

The importance of clothing in solving homicide crimes, and the integration between the specialized services of the civil police of the state of Rio de Janeiro

Abstract

This paper sets out to address the relevance of the analysis of clothing in association with human remains in order to elucidate homicide crimes, as well as to shed light on the importance of the integration between the specialized services of the Civil Police of the State of Rio de Janeiro- Brazil. With this in mind, a case study is presented in which the integration between these services, as well as the accurate analysis of the victim's clothes in association with the human remains, was fundamental for the elucidation of the dynamics, means and cause of death in the case.

Keywords: clothing, forensic anthropology, homicide, integration

Volume 12 Issue 2 - 2024

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Received: May 17, 2024 | **Published:** June 04, 2024

Introduction

It is common knowledge that one of the main objectives of forensic anthropology is human identification, a scientific procedure that is carried out through the comparative analysis of antemortem records (medical records, x-rays, odontograms or other comparable data) and post-mortem records (comprising the osteobiographical analysis of the individual). In addition to the positive identification of the victim, forensic anthropology is equally important for elucidating the circumstances of the death, including its cause, the type of instrument that caused it, the types of injuries and the time at which they occurred, as well as the analysis of elements found near the corpse, such as clothing and belongings. The use of clothing and adornments are fundamental and universal elements of human cultures, rendering them practically inseparable from human beings.

For this reason, when we come across a homicide, mass disaster or other event resulting in death, these elements will almost always be present at the scene and often directly involved.¹ In fact, their absence must also be taken into account, whether due to taphonomic factors or human intent. Whatever the case, items of clothing tend to be one of the most common types of evidence found in situ. Precisely because we are always dressed, clothing is often able to provide valuable information in cases of violent crime, such as homicide or rape, holding evidence crucial to understanding the dynamics of death, such as cuts, wounds or burns. In some cases, the clothing itself can even be considered a crime scene. It is therefore necessary for the expert to examine clothing and belongings, when present, in conjunction with human remains, in order to verify the presence or absence of evidence that may be related to the cause or circumstances of death.

¹<https://ideas.repec.org/a/lum/ejlpal/v5y2018i2p137-141.html>

Case summary

The case in question took place in the state of Rio de Janeiro and was the result of a homicide crime.

In the year 2022, the Niterói Regional Technical-Scientific Police Station received human remains for examination that had been removed from a shallow grave located in clayey soil. The material consisted of a totally disarticulated human skeleton, covered with muddy soil material, along with a pink and white printed baby look blouse, a top, a pair of size 34 beige short jeans with a buckle, panties and a black lacy bra top (Figure 1–3). On the baby look blouse, gashes were identified that in no way resembled those caused by the decomposition of the material, but instead those resulting from human action, more precisely, with a sharp-edged blade (Figure 4). These gashes caught the team's attention, and the garments were then gathered up, preserved and sent, along with the bones, to the Anthropology Department of the Rio de Janeiro State Civil Police. No colonization by cadaveric fauna or smell of putrefaction was detected. Based on the aforementioned information and the dynamics of the event related to the finding of the corpse, the experts estimated the post-mortem interval to be approximately six months before the remains were found. The minimum number of individuals (MNI) was set at 1 (one).



Figure 1 Presentation of the actual circumstances in which the bones were found.



Figure 2 Clothes found on the bones.



Figure 3 Disjointed human skeleton.



Figure 4 Rear view of the cloth, in which the presence of the cuts described can be seen, circled in blue.

Examination

After the analyses carried out by the routine necropsy at PRPTC-NIT, the remains were sent in a black bag commonly used for transporting corpses to the Forensic Anthropology Service (SAFO) of the Instituto Médico-legal Afrânio Peixoto (IMLAP). In this location, the remains were thermally treated so that only bone material remained. After this procedure, they were inventoried and assembled on the analysis table in a position akin to the anatomical layout (Figure 5).



Figure 5 Skeleton arranged in a similar position to the anatomical layout - SAFO/IMLAP.

Examination of the clothing and belongings

Three types of clothing were found together with the remnants. Firstly, a white baby look blouse was identified with gashes suggestive of cuts, most of which were located transversely in the central part (Figure 6). A few are arranged longitudinally and obliquely to the side. On the rear cloth panel of the blouse, as seen in the previous examination carried out at the PRPTC-NIT, several gashes were identified on the left side, which did not appear to be the result of manipulation, dragging or wear. On the other hand, they suggested that they had been made by a sharp object (with a blade), and were arranged in an oblique position in relation to the longitudinal axis of the garment (Figure 6).

