

## HISTORY OF ONCOLOGY

### Cancer and Roman medicine

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#### Summary

In this article we present the opinions of some eminent Roman physicians about cancer. We emphasize the points of view of Galen, famous Roman physician of Greek origin whose doctrines dominated medicine for more than 15 centuries. We then cite the opinions about cancer of some other

outstanding physicians of that period like Celsus, Pliny, Leonidis of Alexandria, Aretaeus of Cappadocia, Soranus of Ephesus etc. We also quote some examples of cancer and we describe what those physicians thought of its pathogenesis, diagnosis and treatment.

**Key words:** cancer, Celsus, Galen, Pliny, Roman medicine

#### Introduction

The Roman physicians knew the cancer very well and they described it accurately in several cases.

It is necessary to pay attention while reading the Latin medical literature; in fact the word *crab* was equally used to indicate the cancer and the ulcer.

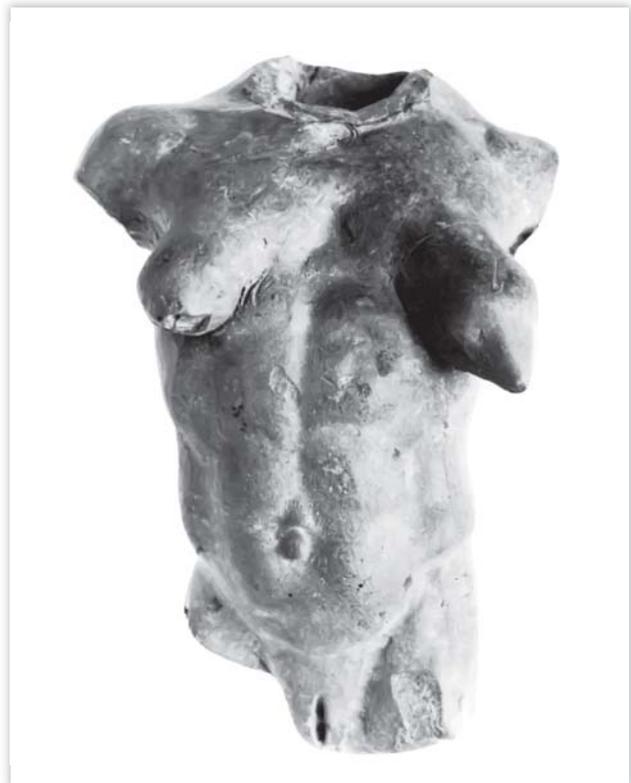
Interpretation is clearer when they use the word *carcinoma* as well as the words *scirrhus* (*scirrhus*) [1,2], *scirrhosis* [3] and *scirrhoma* [Pliny, op. cit., XXV, 40]. Pliny the Elder (23-79 A.D.) also uses the word *cacoethes* to describe a malignant tumor [Pliny op. cit., XXVII, 105]. Celsus [4] and Cassius Felix also call an incurable cancer as *thymium* [Celsus, op. cit., L.c] and Pliny calls *steatoma* a non well defined tumor [Pliny, op. cit., XXVI, 87].

Naturally the Romans used the generic term *tumor* to point out any kind of swelling, puffiness, bump, tumor, even the malignancies.

#### Celsus on cancer

In the first years of the Christian era, Aulus Cornelius Celsus (42 BC - 38 AD) gives the following definition of real cancer: "The carcinoma manifests mainly on the superior parts, in the regions of the face, the nose, the ear, the lips and women's breasts, *mammae feminarum* (Photo 1). A kind of sharp pain is felt around the affected place, which stays motionless, unequally swollen, sometimes even congested. The proximal veins are distended.

During the examination, the affected place is painful in ones, insensible to others, and sometimes, although not ulcerated, it is harder or softer from the normal. Elsewhere, we find a smooth ulcer; its red color is similar to that of the lentils.



**Photo 1.** Breast cancer during antiquity. Louvre Museum.

This disease is of the most serious ones. Firstly, a malignant tumefaction is being formed, then a carcinoma without ulcer, then an ulcer and finally a *thymium*. None of these diseases, except the *cacoethes*, can be suppressed.

Certain doctors use caustics, others the cauterization by branding iron, others use the excision by the knife, but no treatment has ever succeeded. Excision can't prevent the recurrence, which is always more serious and it ends by taking away the patient".

He stayed up later on the carcinoma and its deformed aspect. He proposes the removal (extirpation) before the tumor becomes very malignant; he also recommends the early excision of breast cancer and the ligation of blood vessels during intervention [5].

