

NOTA DE PESQUISA | *RESEARCH NOTE*

KEY FACTORS IN THE INVESTIGATION OF PAST VIOLENCE AND TRAUMA

FATORES-CHAVE NA INVESTIGAÇÃO DE VIOLÊNCIA DO PASSADO E TRAUMA

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ABSTRACT

The investigation of sites thought to relate to past violence and trauma requires a team approach of specialists with thoughtful selection of methods and equipment. Among the many factors and themes involved in such investigations, techniques of recovery, acquisition of information regarding missing persons and careful dating of evidence are of immense importance.

KEYWORDS

Recovery, Trauma, Dating.

RESUMO

A investigação de locais que se acredita estarem relacionados a violência e traumas passados exige uma abordagem de equipe de especialistas com uma seleção cuidadosa de métodos e equipamentos. Entre os muitos fatores e temas envolvidos nessas investigações, as técnicas de recuperação, a aquisição de informações sobre pessoas desaparecidas e a datação cuidadosa das evidências são de imensa importância.

PALAVRAS-CHAVE

Recuperação, Trauma, Datação

RESUMEN

La investigación de lugares que se creen relacionados con la violencia y traumas pasados requiere un enfoque de un equipo de especialistas con una selección cuidadosa de métodos y equipos. Entre los muchos factores y temas involucrados en estas investigaciones, las técnicas de recuperación, la adquisición de información sobre personas desaparecidas y la datación cuidadosa de las evidencias son de gran importancia.

PALABRAS CLAVE: Recuperación, Trauma, Datación.

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Introduction

Unfortunately, many sites around the world relate to past violence and human trauma. The topography and detailed structure of such sites vary remarkably and can include mass graves in open fields, deposits in wells and cisterns, burials in lakes and rivers and even clandestine locations in urban environments. Since each site is unique, investigations require thoughtful deployment of resources, personnel, and methods. Those in charge of such investigations must assemble all known information about the nature of the site and be aware of the range of methods and approaches possible. Recovery is a destructive process; thus, investigation must proceed to maximize and safeguard the evidence recovered in recognition of time and resource constraints. Although the list of concerns in such initiatives is extensive, three issues are of prime importance and are discussed here: proper search and recovery, the acquisition of information about missing persons and proper dating of evidence recovered.

Search and Recovery

The search process always begins with information assembled from informants, records and other sources. Once the search area is defined, appropriate specialists and equipment are selected to address specific issues created by the physical and social landscape. Search and recovery calls for a team approach with individuals' roles and responsibilities clearly defined. All those participating must understand the mission and how they will contribute. Participation can represent a challenging adjustment for some professionals used to autonomy and leadership in their normal forensic practice. In the team approach, each professional must accept their assigned role and work respectfully with others on the team. Such cooperation can extend to team leaders, especially if multiple agencies are involved.

The search effort can involve aerial photography and sensing, examination of topographic features and interpreting vegetation patterns. The search for subsurface burials and related features may employ ground penetrating radar, electromagnetic equipment, probing, metal detectors and tests for soil resistivity (HOLLAND & CONNELL, 2016, p.167-180). These search techniques detect areas of soil disturbance that might relate to the activity in question. Of course, they are of limited use in an urban environment with widespread soil disturbance due to construction and other activities.

Once the actual site is located, the recovery process begins, usually with archeological-type excavation. Since this process is destructive, careful, professional technique is required with adequate documentation during the process. All evidence recovered must be safeguarded to prevent contamination and maintain the chain of evidence. Improper procedures may jeopardize subsequent analysis and the ultimate use of the evidence in legal proceedings (CHEETHAM & HANSON, 2016, p. 181-194). Care must be taken to recover fragmentary evidence. Such recovery can be especially difficult when burned human remains are involved (POPE, 2023, p. 13-35).

Information Regarding Missing Persons

Positive personal identification represents a key goal of most investigations involving human violence and death. Such identification is possible when unique features are shared between a missing person and recovered remains. This represents a two-step process. First, features must be found that occur both in the recovered remains and the missing person. Second, science must demonstrate that the shared features are unique; they cannot be found in another missing person. Failure to recognize this second step can result in a disastrous misidentification.

