JBUON 2019; 24(1): 410-414
ISSN: 1107-0625, online ISSN: 2241-6293 • www.jbuon.com
E-mail: editorial_office@jbuon.com

HISTORY OF ONCOLOGY

Oncologic conceptions in the work of the surgeon Guy de Chauliac (c. 1300-1368)

Gregory Tsoucalas[1], Marianna Karamanou[2,3], Konstantinos Laios[2], Konstantinos Markatos[2], George Androutsos[3]

[1]History of Medicine, Anatomy Department, Medical School, Democritus University of Thrace, Alexandroupolis, Greece; [2]Department of History of Medicine and Medical Deontology, Medical School, University of Crete, Crete, Greece; [3]Biomedical Research Foundation, Academy of Athens, Athens, Greece

Summary

Guy de Chauliac, the most famous surgeon of the middle age, influenced the practice of surgery for centuries. His landmark work, in seven treatises, "Chirurgia Magna" was translated from Latin to French and became popular across Europe, educating hundreds of surgeons. In his book, a series of text fragments were dedicated in cancer such as breast tumor removal, amputation for soft tissue carcinomas of the extremities and cancer treatment using arsenic. Chauliac was probably the first physician to suggest the excision of cancer at early stage and this is considered as a promoter of surgical oncology.

Key words: *Guy de Chauliac, cancer, history of oncology, medieval surgery*

Introduction

The Hippocratic Collection of medical books, written by Hippocrates and his pupils-followers between 5th and 3rd century BC, is the first medical document which made a wide reference and classification on a well-known affection in the ancient Greek world, the cancer. "Corpus Hippocraticum" was the first medical text to use the words "karkinos" (cancer) and "karkinoma" (carcinoma) to describe a non-healing swelling or ulceration and a malignant non-healing tumour respectively. The term "scirrhus" was also introduced to describe the hardened tumours [1,2]. Various references for cancer were made by Hippocratics; all tumours (Greek: όγκοι, oncoi=abnormal swellings) were considered to have an inflammatory origin; the result of unfavourable humoural fluxes, or humours in excess, provoked by an extravascular outpouring of fluid into soft tissue spaces. In Hippocratic nomenclature, tumours were mainly classified as "karkinomata" (cancers), "phymata" (tuberculae), "theria" (beasts), "elki" (ulcers), "scirrhoi" and "oidemata" (oedemas) of neoplastic nature [2,3]. Tumours were arising from a localized inflammation when flux caused an overconcentration of one of the four humours (the black bile) from the veins into the fleshy or parenchymal components of the body part [3-5].

Although some surgeons in antiquity such as Antyllus (2nd century AD) suggested that cancer was inoperable [6], others like Galen (ca 130-201) [7], Aretaeus of Cappadocia (c. 2nd-3rd century AD) [8-11] and Paul of Aegina (625-690 AD) were recommending treatment [12] and their views were adopted by the Arabo-islamic physicians [8,13].

Correspondence to: Marianna Karamanou MD, PhD. Medical School, University of Crete, Greece, P.O. Box 2208, Heraklion, Crete, Greece. Tel: +30 6973606804, E-mail: mariannakaramanou@yahoo.com

Figure 1. Guy de Chauliac, portrait in young age, engraving by Ambroise Tardieu (1788-1841) [Source: BIUM, Paris].

In middle age, the translation of the most important Arabo-islamic medical treatises in Latin gave a new perspective in western European medicine, transmitting the ancient Greek knowledge [14]. In 13th and early 14th century, medical faculties became the principal places in Europe where medicine was assimilated and developed, marking thus the peak of the scholastic form of medicine which attempted to provide efficient solutions to medical problems. Studying medicine in the most prestigious medical faculties of his time, in Montpellier, Toulouse and Bologna, Guy de Chauliac became one of the most prominent surgeons of late medieval period who dealt with cancer [15].