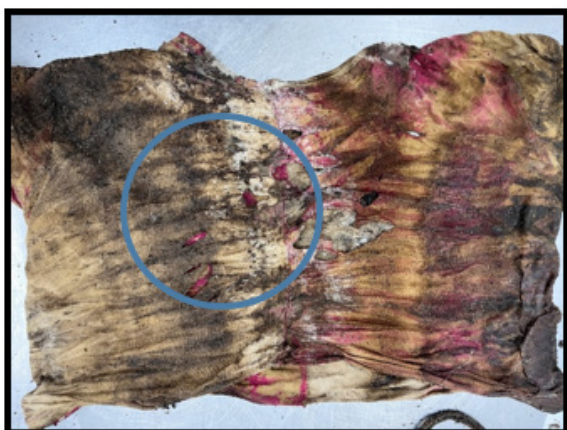


Figure 6 Blouse showing the presence of the tears described at the back, circled in blue.

In addition to identifying the torn sections in the clothing, comparative superimposition examinations were carried out with the victim's costal arches placed on the blouse, in order to assess the combination and compatibility of the previously identified injuries. It should be noted that the results of the study were significantly positive, since we identified a direct relationship between the gashes and the injuries, as shown in the figure below (Figure 7).



Figure 7 Victim's clothes superimposed on the costal arches (IMLAP).

Anthropological examination

The main objective of the studies carried out jointly by experts from PRPTC-NIT and SAFO-IMLAP was the anthropological analysis of the human remains, the analysis of the victim's clothing and belongings and the elucidation of the cause and circumstances of death.

Inventory

After arranging the remains on the table in an anatomically similar layout, the skull was observed with a mandible; left and right clavicles; left and right scapulae; manubrium and body of the sternum; left and right humeri; left and right radii; left and right ulnas; eleven right costal arches; ten left costal arches; seven cervical vertebrae (C1-C7); eleven thoracic vertebrae (T1-T11); four lumbar vertebrae (L1, L2, L4 and L5); right semilunar; two pelvic bones (unnamed); sacrum; left and right femurs; right patella; left and right tibias; left fibula; left and right calcaneus; left and right talus; left and right naviculars; three left

and right cuneiforms; five left metatarsals; four right metatarsals; four left tarsal phalanges and four right tarsal phalanges.

Sex

The study to which this topic refers is to determine the sex of the individual by means of the metric or morphological evaluation of anatomical bone damage. In the case in question, the skull and pelvic bones were analyzed. With regard to the skull, it was observed that it is of medium size; the forehead is not very sloping; the glabella is not very apparent; the superciliary arch is slightly projected; the supraorbital ridge is slightly narrowed; the mastoid processes are short and not highly developed; the nuchal lines are only slightly apparent. With regard to the pelvic bones, it was observed that the ischial notch is open and deep; the ischiopubic ramus is thin and narrow and the subpubic angle is greater than 90°. The presence of preauricular sulcus was also identified and the sacrum is only slightly curved. Therefore, based on the morphological assessment of the aforementioned anatomical characteristics, as established in the methodology proposed by Buikstra and Ubelaker (1994), the experts estimated that the remains belong to a person of the female sex.

Age

Three methods were used to estimate age. The incomplete fusion of the sternal aspect of the collarbones, based on the methodology proposed by McKern and Stewart (1957), together with the anthropological technique proposed by Suchey-Brooks (1990) for estimating age based on the morphological aspect of the pubic symphysis and the technique proposed by Ubelaker (1978), based on the levels of root development and tooth eruption, enabled the experts to include the individual in the 19- to 23-year-old age range at the time of death.

Stature

The technique proposed by Mendonça (2000) was applied to the physiological and perpendicular measurements of the individual's right femur, reaching the height margin corresponding to 1.77m, which can vary between 1.69m and 1.81m.

Ancestry

The technique proposed by Hefner (2009) for estimating ancestral affinity, based on the analysis of morphoscopic features of the skull, suggests that the individual was of predominantly African ancestry.

Traumas

In the practice of forensic anthropology, traumas are classified according to the "period" in which they were produced, which can be antemortem (traumas that show clear macroscopic characteristics of bone remodeling); postmortem (traumas that affect bones that are already quite desiccated, poor in organic matter) or perimortem (traumas that do not present the characteristics observed in the phases described above, which can possibly include a very long period of time). Therefore, we sorted and classified the lesions based on where they were sustained, when they were sustained, their types and configurations, as well as the corresponding action (blunt force, piercing or other).

Nasal bone

A fracture was observed affecting the right nasal bone (circled in yellow), generating bone folding and loss of substance, compatible with blunt force action produced during the perimortem period (Figure 8).



Figure 8 Fracture of the nasal bone.