Celsus was the first to observe the painless character of certain non ulcerated cancers; he notes that cancer becomes painful when it approaches the ulceration stage. He notices the satellite ganglionic lymphatic reaction. He observes the production of edema on the venous system due to the tumoral compression. He admits the distant expansion by the bloodstream and he notes the relapses after the excision of the primary tumor [6].

Celsus allows us to appreciate the evolution of surgery between the Hippocratic period and the Christian era. Celsus was the author of a kind of popular encyclopedia of which the *De re medica* is the unique fragment that reached us. Celsus, surnamed Cicero of medicine, the most educated among the doctors, studied medicine more in the books than after the patients. If we are referring to him it is because his work brings us an exact idea of the doctors' knowledge about cancer at the beginning of the Christian era. Celsus adopted the Greek Schools' classification. His description of the deforming aspect of carcinoma, the clear distinction that he does between a true tumor and a ganglionic edema, show that the Cnidians and the School of Alexandria had added clinical precisions to the Hippocratic observations. When the diagnosis is uncertain, Celsus does not hesitate to give a therapeutic option that will resolve the question. He proposes the removal (extirpation) of the carcinomas that are not malignant, as he believes that they are filled with air [7].

At the end of the 1st century A.D, Leonidis of Alexandria, famous surgeon, merits a place in history of medicine by introducing the rectoscopy in the study of proctology [8].

## Galen on cancer

In the 2nd century, Galen (131-201 AD), in his famous *Treatise of tumors*, calls the cancers "*tumors against nature*". "They are born in all parts of the body

and especially in menopausal women's breast". He also calls them *scirrhus* [9].

Galen recognizes 3 forms of tumors: a) tumors following the nature (pregnant uterus, breasts during puberty); b) tumors surpassing the nature (the hypertrophic callus of the fractures); and c) tumors against nature (humoral tumors). Galen describes the *scirrhus* as a firm, fixed and painful tumor and the carcinoma as a very hard tumor that evolves into ulceration. Scirrhus is an against nature tumor, insensible and hard. The scirrhus that is not hard is not completely numbed; however the feeling is very weak: "The numbed scirrhus is incurable. The less sensitive scirrhus is not incurable, although it does not recover easily. It originates from a viscous and thick humor which is attached on scirrhus parts so it cannot be easily dissolved. Sometimes, even at the beginning, it fixes little by little and increases" [Galen, op. cit., *De la méthode thérapeutique*, II, 6]. Elsewhere, Galen writes that against nature tumors are caused by the melancholic humor [Galen, op. cit., *De la méthode thérapeutique*, II, 12]. He knows the scirrhuses and the cancers of the internal organs and he affirms the incurability of the uterine cancer. He clarifies the pathogenesis of cancers: "They originate, he says, from the black bile, but of a kind that does not boil. If this humor presents an excess of acidity it forms ulcerated carcinomas. For this reason, the carcinomas have a more black color than the inflammations and they don't have heat. At these tumors, the veins are more abundant and more prominent. Because of the humoral thickness, the carcinoma is incurable, knowing that it is not passed on or dispersed, it does not respond to the purgation and to the more or less mild drugs while it exacerbates under the influence of potent drugs. However, it is possible to prevent the carcinomas that begin to evolve, by purging the black bile before it fixes on the affected parties; and we evacuate this humor by using some simple drugs like fish or the sacred purgative that in this case must contain black hellebore. Locally on the ulcerated carcinomas we apply golanum juice, as well as zinc flowers. "When the black bile will attack the flesh, if it is biting, it erodes the skin, all the surroundings and it ulcerates; but if it is less sharp, it produces canker without ulceration". This is the doctrine of bilious pathogenesis imagined by Hippocrates at the 5th century before our era and formulated 7 centuries later by Galen. It will continue to be considered as a dogma till the 17th century [10].

The tumoral proliferation is done by the veins which are loaded with the bile and they spread it. A diet, especially of abstinence, can be used for the neglected cancer; against the pains provoked by the cancer it is necessary to use the infusion of poppy's root. If we can remove the tumor surgically, we have also to clean the wound from the blood and to cauterize it by branding iron [11].

The Latin authors never speak about the cancer of internal organs, except the uterine cancer.

