

A case of Kennedy terminal ulcer in a 17th-century Italian mummy

Mirko Traversari,^{1*} Luca Ventura,^{2*} Aleksander Sebastian Iwaszczonek,³ Elisabetta Cilli,⁴ Marco Longoni,⁵ Gianandrea Pasquinelli,^{1,6} Giancarlo Troncone,⁷ Arturo Brunetti,⁸ Davide Melandri,^{1,9} Claudio Bellevicine⁷

¹Department of Medical and Surgical Sciences, University of Bologna; ²Division of Pathology, San Salvatore Hospital, L'Aquila;

³Regular Theatine Clerics, Basilica of San Paolo Maggiore, Naples; ⁴Department of Cultural Heritage, University of Bologna, Ravenna;

⁵Neurology Operative Unit, Bufalini Cesena City Hospital and Morgagni Pierantoni Forlì City Hospital, AUSL della Romagna; ⁶IRCCS AOUBO, Bologna; ⁷Department of Public Health, University "Federico II", Naples; ⁸Department of Advanced Biomedical Sciences, University "Federico II", Naples; ⁹Department of Emergency, Burn Center and Dermatology, AUSL della Romagna, Italy

*These authors share first authorship.

Abstract

Giacomo Torno was born in 1539 (or 1541) in Naples. At the age of 18 he joined the Clerics Regular Theatines in San Paolo Maggiore and was welcomed on 30 October 1558. He suffered a stroke on 4 December 1608 and died 45 days later. Contemporary sources report that he appeared to be tormented by the devil during his illness, suffering from constant spasms in his arm, which caused him great discomfort. During the analysis of his mummified body, a discontinuity of the skin surface at the level of the

sacrum was discovered. All morphological features indicate a wound that developed during the subject's life. Based on historical sources, the fracture of the first coccygeal vertebra, the appearance of the lesion near death, and the shape of the lesion, suggest that this is the first recorded instance of the Kennedy terminal ulcer, identified through both direct and indirect sources.

Introduction

Giacomo Torno was born in 1539 (or 1541) in Naples as the second son of the lawyer Giovan Antonio Torno and Laura Follera. As a young man, he studied letters and jurisprudence and at the age of 18, despite his father's strong opposition, he entered the Clerics Regular (Theatines) in San Paolo Maggiore, where he was received on 30 October 1558 by the superior, Blessed Giovanni Marinoni, formerly his confessor. Since that moment, Giacomo Torno distinguished himself for great humility. Although he had a natural tendency towards stubbornness, the Servant of God was described as the most affable Theatine, an example of meekness and patience. Giacomo Torno was one of the confessors of Sant'Andrea Avellino and assisted him until his death. He studied the Holy Scriptures deeply and intensely. Already alive he was considered by his brothers as a saint, thanks to his undeniable charismatic qualities and his devotion to others.¹ On 4 December 1608, during the celebrations of Santa Barbara Virgin and Martyr, he suffered a stroke, which rendered him ill. Contemporary sources tell us that immediately after the stroke, an arm of the humble Theatine «had become completely dry and [unusable]», so it happened that the devil seized him to place himself on the sick man's stomach, using his weight to inflict even greater suffering. And even if «the very patient Father for [to unburden himself] of that boring weight, with the other hand he lifted it from his stomach; the devil putting it back again more boringly, and as the same reported with this importunity of his almost all night harassing him, did not let him sleep». ^{1,2} Therefore, it was necessary to secure his arm to the mattress in a way that did not burden his stomach with excessive weight. "In this last illness of his, which lasted a month and a half, with the same patience for the pains as for the harassment given to him by the Demons.",³ on 18th January 1609, around twenty o'clock, only 45 days after the stroke, death came, «with opinion of holiness, to enjoy eternally the sweet fruits of his religious labors».⁴

Correspondence: Mirko Traversari, via Dismano 4875, 4722, Cesena (FC), Italy.
Tel.: +39.3392261990.
E-mail: mirko.traversari@gmail.com

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Materials and Methods

The life of Giacomo Torno, and above all the chronology of

his last months, has been verified and analyzed in seventeenth-century treatises.^{1,2} A recent formal verification to evaluate the state of conservation of the body was carried out in June 2022. The body was dressed in complete priest's garments (Figure 1A) with shoes and a death mask (Figure 1C) applied to the face. The body was undressed under atraumatic conditions and was primarily subjected to direct visual inspection (Figure 1B,D). The mummified body was also subjected to a total body medical CT scan at AOU Federico II to verify the degree of internal integrity, with the following acquisition parameters: single helical scan, 0.5 slice thickness, reconstruction interval of 0.7 mm, and an energy of 120 kV and 70-80 mA.⁵⁻⁷ Due to the high degree of soft tissue preservation, sex was verified by direct inspection, and age-at-death was verified thanks to degenerative indices and morphological variants in the skeleton and dental wear pattern.^{8,9} Skin wounds were evaluated following international standards.¹⁰⁻¹²

