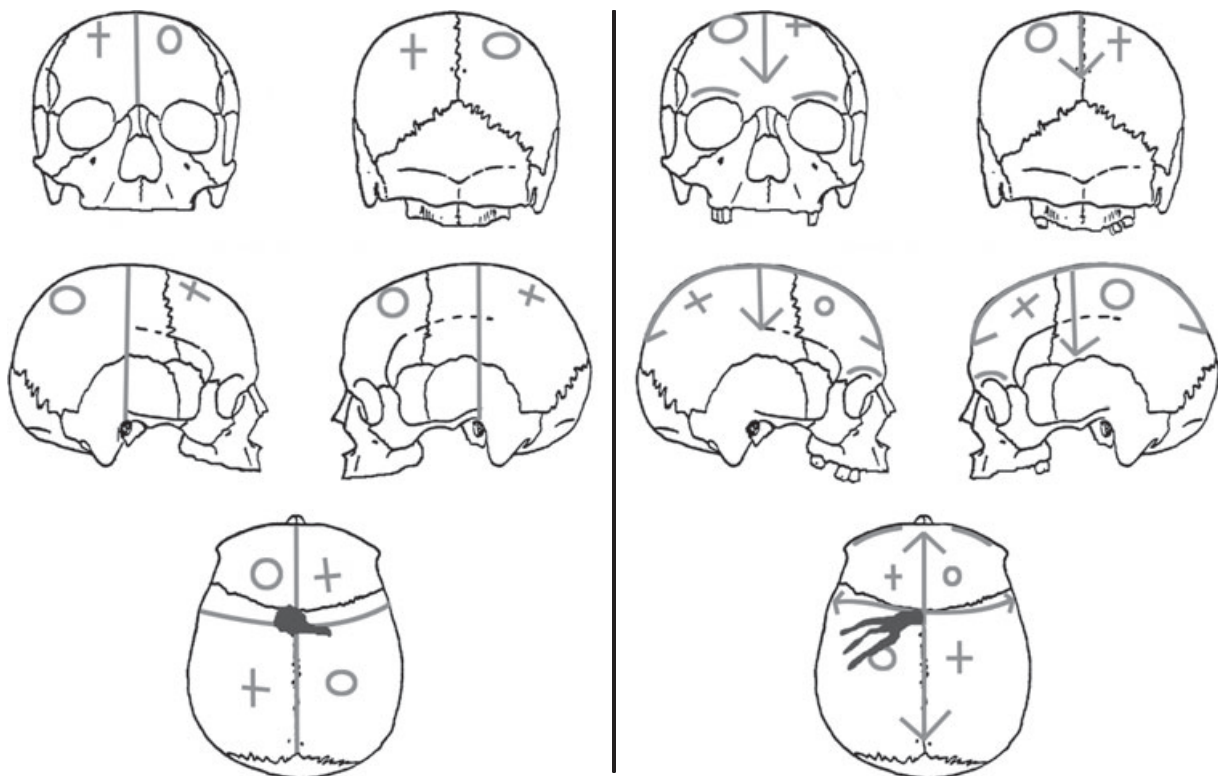


FIG. 4—Symbolic markings on the two crania. Light gray indicates symbols drawn on the cranium with white paint. Dark gray area on the top of the crania represents wax residue.

areas of red pigment staining, and wax on the apex (Fig. 4). At least two of the four recovered machetes also had similar “O” and “+” symbols, as well as a skull and feathered arrow symbols, drawn on the blades.

Case 2

In 2008, a human cranium and several nonhuman bones were discovered by a fisherman on a rocky coastline of the Bronx (Fig. 5). The fisherman found the cranium at the water’s edge, moved it to the sidewalk, and called the New York Police Department. Upon further inspection of the scene by homicide detectives and an NYC OCME medicolegal investigator, three bones, a bracelet, and several beaded necklaces were found among the rocks in the same area. Three of the beaded necklaces were of one color: red, white, or blue. The fourth beaded necklace contained a variety of colors, alternating patterns of grouped beads with three shells, and a section of metal chain contained within the necklace. The

bracelet had alternating light blue and white beads (Fig. 6). The remains and evidence were transported to the medical examiner’s office in the Bronx for further examination.

A medical examiner and anthropology team examined the remains which consisted of one human cranium and four nonhuman animal bones. The cranium was filled with mud and was radiographed. The radiographs revealed a cylindrical, radiopaque object within the cranium that was subsequently determined to be a glass jar that contained mercury (Fig. 7).