Guy de Chauliac's life and work

Guy de Chauliac was born around 1300 in Chaulhac, a commune in the Lozère department in southern France, in a poor family of farmers. Of his early life little is known but it seemed that he had an inclination for medicine at young age. It was said that a noble girl of the barony of Mercoeur broke her leg and the fracture was not healing. After visiting a witch, she was advised to consult a young gifted boy from the region. Having some knowledge of empirical medicine, Guy managed to treat effectively her leg, became the "protégé" of the noble family and was instructed by the church. Initially he became a cleric, but soon, he changed his mind and decided to study medicine [16,17] (Figure 1). He was enrolled at the medical faculty of Toulouse, then at Montpellier and finally at Bologna where he learned anatomy under Nicola Bertuccio Lombardo (-1347), a pupil of Mondino de Luzzi (1250-1325), the author of the first modern book on anatomy, and he attended the lectures of Alberti Zancarri [16,17]. In 1325, he received his medical degree from Montpellier and moved to Lyon where he practised medicine. There he became provost to Saint-Just and soon afterwards canon of Reims and Mende [16] (Figure 2). Prior to his medical education, he made a promise of celibacy and he has never been married [17].

Guy de Chauliac was also the personal physician to three popes during the Avignon papacy: Clement VI (1342-1352), Innocent VI (1352-1362) and Urban V (1362-1370). At the time of the great epidemic of the bubonic plaque, known as Black Death (1348-1350), Chauliac was in Avignon and although his colleagues left the city, he remained to care patients. He also advised the Pope Clement VI to sit alone in his study room, between two fireplaces, believing that this could clean the pestiferous air and keep the Pope free of infection. The Pope survived but Chauliac didn't achieve to save Laura de Noves (1310-1348), the wife of Count Hugues de Sade and muse of the poet Francesco Petrarch (1304-1374) who wrote its famous "Invective contra medicum" (Invectives against physician) [16,18].

In 1363, he completed his masterpiece "Inventorium sive collectorium in parte chirurgicali medicine" (Inventory or Collection concerning the surgical aspects of medicine), commonly known as "Chirurgia Magna" (Great Surgery), a compilation of the works of the most famous physicians till his time such as Hippocrates (460-377 BC) Galen, Rhazes (864-925), Avicenna (980-1037) and Albucasis (936-1013). The book was published first in Lyon in 1478, and soon was translated into French, known as "La Grande Chirurgie". In 1513, its most complete edition was printed in Venice by Gregorio di Gregori (1496-1527). "Chirurgia Magna" is composed of seven treatises; each treatise is divided into two doctrinae and each doctrina in chapters. Treatise I deals with anatomy, based on Galen's work; treatise II concerns abscesses, buboes, as well as a chapter on the plague; treatise III deals with wounds; treatise IV concerns ulcers; treatise V mentions fractures and dislocations; treatise VI describes surgical diseases that could not enter in the previous categories (eye diseases, burns, gout);

treatise VII is an antidotary or Materia Medica mentioning about 750 drugs [17,19].

Chauliac's surgical skills and knowledge were extending beyond the care of simple wounds and ulcers. In his work "Chirurgia Magna", he suggested that penetrating wounds should be closed with sutures soon after their cleansing with aromatic wine and alcohol, introducing bandages stiffened by egg whites [17]. He had even recommended that all penetrating wounds of the abdominal area should be sutured with silk, using a special needle that he had manufactured for such a purpose. He was also an expert in skull trepanation, able to recognize the meninges and the cerebrospinal fluid. He had even performed a trepanation to the Pope to be Clement the V, in an attempt to treat his migraine. In his work, he was advising the removal of kidney stones, recommending that bladder stones should be treated by travelling lithotomists [17]. In orthopaedics, his most important contribution was the continuous weight extension and traction to the treatment of fractures and old dislocations and the use of splints for fractures of wrist and ankles [17]. Also, he invented the dental pelican (resembling a pelican's beak) which was used until the late 18th century [20]. In 1363, he had invented an aural and nasal speculum, resolving the issue posed during inspection or intervention in the external ear canal and the nostrils [21]. In physiology, he had adopted the theory of the four humours to explain physiological and pathological conditions and he did the same with cancer's etiology [17].

A gifted physician and multifaceted person, Chauliac wrote also several other treatises on physiognomy, astronomy and astrology, as well as "De subtilitanti dieta" (On plain diet), about the regime to follow in the case of cataract, written to alleviate the cataract of King John of Bohemia (1296-1346) and "Chirurgia Parva" (Small Surgery) which is a poor compendium of some parts of the "Chirurgia Magna" [19].

Chauliac died near Lyon in 1368 and his book on surgery "Chirurgia Magna" remained as the principal book of surgery for almost two centuries [19] (Figure 3).

