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Case report

Virtual anthropological study of the skeletal remains of San Fortunato (Italy, third century AD) with multislice computed tomography

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ABSTRACT

In June 2010, the priests of the church of Santa Maria in Silvis in Serracapriola, Italy, asked the University of Foggia to study skeletal remains which they believed to be those of San Fortunato. San Fortunato lived in Rome in the third century AD and little is known about his life and death. For forensic and anthropological study to determine the geographical origin, sex, age, stature and diagnose any diseases, multislice computed tomography (MSCT) was performed. Due to time and administrative constraints (we had access to the remains for only one day, and no biological sampling was permitted), dry bone and DNA analyses were not performed. The remains, thought to be 17 centuries old, were severely damaged and conventional anthropological methods already transposed to MSCT could not be used. However, considerable information for reconstructive identification was obtained. The skeletal remains were those of an Italian male, of height between 1.53 m and 1.56 m, with age at death estimated between 20 and 40 years. The effects of taphonomic processes were also visible. No historical physical description of San Fortunato is available so we were unable to compare our results. To the best of our knowledge, this is the first case in which MSCT has been used to examine the presumed skeletal remains of a Saint. It also demonstrates that reconstructive identification can be performed independently of dry bone study and illustrates the value of MSCT when skeletal remains must be preserved.

1. Introduction

In June 2010, the priests of the church of Santa Maria in Silvis in Serracapriola, Italy, asked the University of Foggia to study skeletal remains which they believed to be those of San Fortunato (Fig. 1A).

Little is known about the life of the Saint, and particularly about the manner of his death. The first document mentioning San Fortunato is an official letter dated 5th of March 1687 written by Pope Innocent XI, donating the Saint's remains to a local cardinal named Carafa. This testimonial letter contained a description of the removal of the remains from the catacombs of the family of Pope Pontianus in Rome, where San Fortunato's tomb was identified by an inscription on the tombstone: "FORTUNATI CHRISTI MARTYRIS" [1]. Although there are no historical references to the martyrdom of San Fortunato, his death may be dated between the renewed persecution of Christians ordered by Maximinus Thrax, who became Roman Emperor at the beginning of 235 AD, and the deportation of Pope Pontianus, who buried San Fortunato in his family catacomb. Pope Pontianus was condemned to forced labor in a metal mine in Sardinia in September of the same year [2,3].

Paradoxically, more data are available concerning the history of the skeletal remains than about the Saint's life and death. In his tomb were found a lamp and a small vial containing blood. These material elements are classic religious symbols of martyrdom. Furthermore, the burial suggests that the martyr was known to the family of Pope Pontianus, who, in order to honor the memory of the Saint, buried the skeletal remains in his own private family catacomb in Rome. The relics were later offered to Cardinal Carafa. The Marquis Caesar d'Avalos d'Aragona, who inherited the relics from the Carafa family, transferred the skeletal remains to the church of Santa Maria in Silvis in Serracapriola in 1726 [1]. Up to the present time, the remains were kept in an urn at the altar.

Inside the urn were a number of sealed bags containing dry bones: the cranium, some vertebrae, parts of the thorax