Results

Visual inspection allowed us to verify the almost complete mummification of the body, except for the feet and the skull, which were partially skeletonized. Feet showed loss of some osteological elements occurred before current analyses. Contemporary sources from the time of his death, report a strong devotional movement by the faithful, who removed numerous relics from his body, including shreds of cloth from his habit and some toes, before he was buried.^{3,4} The attribution of sex and age-at-death confirmed the hagiographic notes about the Venerable. During the analysis, a discontinuity of the skin surface at the level of the sacrum emerged (Figure 2A). The wound (53.14 mm width; 71.51 mm length) appeared compact, without any degenerative signs due to the action of humidity, pear-shaped, with rounded edges and without any detachment between the various layers of the skin (Figure 2B). All these morphological features indicate a wound developed during the life of the subject and not a post-mortem lesion caused by taphonomic changes.^{13,14} On the skin around the edges of the wound, the mold of a textile weave (15 garments per cm) has also been preserved, which is probably attributable to the use of a pad or wound bandage. The sagittal view of the CT scan showed a type 1 flexion fracture of the first coccygeal vertebra (Co1) (Figure 2C).¹⁵

Discussion and Conclusions

From the chronicle provided by historical sources, an unexpected event was described. Giacomo Torno suffered a stroke on 4th December. The brain lesion was most likely of vascular origin (ischemic versus hemorrhagic). The involved hemisphere was probably the right one in consideration of the flexion attitude of the upper left, still visible in the mummy, which is indicative of hemiplegia with hypertonicity (Figure 3). The sudden acute ischemic event may have caused a violent fall to the ground, resulting in a coccyx fracture. In the following days, he quickly recovered consciousness without regaining the upper limb's complete functional autonomy and, most likely, the walking ability. He was forced to bed for a long time with suffering referred to the affected limb. The movements of the upper limb that are defined as «induced by the Devil» could be interpreted as partial motor epileptic seizures, a possible complication of the stroke, rather than excessive spasticity and hypertonicity of the upper limb. Concerning the right paramedian sacral wound, it is conceivable



Figure 1. Phases of the undressing process. **A)** The mummy with the current vestments still worn; **B)** the mummified body ready for direct analysis; **C)** the resin mask still on the face; **D)** the face of the Venerable Giacomo Torno, once the mask has been removed.

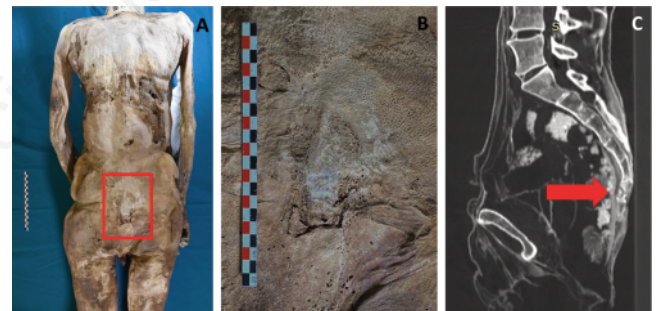


Figure 2. **A)** Anatomical location of the lesion; **B)** detail of the lesion on the sacral region; **C)** sagittal view of the computed tomography scan, the arrow indicates the fracture of the first coccygeal vertebra.



Figure 3. The flexion of the upper left limb shows no signs of ligatures that could justify the position in any other way.

that the body maintained a posture with the trunk and pelvis tententially rotated to the right. The right hemispheric stroke is generally associated with the phenomenon of spatial and somatic hemineglect towards the left, with the consequent tendency to direct one's head, gaze, and attention towards the right ecological and corporal hemispaces. Another interesting issue dealing with the presence of the wound emerges from the written sources. Historians tell us that Giacomo Torno's body was found wounded, «especially from a great ulcer, which he had under his loins, which came to him after his death».¹

And that “he concealed in life a wound that was discovered under his kidneys at the point of death, as wide and long as a hand”.³ The presence of the sore is therefore placed even after the death of the Venerable. Therefore, although it resembles a decubitus ulcer, the lesion is much more likely a so-called Kennedy terminal ulcer (KTU).^{11,16} These are particular ulcers that appear from a few hours to a few days before the death of the affected subject in the context of skin insufficiency.¹⁷ KTU is part of the series of skin injuries found in patients at the end of life, on which the scientific community has already extensively debated to define terminologies and areas.¹⁸ The typical shape of the print left by the ulcer and the timing of appearance suggested by the sources as close to death, seem to be attributable to a terminal event, which perhaps required a simple cloth pad applied post mortem as suggested by the trace of the texture still imprinted on the surrounding mummified skin. Taking into account the historical sources, the appearance of the lesion close to the moment of death, the typical shape of the lesion, and the absence of other bedsores on Giacomo Torno's body, which would indicate a different pathological state, suggest that this is the first documented case through the integrated use of direct and indirect sources in the Kennedy terminal ulcer literature found on a 17th-century patient.

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