Guy de Chauliac's contribution in surgical oncology

Chauliac's authoritative surgical text "Chirurgia Magna" revealed a series of references concerning cancer. He defined cancer as "a hard, round, veined, darkish, fast-growing, restless, warm and painful tumour" [17]. In his work, cancer's pathophysiology is based on humoural theory but he introduced a novel idea by differentiating black bile produced in the liver, which according to his opinion contributed to the formation of hard tumours in the breast, and black bile produced as the breakdown result of the three other humours (blood, phlegm, yellow bile), which resulted in what he considered to be the true cancer. Furthermore, he stated that in cases of an imbalance, every humour could become thick, stagnant and could not be dis-

Figure 2. Guy de Chauliac and his interns at Saint Just Hospital, in Lyon. [Source: BIUM, Paris].

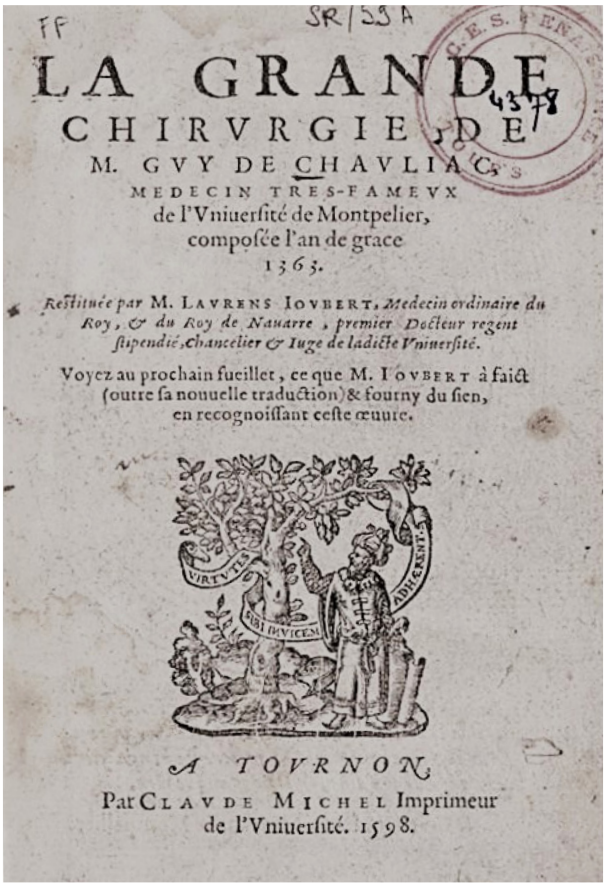

Figure 3. Frontispiece of the book of Guy de Chauliac, La Grande Chirurgie, 1598.

charged from the blood or the pores. Concerning breast cancer, Chauliac pointed out that menstruation is the causative factor as it was blocking the evacuation of black bile [17,22].

Therapeutically, in 14th century, a peculiar cure for cancer, the "fresh meat cure", was proposed by several medical authors, among which Guy de Chauliac [17]. In his work he mentioned: "some people appease cancer's treachery and wolfish fury with a piece of scarlet cloth or with hen's flesh. And for that reason the people say that it is called wolf because it eats a chicken every day and if it did not get it, it would eat the person". So he was proposing to apply in the cancerous ulcer, every day, fresh killed poultry or veal to control the disease [17,23]. On the other hand, Chauliac was probably the first physician to suggest the excision of superficial tumours at early stage as well as the cauterization to prevent the reoccurrence [17]. Noticing the possible spreading of cancer, he supported the wide surgical excision and the application of caustic pastes to clean the wound after the surgical removal of the tumour [17]. In breast cancer cases, he embraced Galen's approach, proposing the removal of the tumours which should be completely removed, saving the patient's life. In his work he described an infiltrating carcinoma of the breast with extension beyond the breast tissue and he recognized local, regional, and generalized adenopathies, what we call today metastatic lymph nodes [17]. In cases of cancer located in extremities, he suggested the amputation at the earliest possible stage. Moreover, Chauliac introduced general anaesthesia by inhalation of narcotics and used the oil of poppy seeds for local anaesthesia, allowing him to perform such operations [17]. As a supplementary treatment, he advised the application of caustic substances such as arsenic in small doses [17].