Vertebrae

Bone folding was observed at the lower edge of the right lamina of the C5 vertebra, close to the right transverse foramen, caused by piercing action, by different blows delivered in the anterior posterior direction and produced during the perimortem period. There were also two fractures with regular edges and parallel to each other addressing the right transverse process of the C7 vertebra (circled in red), affecting its articular facet. In the same vertebral body, there was a fracture mark addressing the inner wall and upper edge of the vertebral body (circled in yellow) caused by a puncture wound, whereby the set of three injuries were produced by three different blows delivered in the anterior posterior direction and produced during the perimortem period (Figure 9).

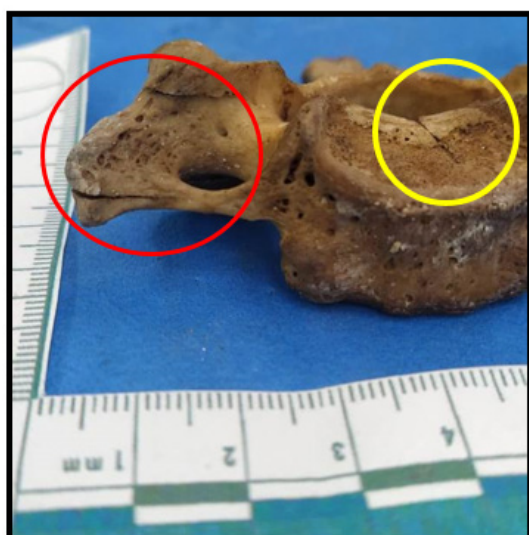


Figure 9 Blunt force injuries to the C7 vertebra.

Right collarbone

A fracture trace with regular edges was observed, in an oblique arrangement, addressing the posterior face of the collarbone, measuring 28mm and containing a granule similar to metallic material attached to the left edge of the bottom of the trace, produced by a

sharp object, with a blow delivered in the anterior posterior direction prior to the perimortem period. It should be noted that the granule was duly collected and stored for later analysis.

Costal arches

Uniform fracture traces with regular edges (circled in red) were observed addressing the posterior region of the 4th, 5th and 6th right costal arches, as well as the 1st, 2nd, 3rd, 4th, 5th and 7th left costal arches, produced by piercing action, with blows delivered in the posterior direction and produced during the perimortem period (Figure 10).



Figure 10 Revealing the fracture compromising the costal arch.

Cause of death

The fracture mark on the inner wall of the vertebral body of the C7 vertebra, produced by a sharp object in an inferior posterior direction, decidedly caused sectioning of the spinal cord, which, at this level, is incompatible with life, i.e. fatal. The injuries described on the costal arches show that there were decidedly multiple perforations of the lung parenchyma, which contributed to the cause of death.

Results

The anthropological examination allowed the experts to state that the characteristics observed indicate that this is a single individual, belonging to the female sex, included in the 19- to 23-year-old age range and of predominantly African ancestry. It was further estimated, based on the stage of decomposition of the remains that the death occurred less than six months before the corpse was found. With regard to the traumas identified on the corpse, we would highlight that the internal wall of the vertebral body of the C7 vertebra, produced by a sharp object, in an inferior posterior direction, clearly caused sectioning of the spinal cord, which is incompatible with life, i.e. fatal. The injuries described on the costal arches show that there were clearly multiple perforations of the lung parenchyma, which contributed to the cause of death. It should be noted that the identification of the victim was carried out by means of a genetic match by the IPPGF/PCERJ (Instituto de Pesquisa e Perícia em Genética Forense da Polícia Civil do Estado do Rio de Janeiro).

Discussion

As was seen above, the integration between the specialized sectors of the civil police, in the form of an exchange of knowledge and joint action, was essential in solving the case. The anthropological analysis of the remains together with the victim's clothing and belongings made it possible to elucidate not only the cause of death, but also the circumstances. By examining the overlap of the shirt and the costal arches (arranged in a similar position to the anatomical layout), the experts were able to identify the number of injuries, their nature, the orientation of the blows, as well as the type of instrument that might have produced them.¹⁻⁴

Conclusion

The importance of presenting this work is based on the need to discuss greater integration between all the existing departments of the Civil Police of the State of Rio de Janeiro (PCERJ), as well as the preservation of the clothing of the corpses to be examined. In this case, the preservation of clothing and its joint analysis with bone remains were crucial to enable the Forensic Anthropology Service to establish critical points for solving the case.

Acknowledgments

We would like to thank all those who contributed in some way to solving the case and producing this work: Alípio dos Santos Rocha; Arthur de Mello Prates; Carlos Eduardo Silva dos Reis; Daniel Luiz Alves Gimenes; Danielle Peres; Ingrid Valle Figueiredo; Pablo Valentim; Rubens Ghidini; Thacia Cristia Dias Quadros; Wania Lucia Agricola and William dos Santos Ferreira.

Conflicts of interest

The Authors declare that there are no conflicts of interest and that they are authorized to publish the case.

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