An identification cannot be made unless the comparative antemortem information is available. In the aftermath of a violent event, most investigators immediately pursue the location and recovery of victims, as well as the evidence needed for identification from the deceased individual (fingerprints, dental features, skeletal radiographs, anthropological analysis, DNA sampling etc.). However, it is just as important to assemble the information from missing persons that will be needed to make the identification. This effort can be very time consuming, involving interviews with family and friends, search for medical and dental records and taking the necessary DNA samples from key family members and possibly materials associated with the missing person. Obtaining such information requires sensitivity to community concerns, cultural factors, and political context (PARRA, Roberto C. and Douglas H. Ubelaker, 2023, p. 1-395). Given political history and circumstances, family members may be reluctant to cooperate. Conversations with family members should employ language about missing persons rather than antemortem information since it has not yet been established that death of the missing person has occurred.

Establishing the Approximate Date of Death of Recovered Remains

If search and recovery efforts result in the discovery of human remains, it is important to determine if they relate to the historical site in question. For example, if the event being investigated occurred in 1973, it must be established that the recovered remains relate to that date and not an earlier or later one. Excavations frequently encounter remains from earlier time periods of archeological interest that have no bearing on the focus of the investigation. It is also possible to encounter more recent remains that are of medico-legal interest but are not related to the investigation. Frequently, contextual clues and associated artifacts can assist in making the necessary distinctions. However, in the absence of such evidence, it can be difficult to date the samples. Tissue preservation usually is not helpful since many factors influence the decomposition/preservation process (NAWROCKI, 2016, p. 373-390).

Radiocarbon analysis has emerged as a useful tool for these situations. Investigators need to be aware that two types of radiocarbon analysis are available, both involving laboratory analysis of the amount of the isotope carbon-14 present. Carbon-14 enters the human body through the food chain and becomes incorporated in tissues as they form and remodel with time. The traditional radiocarbon dating method recognizes that carbon-14 is mildly radioactive and gra-

dually deteriorates with time. Through its known half-life of 5,730 years, radiocarbon specialists can measure the amount of carbon-14 present and calculate how many years have passed since death. This method has been used extensively to date archaeological materials related to ancient times (TAYLOR, 2000, p. 60-67).

The other method of radiocarbon analysis useful for forensic analysis relates to the modern period after 1950 AD. After 1950, various countries conducted atmospheric testing of thermonuclear devices that unleashed copious amounts of artificial radiocarbon into the atmosphere. Atmospheric levels increased dramatically over previous stable levels to a peak around 1973-1974. Following atmospheric test-ban treaties, these levels have gradually declined and are now approaching the pre-1950 levels. As a result, people who were alive after 1950 have the elevated levels of radiocarbon in many of their tissues. If radiocarbon analysis of recovered human remains reveals modern radiocarbon, investigators know that person was alive after 1950. Research has revealed that concentrations of radiocarbon vary in different tissues of the body depending on biological methods of tissue formation and remodeling (UBELAKER ET AL., 2006, p. 484-488). For example, blood and many soft tissues of the body remodel relatively rapidly and maintain a close relationship with atmospheric and dietary levels of radiocarbon. Within the skeletal system, cancellous bone, such as that found in the bodies of vertebrae, remodels more rapidly than cortical bone. The enamel in teeth does not remodel at all, maintaining the carbon-14 levels incorporated into the tooth when it formed during childhood. Thoughtful analysis of radiocarbon from different tissues can clarify if the levels relate to the earlier or later side of the bomb-curve.

Research also has demonstrated that the rate of remodeling slows with advancing age and thus these factors must be taken into account (UBELAKER, et al., 2015, p. 56-60). It is possible now to formulate a hypothesis to be tested with radiocarbon analysis. Given the date of the event in question and age of the decedent, the level of expected radiocarbon can be calculated. If analysis reveals a different amount, the investigator knows that the remains do not relate. In consideration of the age-related lag time and the tissues sampled, both the birth date and death date can be estimated. This method is complex and requires thoughtful sample selection for analysis and interpretation, but in most contexts, it represents an extremely useful tool.

Conclusion

Investigations of sites of past human violence and death are both complex and challenging. Yet evidence yielding truth can emerge if the many complicating factors can be mitigated. Proper search and recovery with maintenance and protection of the chain of custody is necessary to facilitate the analysis downstream. The gathering of reliable information regarding missing persons is vital to the identification process. Accurate dating of recovered remains and related evidence must be accomplished to establish relevance. When these complex factors are successfully addressed, site investigation can be productive and informative.

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