Conclusion

At the late medieval period, medicine was still dominated on one hand by superstitions and on the other hand by the teachings of ancient Greek physicians, mainly Galen. However, it was a transition period where human dissections begun to practise but anatomical teaching was still relied on Galen. In that era, Guy de Chauliac made noteworthy contributions to surgery and oncology. In his work, the period that he lived is reflected: Galenic theories on cancer's pathogenesis and fresh meat cure for cancer treatment; but also it seems that he realized that the early excision of cancer could be lifesaving. Currently, Guy de Chauliac is considered the father of medieval surgery who systematized medical knowledge and laid the foundation for renaissance surgery and its promoter, Ambroise Paré [24].

References

1. Hippocrates. De morbis popularibus (=Epidemiae), ed. É. Littré, Œuvres complètes d'Hippocrate, vols. 2-3,5. Paris, Baillière, 1840-1846.
2. Karamanou M, Diamadis A, Androutsos G. The first cases of cancer in antiquity. JBUON 2008;:601-8.
3. Retief FP, Cilliers L. Tumours and cancers in Graeco-Roman times. S Afr Med J 2001;91:344-8.
4. Hippocrates. De locis in homine, ed. É. Littré, Oeuvres complètes d'Hippocrate, vol. 6. Paris, Baillière, 1849 (repr. Amsterdam: Hakkert, 1962), p 320. (Cod: 8,723: Med.).
5. Reiser SJ. What modern physicians can learn from Hippocrates. Cancer 2003;98: 1555-8.
6. Antyllus. On Surgery In: Oribasius Collectiones medi-

cae, XLV, In: Bussemaker UC, Daremberg C (eds and transl). Oeuvres d'Oribase . Paris, Imprimerie Nationale, 1851-1876.

7. Malloch A. Galen. Ann Med Hist 1926;8:61-8.
8. Aretaeus, Adams F (trans): The extant works of Aretaeus, the Cappadocian. London, Sydenham Society, 1856.
9. Tsoucalas G, Karamanou M, Laios K, Androutsos G. Aretaeus of Cappadocia and the first accurate description of uterine carcinoma. J BUON 2013;18:805-7.
10. Tekiner H. Aretaeus of Cappadocia and his treatises on diseases. Turk Neurosurg 2015;25:508-12.
11. Tsoucalas G, Sgantzos M. Aretaeus of Cappadocia (ca 1st-3rd century AD): views on hepatic cancer. JBUON 2016;21:1326-31.
12. Aeginus P. The seven books. Book VI, vol II, Adams F (Translator). London, The Sydenham Society, 1847.
13. Hajdu SI. Pathfinders in oncology from ancient times to the end of the middle Ages. Cancer 2016;122:1638-46.
14. Prioreschi P. Byzantine and Islamic Medicine. Horatius Press, Omaha, 2001.
15. Feingold M, Navarro-Brotóns V (Eds.). Universities and Science in the Early Modern Period. Dordrecht, Kluwer, 2006, pp 37-40.
16. Dupont M. Dictionnaire historique des médecins dans et hors de la médecine. Larousse/Bordas, Paris, 1999.
17. Nicaise E. La Grande Chirurgie de Guy de Chauliac. Paris, Alcan, 1890.
18. Tabanelli M. Un secolo d'oro della chirurgia Francese. Forli, Valbonesi, 1969.
19. Prioreschi P. A History of Medicine: Medieval medicine. Horatius Press, Omaha, 2003.
20. Shklar G. The dental medicine and surgery of Guy de Chauliac with extended excerpts from the Cyrurgia Magna. J Hist Dent 1997;45:113-19.
21. Feldmann H. History of the ear speculum. Images from the history of otorhinolaryngology, highlighted by instruments from the collection of the German Medical History Museum in Ingolstadt. Laryngorhinootologie 1996;75:311-8.
22. Demaitre L. Medieval notions of cancer: malignancy and metaphor. B Hist Med 1998;72:609-37.
23. Skuse A. Constructions of Cancer in Early Modern England: Ravenous Natures. Berlin, Springer, 2015.
24. Karamanou M, Diamantis A, Androutsos G. Oncologic conceptions of Ambroise Paré (1509-1590), father of surgery. JBUON. 2009;14:149-55.