### Cancer and non medical Latin literature

The non medical Latin literature deals with several cases of cancer of more or less famous persons. Pliny the Younger, for instance, talks about Silius Italicus who suffered from an incurable tumoral disease which provoked, irrevocably, his death [Pliny J. Epistulae. III, 7]. In the same manner, Pliny the Younger, in a letter in Gallus, talks about a patient who suffered from *indignissima tormenta* that he did not eat any more and died. Martial talks about Festius who had a cancer of the throat and committed suicide: “A devouring evil gnawed at its innocent throat and a dreadful illness devastated his face”.

### The teratomas

Pliny the Elder, under the name *apostema*, describes a tumor which contains concretions, sand, shells, grime and many other things. He says that these tumors are caused by the superfluous of certain humors [Pliny, op. cit., XX, 16].

Celsus says that between the skin and the trachea he noticed tumors containing a humor resembling honey and sometimes even hair blended with bony fragments [Celsus, op. cit., VII, 13].

### The esophageal diseases

“In the esophagus there are tumors formed of the muscles encircling the channel, producing stricture and difficulty in swallowing or producing regurgitation of drinks up to the nose. When the stricture is due to an inflammation and it is not produced in the proximal parts, a pain is felt during swallowing, at the same time as food has difficulty in passing. All persons that suffer from an esophageal affection feel a pain in the back. The illness is often mortal» [Galen, op. cit., Des lieux affectés, 46]. Of course this esophageal illness had to be, in most cases, cancer.

### The gastric cancer (heart disease)

The heart disease, *morbus cardiacus* of Latin authors, presents a great importance. We have to clarify that *cardiacus* has nothing common with heart, but its

name derives from the Greek word *καρδία* (*kardia*), which means the upper end of the stomach, so called because it was very close to the heart [12].

So, the *morbus cardiacus* was a disease of the stomach and not of the heart and only later it took this signification. The *morbus cardiacus* was mentioned for the first time by Cicero which called the patients *cardiaci* [13].

According to Celsus, this disease is manifested by localized pain in the cardiac region, or epigastric, diaphragmatic, *praecordia*, from gastric disturbances, fainting and syncope state [Celsus, op. cit., III, 18]. Pliny the Elder says that patients died from heart disease [Pliny, op. cit., XI, 75].

Areteaus of Cappadocia gives us a more complete description: he says that the patients feel hate and dislike for food, and nausea is accompanied by anxiety, heart pain, salivary reflux, sometimes vomiting. If they take food, the pain which results from it is stronger than that of hunger [14]. All that could be from a gastric ulcer, but, further on, he adds: “They feel a heavy, sometimes shooting pain in the stomach region; they become thin, cachectic, pale, without force, unable to attend their ordinary works. It is about an incurable illness” [Areteaus, op. cit., Chr. II, 8]. Celsus adds: “The illness is chronic, the abdomen is hard and painful; it returns no material and even no gases; the extremities are cold and the respiration becomes difficult” [Celsus op. cit., IV, 19]. Caelius Aurelianus says that sometimes there was *stercarum egestio* (emission of feces) which are *sanguinea* (*bloody*) [Caelius Aurelianus, op. cit., De morbis acutis et chronicis, IV, 3]. Celsus clarifies that feces are then black and the blood becomes dark [Celsus, op. cit., II, 8]. The *morbus cardiacus* therefore seems to correspond precisely to our gastric cancer.

### Cancer of the lips

Lips can be affected by cancer. In that case they should not be cauterized and excision is preferable [Celsus, op. cit., VI, 15].

### Uterine cancer

Celsus was the first to observe that “if the groin of a woman becomes swollen without any apparent cause, it is because of an ulcer in the uterus” [Celsus, op. cit., II, 7]. Of course the ulcer had to be a cancer and the *inguen* a nodal metastasis.

If the occlusion of the cervical orifice becomes hard - writes Galen - the uterus is affected. Certain

women feel a heavy pain which goes till their mouth and legs. When the absence of menses persists, a tumor which resembles an abscess sometimes is formed in the groin area.

Soranus of Ephesus (1st century AD) describes precisely the cancer of the uterus and he calls it exactly as cancer: “The uterus, he writes, presents sometimes without ulceration, sometimes with ulceration; in this case we may experience pains, sharp pains in the kidneys’ area, in the vertebrae, in the umbilicus; we can have sweats, cold, respiratory disturbances. The evolution of the disease is malignant; the women have terrible pains; there is no useful drug against this disease” [15].

Soranus of Ephesus refers often to the uterine tumors of benign origin and he calls them *inflatio*, *tumor*, *duritia* [Soranus, op. cit., II, 6, 7 et 8] or *clavus* [Soranus, op. cit., II, 27].

