

The Governmental Ri.Sc. form for Unidentified Human Remains and the Role of Forensic Anthropology

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Introduction

The identification of cadavers and human remains has always represented an important issue in forensic pathology, not only for ethical but also for legal reasons (of criminal and civilistic nature) all related to the assessment and declaration of the death of a person. The need to identify a cadaver reflects the right of all human beings to be buried and mourned and the completion of many civil procedures such as inheritance issues and payment of insurance as well as the implications in criminal law if we consider that it is fundamental to identify a murder victim in order to adequately investigate a potential crime. Very little is known in international forensic literature concerning the issue of unidentified decedents across Europe and the status of the identification of human remains is still seriously underestimated at a European level and represents a severe problem due to several factors depending on the country involved; in Italy some of the reasons behind this are related to diminishing family and an increase in both legal and illegal immigration as well as the lack of trained personnel and standardized protocols that might enable forensic pathologist to systematically collect and register data from cadavers (Cattaneo *et al.*, 2000; Cattaneo *et al.*, 2010; Hanzlick, 2006; Hanzlick *et al.*, 2008; Paulozzi *et al.*, 2008).

Italy (but not only) is a country where the problem has been ignored by politicians and most of the information concerning the phenomena has been derived from data reported in very few studies published, particularly concerning Milano and its Institute of Legal Medicine (Cattaneo *et al.*, 1999; Cattaneo *et al.*, 2005), which every year performs a high number of autopsies (1000 circa per year) and has functioned in the last 16 years (since 1995) as an observatory of the problem (Cattaneo *et al.*, 2010). The study has revealed interesting statistical information about the number of human remains with no suspicion of identity arriving at the morgue in Milan between 1995 and 2008. The Institute of Legal Medicine has therefore been involved in the development of a national and standardized protocol useful for recording as much information as possible of all unidentified decedents and, more

importantly of a Central National database for unidentified cadavers together with missing persons in which to convey such data in order to cross-match it with data on missing persons. The data emerging from the study illustrates a serious problem of unidentified decedents, and along with the pressure from national associations for missing persons have led politicians in the last years to debate the problem in the Italian Parliament. An official census of unidentified cadavers and missing persons Nationwide has been performed as a first step by the Ministry of Internal Affairs' office which has tried to trace the national number of unidentified cadavers: the total of unknown cadavers amounts to at least 800, revealing alarming data forasmuch as the number is still a large underestimation since most offices contacted have not returned correct and complete information. The emergency of the situation led Parliament to enact an incoming law of the 6th March 2007, "Progetto di Legge n.114 A.C. 1828" that establishes a unique web-based national database named "Sistema Ri.Sc" (Research of Missing Person System) arranged by CEN (National Electronic Centre of Napoli) which allows personal details of missing persons to be compared and eventually cross-matched with personal details of unidentified cadavers to support the identification. All PM and AM data concerning respectively unidentified cadavers (*Post Mortem* data) and missing persons (*Ante Mortem* data) found in the Italian territory will be collected and recorded by means of the Ri.Sc. form (which is different but specular for both unknown decedents and missing persons); the post-mortem form is filled in by a forensic pathologists and then entered and registered by the Police into the system. These data should then be compared to *antemortem* data of missing persons.

This study aims exposing the problems related to the difficulties linked with the filling in of the sheet that require in most of the cases specific skills in forensic osteology and odontology, as the results show. Proper data collection is the first step for a properly working system and requires trained personnel in identification and standardized protocols for the extrapolation of correct information (like sex, race, age and stature essential), particularly in the case of human remains. The quality and problems of the Ri.Sc sheet displayed during its testing in numerous cases of unidentified bodies recorded in our laboratory's archives (Forensic Anthropology and Odontology Laboratory of Institute Legal Medicine of Milan) are discussed in this

study together with the role of forensic anthropology. One of the questions arising concerns which specific profession should be involved: could just a pathologist be the only professional figure called in? In many situations, only the pathologist's knowledge is not always enough and other specialists are fundamental: we have focused on the importance of professional figures as forensic anthropologist who can give specific information not just in cases of badly preserved cadavers but even with well-preserved cadavers.

Materials and Methods

The Ri.Sc. form is the new governmental way of collecting data on unidentified bodies. It is filled in by the pathologist during the postmortem examination and it is arranged in sections and check boxes, which are: SDI section, characteristics, teeth, clothes, personal effects, ID documents, state of preservation, additional information, distinguishing marks, judicial authority, photos. The form was tested on 40 unidentified cases referring to 1995, 1996, 2009 and 2010 for the city of Milan (Italy). These cases had been previously examined at the Laboratorio di Antropologia e Odontologia Forense, at the Institute of Legal Medicine in Milano and their biological profile published on line.