The cranium was of a middle-aged to older male of indeterminate race/ancestry. It exhibited dark staining, cortical exfoliation, and adherent dirt consistent with long-term exposure in a burial environment. Furthermore, there was moderate postmortem damage to the orbits, midface, and basicranium, as well as wear of the left inferior zygomatic process which suggested an extended postmortem interval. The taphonomic characteristics were consistent with an historic origin and indicated that the cranium was not forensically significant beyond possible grave looting.



FIG. 5—A human cranium discovered in the Bronx (case 2), anterior and lateral right views.



FIG. 6—Beaded necklaces and bracelet recovered in association with the cranium (case 2).

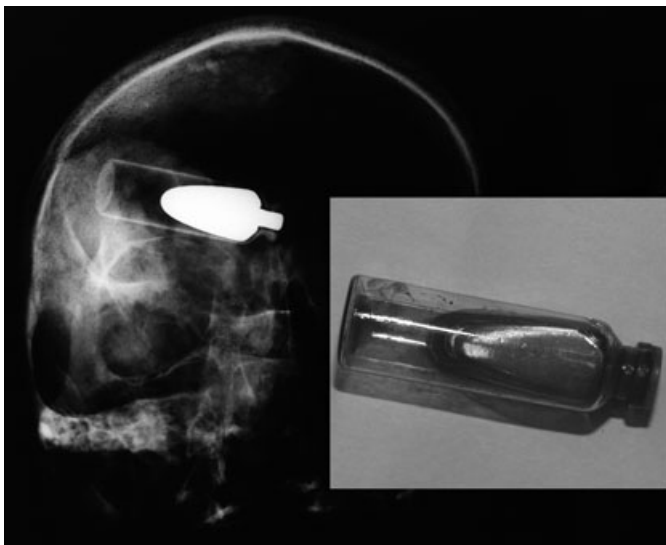


FIG. 7—Radiograph of cranium #3 and jar of mercury found in the cranium (case 2).

Discussion

We describe three crania and associated artifacts from two ritualistic cases discovered in New York City. Based on the contextual information, associated artifacts, and taphonomic findings, these

crania were not of forensic significance (although their origin may be from looting of graves). Various African-Caribbean syncretic religious traditions use these materials in their rituals. Human remains may be looted from cemeteries to be used in Palo Mayombe rituals (9). Although there are similarities, Palo Mayombe, not Santeria, uses human remains such as crania and long bones for its magic (9,10).

The use of mercury in these practices also is relatively common and has public health concerns (5–7). Among Latin American and Caribbean cultural traditions, mercury (*azogue*) is used to bring luck, love, or money. It also may be used to ward off evil or in specific acts of divination (7). A study by Riley et al. (7) interviewed nineteen Santeria/Palo Mayombe practitioners to understand the use of mercury in their religious practices. Although sprinkling of mercury in the home has been previously reported (5), most of these practitioners were unfamiliar with this use (7). These practitioners described placing capsules of mercury into various objects (e.g., apple, glass of water, ice, glass bottle, gourd, or concrete) which were then placed in various locations around the home (e.g., behind the front door, inside the freezer, buried outside).

Mercury poisoning has been described in a cluster of nine children from one family due to exposure to mercury vapor (6). The children found a 6-oz. vial of mercury on the porch of a neighbor whose business was making mercury-filled amulets for practitioners of Santeria. The children played a game in which they hit a large globule of mercury with a hammer and watched its dispersion throughout the apartment. All of the children had elevated levels of mercury in their urine but no clinical signs of symptoms of mercury poisoning. They were treated with *meso*-2,3-dimercaptosuccinic acid (DMSA). Although mercury use by practitioners of Santeria is widespread and may potentially result in mercury poisoning due to chronic exposure, there were no reports of practices believed to result in the highest exposures (8).

When human remains are discovered which are suspected to be part of a religious ritual, taphonomic findings and related artifacts may help to confirm their historic origin (e.g., grave looting) as opposed to foul play. Since crania used in rituals may originate from cemetery and burial contexts, associated taphonomic characteristics often include soil staining, adherent dirt, cortical delamination, dry (i.e., nongreasy) and brittle bone condition, postmortem damage or wear, postmortem tooth loss, and erosion of bone surfaces (11,12). These taphonomic characteristics may not apply in all cases as the use of medical or anatomic supply bones also has been reported (E. Miller, pers. comm, from “Santeria: A forensic anthropological perspective from Los Angeles County” presentation at the National Association of Medical Examiners in Los Angeles, CA, 2005). Additionally, taphonomic characteristics associated with the ritual activities such as adherent wax, paint or markings, blood stains, or adherence of ritualistic artifacts such as chicken feathers also may be identified (10,13).

