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The oncologic conceptions of the great clinician, phtisiologist, pathologist and statistician Gaspard-Laurent Bayle (1774-1816)

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Summary

Gaspard-Laurent Bayle was a 19th century eminent clinician, pathologist, phthisiologist and statistician that deserves our attention. His very advanced oncologic conceptions rank him among the all-time great pioneers of oncology.

Key words: Bayle, clinician, oncologist, pathologist, phthisiologist, statistician

Introduction

Gaspard-Laurent Bayle concepts about cancer were formulated and published in 1812 in the article *Cancer* that he wrote for the *Dictionary of Medical Sciences* and in his posthumously encyclopedia *Treatise of cancerous tumors* that was published between 1833-1839 [1].

Life and career

Bayle was born at Vernet, Provence in 1774. On the eve of his ordination as a priest, he decided to embrace the profession of law at the time of the French revolution. However, he finally decided to study medicine and he pursued his medical studies in Montpellier (Photo 1).

He served as health officer in the Napoleonian army under the direction of the chief physician Nicolas-René Desgenettes (1762-1857) and accompanied Napoleon in his military expedition in Spain. In 1798 he returned to Paris and he passed successfully the internship exams. He became student of Jean-Nicolas Corvisart (1755-1821), demonstrator in anatomy under Guillaume Dupuytren (1777-1835) and he collaborated with René Laennec (1781-1826) and Xavier Bichat (1771-1802). Doctor in medicine in 1802, he was appointed head of department at Charité Hospital in 1807 and became one of Napoleon's physicians.

He was dedicated with passion to pathological anatomy. In 1810, he published his landmark work in pulmonary tuberculosis, in which he defined and classified the anatomical lesions of the disease [2]. In 1805 he described renal tuberculosis. He also described the swelling of glottis in 1808 and demonstrated the similarities between nasal polyps and those of the gastroin-

Photo 1. The eminent French physician Gaspard-Laurent Bayle (1774-1816).

testinal tract and vaginal mucosa. He defended the idea of cancer diathesis; in 1812 he observed a pancreatic cancer and for the first time he put forward the hypothesis of the primary liver carcinoma [3].

He participated in the scientific committee of the *Dictionary of Medical Sciences* published in 60 volumes. He died on May 11, 1816 at 42 years of pulmonary tuberculosis [4].

Bayle: a pioneer in oncology

Bayle dissected approximately 3,000 corpses and identified the majority of carcinomas known today, including liver carcinoma. Loyal to the school of Morbid Anatomy that Xavier Bichat founded, he sustained that the cancerous diseases are caused by an organic lesion. At the same time, he described with his friend Claude-Anthelme Recamier (1774-1852), the phenomenon of metastasis. The first issue that arose was that this phenomenon (metastasis) contradicted the principles of pathology teaching that cancer was a local disease. To reconcile the theory of cancerous tissue and the tumor dissemination in the body, Bayle emphasized the notion of "cancerous predisposition" or "cancerous diathesis". It is this predisposition, he writes, the true and only cause of cancer recurrence after tumoural excision [5]. Taking this reasoning further, Bayle announces the idea of carcinogenic background: "Hence comes a mild irritation, sometimes sufficient to cause the development of cancer, while in other cases, the disease needs several causes to develop" [5]. But this explanation could not solve the contradictions of the pathological anatomy. In the early 19th century, Bayle spoke of incurable cancer and he was skeptic about the effectiveness of treatments, except of the surgical excision [6].

Actually, surgical oncology emerged in the early 19th century with the rise of pathological anatomy. In the spirit of Bayle, that represented the new school, there was no question of acting out of desperation or at the urging of the patient. The surgeon must choose based on two imperatives: to act in doubt or to act to prevent.

Bayle, about suspicious tumors, writes: "It is better to remove a fibrous or fibro-cartilaginous tumor that could let a woman exposed to the terrible consequences of a cancerous tumor: these malignant tumors in predisposed persons may develop after a lengthy period of time and after repeated irritation" [7].

As for oral or topical anticancer treatment, Bayle noticed first that "mercurial preparations, which were considered to have anticancer properties, may cure only the degenerated venereal diseases that have a cancer-like appearance" [5]. Concerning the arsenic preparations, that had their supporters since antiquity, Bayle attaches some importance to the arsenate of soda, a less toxic substance than arsenic acid [6]. As for carrot, this had also its glorious time in cancer therapeutics. In 1811 Bayle sustained that the carrot was reducing the chronic inflammation that might lead to cancer [8]. Grey lizards (*Lacerta agilis*) had been prescribed first in 1781 for cancer by Flores, a Mexican physician. Bayle admits that he repeatedly prescribed them. Actually he administered orally to a man affected with a cancerous tumor of the face more than 400 of them in a period of 2 months" [5]. But none of his patients showed any therapeutic response and he concluded: "If this medicine has any efficacy, it is probably in some very hot countries" [5].

Bayle's statistics in oncology

In the history of cancer we don't have accurate cancer statistics prior to the late 19th century. In that field Bayle's contribution is monumental. In his statistical analysis he noted: "After tuberculosis, cancer is the most frequent organic lesion; in Paris, in 7 individuals dead after the age of 20, there's always one who succumbed after a cancerous disease" [5].

This analysis is of great importance for many reasons:

1) It is based on results obtained between 1807 and 1816 by Bayle, then chief of department at Charité Hospital, who, after 2559 dissected cadavers, found that cancer was the cause of death in 8-9% of the cases while in the same period, official French statistics showed a cancer mortality of 2-3% [6].

However, Bayle was an excellent clinician and one of the best pathologists of his time. His *Treatise on cancerous diseases* reviews with remarkable precision all cancers identified today, except leukemia [8].

2) It takes into account not only the cancer of breast, uterus or skin, but also the internal or visceral carcinomas identified only at autopsy.

3) It does not take into account the benign tumors, frequently confused with the malignant ones. In his statistics, Bayle studied cancer in the final stage of dissemination.

4) It gives a picture of cancer mortality in societies of his time.

Conclusions

At Bayle's era, statistics barely existed, and it is unclear whether the results are of mathematical precision, so we can only talk about an indication of trend.

Bayle refers to cancer hospital mortality. Patients suffering from cancer –like those suffering from tuberculosis– were rather dying in hospitals or asylums than in their homes because of the severity of cachexia. For three reasons we can roughly conclude that cancer mortality in the beginning of the 19th century could be around 7-8%.

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