Among the 40 cases object of the study, 27 were well preserved (67,5%), 9 were in an advanced putrefaction stage (22,5%), 3 were skeletonized (7,5%) and 1 dismembered (2,5%). The sample was intentionally formed by choosing cadavers in different states of preservation, in order to point out identifying problems, which can arise during the filling in of the Ri.Sc. form and emphasize the contribution of anthropological methods in solving these problems.

Results and Discussion

Very interesting results emerged from the analysis of the Ri.Sc. form, especially in those cases where the coroner had trouble due to the bad state of preservation of the body. Starting from sex determination, if the cadaver was well preserved, anthropology obviously had no role. Otherwise, when the body was in a bad state of preservation (eg. skeletonisation), it was necessary to proceed with standard anthropological methods to provide a quick result on sex, since DNA analysis from such difficult material may take months (Phenice, 1969; Cattaneo and Grandi, 2004). About the section relating to the age of the corpse, if it's well preserved pathologists usually tend to provide an apparent age, which may be dangerous since there is no known standard error. Anthropological methods in this case proved to be very useful in the perspective of providing a reliable age range to put into the database. Specifically, the pubis symphysis wear degree is classified into six stages according to the Suchey-Brooks method (Brooks and Suchey, 1990) and the sternal articular surface of the fourth rib, divided in eight stages according to the

Iscan method (Iscan, 1984). We proceeded also with the Lamendin method, that allowed for a reliable estimation of the age range, through measurements taken on a monoradicular tooth (Lamendin, 1992). The combination of the Suchey-Brooks method and the Lamendin method goes under the name of "Two Step Procedure" (Baccino and Zerilli, 1997), quick and user-friendly. This was even more so in cases of decomposed or burnt human remains where sometimes it was necessary to use the Kerley-Ubelaker method, based on osteon counts (Kerley and Ubelaker, 1978).

As regards the section concerning race diagnosis, the Ri.Sc. form covers only the three most representative types: caucasoid, negroid and mongolid. If the cadaver is well preserved, such a diagnosis can be provided only by visual analysis. Otherwise, in case of a bad state of preservation, the diagnosis of race were carried out by a morphological and metrical approach (Cattaneo and Grandi, 2004).

Among algorithms useful for the diagnosis of race, Fordisc 2.0 must be recalled, a software created by the Tennessee University.

The Ri.Sc. form also allows for the insertion of stature. If the cadaver is in a bad state of preservation or where there are just some skeletal remains, the contribution provided by anthropology is crucial by using standard regression formulas (eg. Trotter and Gleser's).

Then there is the connotations and marks section. This section consists of a graph with a human outline sketched, where it is possible to insert scars, tattoos, amputations, prosthesis, bone fractures, etc. These special marks are often observed only superficially by the coroner, which restricts his analysis most of the time to the detection of scars, moles and tattoos.

In this case, the contribution of forensic anthropology is, again, important: it can provide deeper insight through the observation of typical characteristics of bones, like for example non-metric features and bony anomalies indicating specific activities.

Finally, though not specifically requested by the RISC form, facial reconstruction proved to be an extremely useful tool, particularly in the hypothesis that the person has not been reported missing (in the case of vagrants or illegal immigrants). It may be fundamental to put into circulation an identikit with a face in order to reach identification, and anthropology is the discipline which can provide the correct method.

Conclusions

The application of the Ri.Sc. form to the study sample showed how the form represents an immediate and easy way to collect data from an unidentified corpse, allowing, at least in part, for a solution to the national situation of unknown decedents.

Because the form was tested on different states of preservation it stressed the need for anthropological expertise, particularly for aging, stature and ancestry estimation, not only for badly preserved human remains but in the case of aging even on well preserved cadavers.

It must be kept in mind that a corpse can arrive at the morgue in different states of preservation, so the coroner may encounter many difficulties in collecting data. In this case forensic anthropology provides valuable support to the forensic pathologist, starting from the well preserved cadaver to the skeletonized one. In fact, as the cadaver conditions get worse, for example in case of severe decomposition, carbonization, skeletonization or even dismemberment, forensic anthropology has a wider field of action.

The Ri.Sc system is still at its beginning but this brief pilot study has shown how it can be easily used and how it must be filled in by a series of experts, among which forensic anthropologists.

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