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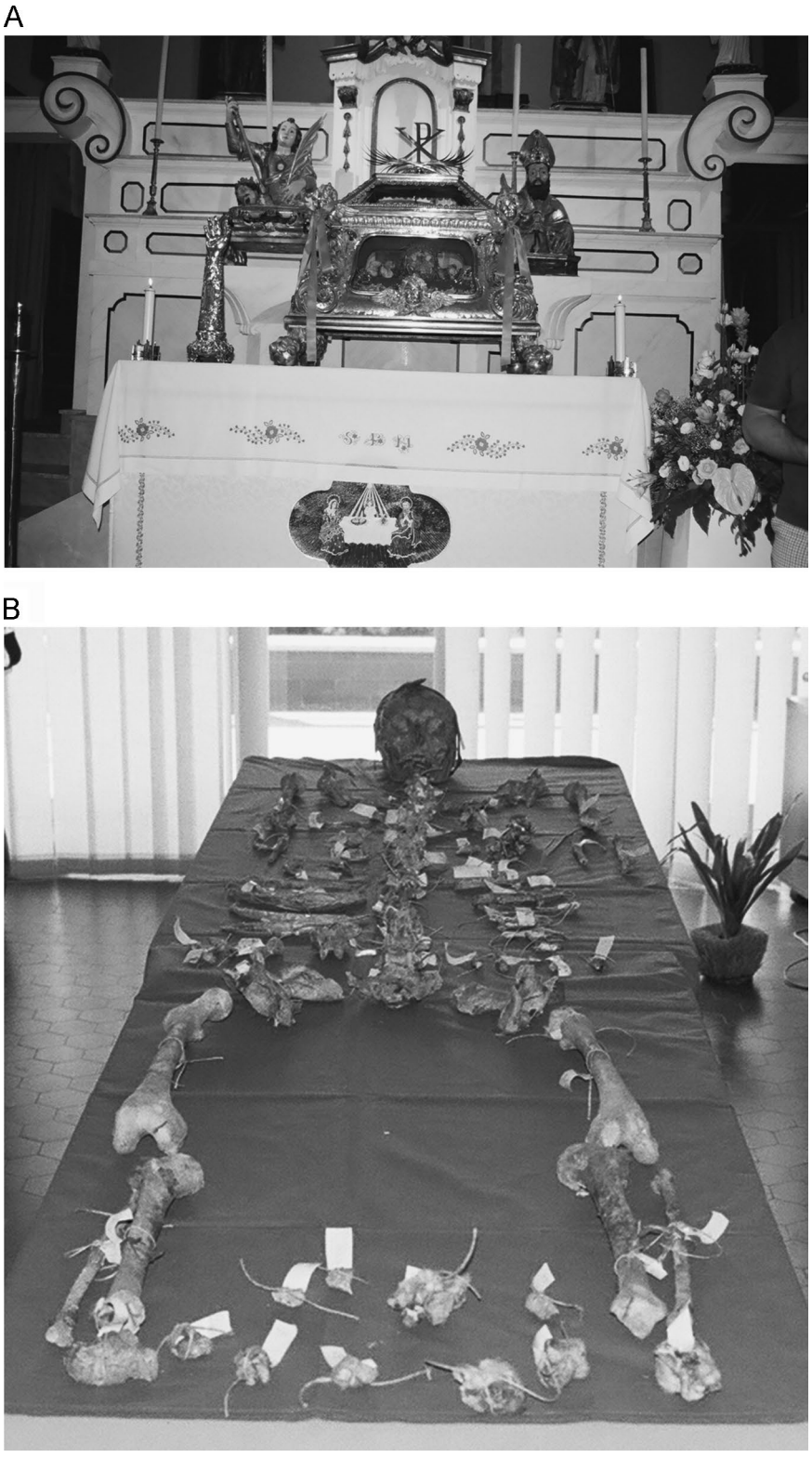

Fig. 1. (A) The urn in the church of Santa Maria in Silvis, Serracapriola, Italy. (B) View of the dry bones.

(fragments of ribs, a fragment of sternum), remains of the innominate and sacral bones, parts of the upper limbs (both humeri, both ulnas, the right radius), parts of the lower limbs (both tibias, both femurs, both ulnas, and fibulas, one calcaneus bone, ten tarsal-metatarsal bones, one cuneiform bone) (Fig. 1B). For forensic, paleopathological and anthropological study to determine the geographical origin, sex, age, stature and diagnose any diseases, the bone remains were examined by multislice computed tomography (MSCT).

The priests of the church of Santa Maria in Silvis agreed to allow access to the skeletal remains only for one day. As permission for biological sampling was not obtained, no DNA samples were taken. Unfortunately due to time and organizational constraints, dry bone study was not performed.