According to his descriptions we suppose that they are fibromas although sometimes they could be cancer. He refers also to the roughness that can be formed in the uterus after a delivery and that could be transformed in condyloma easily extricable by surgery [Soranus, op. cit., II, 29].

## Testicular cancers

Pliny the Elder calls them *testium vitia*, and he enumerates some of them: the inflammation, that he calls *inflammatio* or *ardores testium* [Pliny, op. cit., XXVI, 49 and Pliny, op. cit., (XXII, 75], the tumors, *tumors* [Pliny, op. cit., XXVI, 58], the swelling, *turgor* [Pliny, op. cit., XXI, 85], the discharge or obstruction, *testium epiphora* [Pliny, op. cit., XX, 51], and the pruritus, *pruritus testium* [Pliny, op. cit., XXII, 71].

Usually, Pliny does not give any description or information about the diseases that he enumerates; it adds on the possibility that the children can be born without testicles or these can be destroyed by an accident: “In the man, the testicles can be destroyed only by an accident or by a congenital malformation, constituting then the hermaphrodites and the eunuchs (*spadones*), a third kind of half men (*semiviri*)” [Pliny, op. cit., XI, 110].

From the passages of Pliny and Celsus we can deduce that Romans had seen simple testicular inflammations accompanied or not by swelling and fever; knowing about parotitis, these inflammations and swelling of the testis could have been a complication of the disease; those forming abscesses and tumors could be considered cancer of the testis. Pruritus could be of allergic origin or due to ageing [16].

## Conclusion

The study of tumors and especially of cancer with its serious complications was the centre of interest of the ancient civilizations. The Roman physicians of the first post-Christian era having as pioneer the Roman citizen of Greek origin Galen and others eminent physicians and natural philosophers played a leading role in the research and treatment of cancer and rightly are considered precursors of oncology.

## References

1. Cajus Plinius Secundus. *Naturalis historia*, The Natural History, John Bostock, H.T. Riley, Esq., B.A. London. Taylor and Francis, Red Lion Court, Fleet Street, 1855, L. VII, p 63.
2. Galen. *Œuvres médicales choisies*. Traduction de Ch. Darremberg. Choix, présentation et notes par André Pichot. Gallimard, Paris, 1994, 2 vols, t. II, pp 323-327.
3. Caelius Aurelianus. *Tardarum sive chronicarum passionum*. Amsterdam, B.R. Gräner, 1985, III, p 43.
4. Celse. *Traité de médecine en huit livres*. Traduction nouvelle par Fouquier et Ratier, Paris, 1824, pp 301-304.
5. Peeters EG. *Aperçu historique*. In: *Le cancer*. Collection Marabout Université, No 117, Verviers, Gérard et Cie, Paris, 1966.
6. Oberling Ch. *Le cancer*. Gallimard, Paris, 1954, p 275.
7. Cabanne F, Gérard Marchant R, Destaing F. *Histoire du cancer*. In: *Histoire de la Médecine, de la Pharmacie de l’Art Vétérinaire*. Collection dirigée par J. Poulet, JC Sournia et M. Martiny, 1938, 8 vols, t. VIII, pp 68-70.
8. Gernez L. *Histoire générale de la médecine, de la pharmacie, de l’art dentaire et de l’art vétérinaire*. Albin Michel, Paris, 1937, 3vols, t. III, pp 451-455.
9. Penso G. *La médecine romaine: De l’art d’Esculape dans la Rome antique*. R. Dacosta, Paris, 1984, p 604.
10. Darmon P. *Les cellules folles. L’homme face au cancer de l’Antiquité à nos jours*. Plon, Paris, 1993, pp 23-25.
11. Thorwald J. *Histoire de la médecine dans l’Antiquité*. Hachette, 1962, p 329.
12. Beau G. *Le Cancer*. Seuil, Rayon de la Science, Paris, 1961, p 192.
13. Wardle D. *Cicero Marcus Tullius, De Divinatione*. Oxford University Press, 2006, p 469.
14. Aretaeus of Cappadocia. *The Extent Works of Aretaeus the Cappadocian*. Translation F. Adams, Sydenham Society, London, 1860, Chr. II, p 6.
15. Temkin O. *Soranus’ Gynaecology*, Johns Hopkins Press, 1956, p 174.
16. Androutsos G. *L’urologie dans l’oeuvre De re medica d’Aulus-Cornelius Celsus (1er s. après J.C)*. *Progrès en Urologie* 2005; 15: 344-352.