

## The first recorded use of microscopy in medicine: Pope Innocent XII's autopsy report

In the history of medicine, the discovery and the use of the microscope in clinical practice and biomedical research was a revolutionary achievement. The cultural shift from the traditional macroscopic necroscopy to a microscopic and ultrastructural perspective was essential for the development of modern pathology and for recognising physiopathological mechanisms of several diseases. Physicians started to use the microscope during the 17th century, but they initially limited its use to anatomical, and not pathological, studies. The Italian physician Marcello Malpighi (1628–94) is considered as the founder of microscopical anatomy and his name is still related to several physiological structures, such as Malpighian corpuscles and pyramids of the kidneys. In 1691 Pope Innocent XII (Antonio Pignatelli, 1615–1700) invited Malpighi as his personal physician to Rome, where he could teach young doctors and introduce the use of the microscope among his colleagues, influencing medical thought in the city. After Malpighi's death in 1694, Luca Tozzi (1638–1717) was appointed as new papal physician and was also offered a position as Professor of Medicine at the Sapienza University in Rome. Following the teachings of his predecessor, Tozzi had the pioneering idea to use the microscope during an autopsy (figure) on the corpse of Innocent XII, who died on Sept 27, 1700. During the last living days of the 85 year old pope, clinicians suspected that he had bowel cancer.<sup>1,2</sup> Thanks to the use of a microscope in addition to the traditional macroscopic assessment of the organs, Tozzi confirmed the presence of an early-stage colon carcinoma describing some irregularities of the

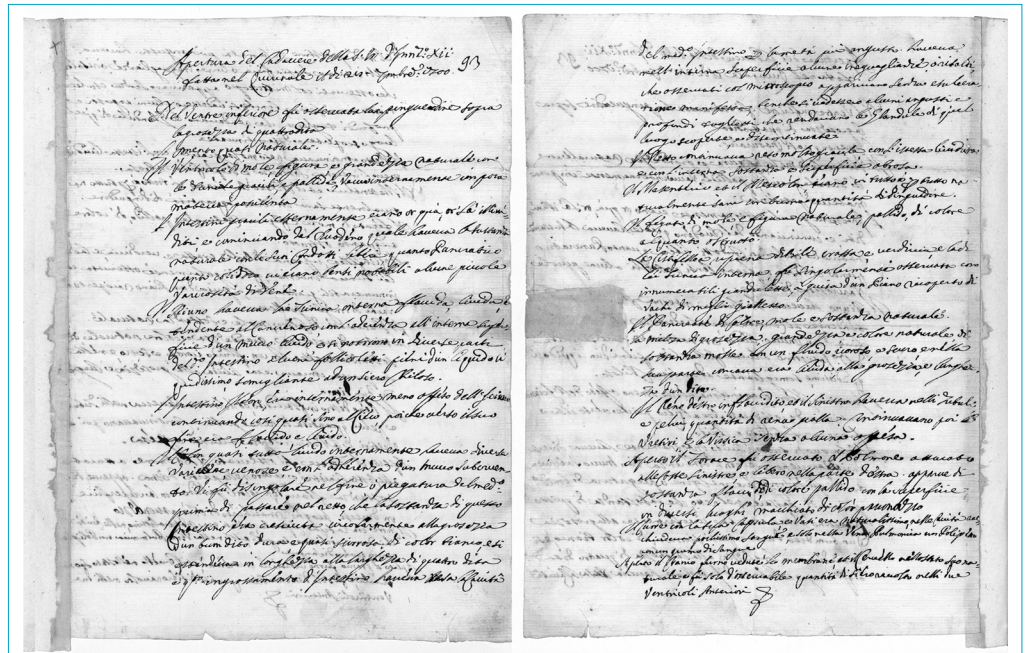


Figure: Innocent XII's autopsy report, by permission of the Vatican Apostolic Library, Rome, Vatican City

glands in the inner layer of the bowel.<sup>3</sup> Tozzi seemed to exclude any lymphatic system invasion and metastasis in other organs, suggesting that the cancer might be an incidental finding.<sup>3</sup> Whatever the actual cause of death of the illustrious patient, this autopsy report, now in the Vatican Apostolic Library in Rome, has a great value to the history of medicine. Indeed, this manuscript testifies to the use of the microscope during a medical procedure—ie, a necroscopy—thus anticipating the works of the great pathologists of the 19th century, such as Carl von Rokitansky and Rudolph Virchow.<sup>4</sup> In our opinion, Pope Innocent XII's autopsy report represents a fundamental step in the history of scientific development and therefore it deserves a major recognition not only by historians but also by modern clinicians and biomedical researchers.

We declare no competing interests.

\*Michele Augusto Riva, Luca Borghi, Fabio Pagni  
michele.riva@unimib.it

School of Medicine and Surgery, University of Milano Bicocca, Monza, Italy (MAR, FP); and University Campus Biomedico, Rome, Italy (LB)

- 1 Ceccarelli G. La salute dei pontefici nelle mani di Dio e dei medici. Da Alessandro VI a Leone XIII. Milano: Ancora, 2001.
- 2 Gualino L. Storia medica dei Romani Pontefici. Torino: Minerva medica, 1934.
- 3 Apertura del cadavere della s.m. d'Innocenzo XII fatta nel Quirinale il di 28 settembre 1700. Shelfmark Vat. lat. 8194, f.93r/v, Biblioteca Apostolica Vaticana, Rome.
- 4 Zampieri F. Da Morgagni alla patologia molecolare. In: Teorie e modelli dell'anatomia patologica. Padova: Libreria Padovana Editrice, 2012.

## Clinical examination nowadays

I am a retired physician and teacher. I studied medicine and taught it with a strong emphasis on taking the history of patients and physical examination before diagnosis. I have told my students that in more than half of patients, the history is the main determinant of the diagnosis. With the gradual shift of emphasis towards technology, I now see doctors facing the patient with a laptop in front of them, asking few questions then, with a limited or no physical examination, handing the patient a long list of tests to be done in the laboratory and various imaging facilities. I realise that the information obtained from

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