The “+” and “O” symbols found on the skulls and machetes in case 1 have been described in tattoos signifying allegiance to Palo Mayombe (10). These types of drawings, called by the Spanish name *firmas* (signatures), are complex emblems consisting of crosses, circles, arrows, the moon, and other symbols. These graphic elements are combined to give them their powers which are used for various ritual purposes including calling and directing spirits (*mpungos*). They may be drawn on the floor, walls, scarves, flags, or other ritual objects.

Associated artifacts, in addition to human remains, routinely found with Palo Mayombe rituals include cauldrons, mercury, wooden sticks, herbs, feathers, animal bones, small metal

agricultural tools, nails, beads, seashells, stones, a chain with a padlock, coins, and various items unique to the palero (13,14). In case 1, the contextual clues, overwhelming number of associated artifacts, and taphonomic indicators all clearly pointed to a ritualistic and nonforensic origin of the human remains. Case 2, however, was recovered with less contextual information and a more limited amount of associated artifacts. Although beaded necklaces (*collares*), like those recovered in this case, are known to be used in initiation rituals with specific colors and color combinations representing each God or Goddess (*orishas*) (11), the recognition of certain taphonomic characteristics also was important in determining the forensic significance.

The use of skeletal remains, particularly human crania, in ritualistic activities will often lead to medicolegal involvement. The context in which the remains are discovered as well as their associated artifacts and taphonomic characteristics can aid the investigator in determining the appropriate level of forensic significance. Mercury is commonly used among practitioners of Santeria and Palo Mayombe; however, the contained nature of these practices suggests that accidental spills as opposed to the actual practices are of greatest concern for mercury exposure in this population (8).

In addition to the two cases described in this report, mercury also was associated with another Palo Mayombe case recently discovered in New York City. In this instance, mercury appears to have been poured into the cauldron along with other material. Investigators should be aware that mercury may not always be contained within vials and, especially when loose, could pose health hazards.

References

1. Wetli C, Martinez M. Forensic sciences aspects of Santeria, a religious cult of African origin. *J Forensic Sci* 1981;26:506–14.
2. Pasquali EA. Santeria. *J Holist Nurs* 1994;12:380–90.
3. Sandoval MS. Santeria. *J Fla Med Assoc* 1983;70:620–8.
4. Kosmin B, Mayer E, Keysar A. American religious identification survey. New York: The Graduate Center of the City University of New York, 2001;13.
5. Goldman LR, Shannon MW. Technical report: mercury in the environment: implications for pediatricians. *Pediatrics* 2001;108:197–205.
6. Forman J, Moline J, Cernichiari E, Sayegh S, Torres JC, Landrigan MM, et al. A cluster of pediatric metallic mercury exposure cases treated with meso-2,3-dimercaptosuccinic acid (DMSA). *Environ Health Perspect* 2000;108:575–7.
7. Riley DM, Newby CA, Leal-Almeraz TO. Incorporating ethnographic methods in multidisciplinary approaches to risk assessment and communication: cultural and religious uses of mercury in Latino and Caribbean communities. *Risk Anal* 2006;26:1205–21.
8. Alison Newby C, Riley DM, Leal-Almeraz TO. Mercury use and exposure among Santeria practitioners: religious versus folk practice in Northern New Jersey, USA. *Ethn Health* 2006;11:287–306.
9. Wetli CV, Martinez R. Brujeria: manifestations of Palo Mayombe in South Florida. *J Fla Med Assoc* 1983;70:629–34, 34a.
10. Martinez R, Wetli CV. Tattoos of the Marielitos. *Am J Forensic Med Pathol* 1989;10:315–25.
11. Rogers TL. Recognition of cemetery remains in a forensic context. *J Forensic Sci* 2005;50:5–11.
12. Berryman HE, Bass WM, Symes SA, Smith OC. Recognition of cemetery remains in the forensic setting. *J Forensic Sci* 1991;36:230–7.
13. Perlmutter D. Syncretic religions. In: Investigating religious terrorism and ritualistic crimes. Boca Raton, FL: CRC Press, 2003;181–234.
14. Walsh-Haney HA, Schultz JJ, Falsetti AB. Rituals among the Santeria: contextual clues and forensic implications. Proceedings of the 55th Annual Meeting of the American Academy of Forensic Sciences; 2003 Feb 17–22; Chicago, IL. Colorado Springs, CO: American Academy of Forensic Sciences, 2003.

Additional information and reprint requests:

James R. Gill, M.D.

Office of Chief Medical Examiner

520 First Avenue

New York

NY 10016

E-mail: jgill@ocme.nyc.gov