



## Historical Note

### Aortic aneurysm. Who described it first? Brief analysis of Antoine Saporta's work

#### *Aneurisma de aorta. ¿Quién fue el primero en describirlo? Breve análisis de la obra de Antoine Saporta*

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## INTRODUCTION

In medical literature, the first description of an aortic aneurysm is attributed to 3 contemporaries: Antoine Saporta (1507–1573), Jean-François Fernel (1497–1558), and Andreas Vesalius (1514–1564).

Saporta wrote a manuscript (in Latin) in 1554 discussing different types of tumors in the body and their differential diagnoses. This manuscript was published in 1624, 50 years after his death, under the title *De tumoribus praeter naturam. Libri quinque* (1), which translates into *Five books on non-natural tumors*. The cover of the book says: "Extracted from the well-stocked Ranchiniana Library and made public; compiled thanks to the care and study of Henri Gras, philosopher, physician, and practitioner of Montpellier" (Fig. 1).

In this work, 4 chapters are dedicated to aneurysms, including those of the aorta: their definition, causes, symptoms, and treatment.

It is widely believed that this could be the first written reference on aortic aneurysms.

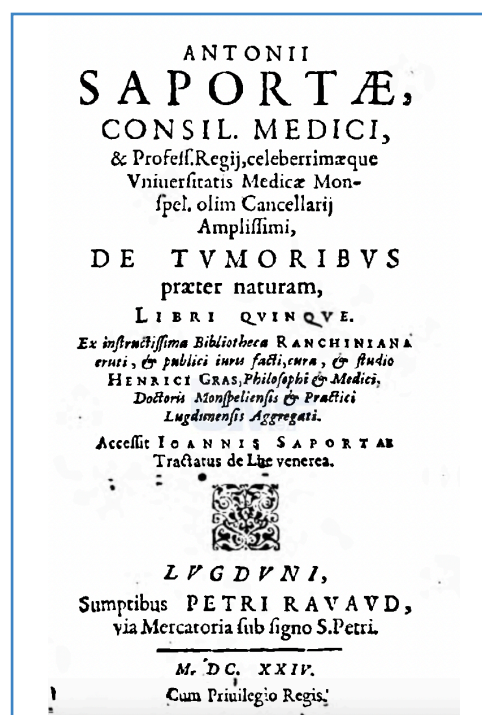


Figure 1.

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## OBJECTIVE

The objective of this article is to transcribe the most notable excerpts from the book and comment on the most relevant medical aspects. The translation has been conducted as literally as possible, aiming to preserve the 16<sup>th</sup>-century style in expressions and vocabulary.

## DE TUMORIBUS PRAETER NATURAM

In Chapter XLIII entitled "On the causes of aneurysms", a clear description of a case report of a thoracic aortic aneurysm and its subsequent autopsy following the patient's death is provided:

*"The aneurysm is caused by the negligence of the surgeon, who sometimes cuts the artery instead of the vein, especially if the wound slips on the skin or flesh and is bandaged, covering the scar. The artery is actually struck and remains open under the flesh and skin. Then, blood and spirit expelled gradually accumulate under the skin, causing swelling.*

*Sometimes it is caused by an increased volume of diluted blood, stretching and tearing the artery; sometimes by sharp, piercing blood that opens the artery, as if by a physical cause.*

*Aneurysms sometimes tear external parts, such as the hands, feet, and those found around the throat and chest. They often cut the arteries of internal parts, such as the chest and back."*

Although he does not explicitly differentiate between post-traumatic (or pseudoaneurysms) and true aneurysms, it seems implicit that he considers both types:

*"This was observed with great astonishment by me in the year of Christ's birth, the fifty-fourth over the thousandth (that is, the year 1054)."*

(Here we note an inconsistency, as the text references the year 1054. This is impossible since the author claims to have directly observed the patient, which cannot pre-date his birth by 500 years. Research and consultations with experts suggest this is a typographical or editorial error. Where it states: *anno à Christo nato quinquagesimo quarto supra millesimum*, it should likely read: *anno à Christo nato quingentesimo quinquagesimo quarto supra millesimum*. Thus, the year 1554 is consistent with the context and the information provided in the text. Such transcription errors were common in manuscripts of the time.)

*"When John Fabri, a keen and a scholar, was at the Monspelién Palace for engagements, frequently drinking rich wine out of season, he began, around the age of fifty, to experience difficulty breathing and bothersome heart palpitations.*

*Various remedies were provided to fight this illness, not only by us but also by the most eminent physicians of our Academy. However, as the disease remained stubborn and persistent due to poor dietary habits, it worsened. After several months of treatment without medication on the advice of physicians (who left that part of chronic treatment to nature), he started complaining about a part underneath his left shoulder blade.*

*Upon examining and closely observing the painful area, I noticed a remarkable swelling, soft to the touch and pulsating. When pressed with fingers, it disappeared entirely, only to return when released. I immediately suspected an aneurysm caused by prolonged heart palpitations and an abundance of bilious blood filling and distending the arteries.*

*The size of the tumor, initially unnoticed by others, grew daily. He summoned two eminent physicians and me for consultation, driven by his wife's pleas.*

*One physician steadfastly claimed the patient suffered from cancer, another from edema. I, however, believed he was affected by an aneurysm.*

*The signs indicating an aneurysm were so clear they could not deceive me. Touching the heart's region with one hand and the swelling with the other, the same diastole was detected."*

Without imaging technology, the differential diagnosis was precise and accurate, forming the focus of Saporata's entire work:

*"This opinion was confirmed by the sharp judgment of Michael Heroardus, the most eminent surgeon skilled in dissections. After carefully examining the tumor with his keen eyes, he fully agreed with my opinion.*

*Furthermore, when this deeply rooted and truly lamentable disease progressed, the patient exchanged life for death."*

Almost certainly, this was a case of a mycotic thoracic aortic aneurysm, likely of syphilitic origin, in its terminal phase of growth before rupture:

*"To understand the disease's nature and cause, we incised the swollen area, revealing profuse, foul-smelling blood. Once entirely drained and cleaned, the first artery underneath the heart, extending from the large artery to the head, was found to be greatly dilated and torn. This descends to the intercostal muscles. Blood accumulated in the muscle spaces, decomposing over time, had so weakened the vertebra and rib in that area that they appeared carious."*

It seems like the aneurysm had eroded the vertebral bodies and rib arches, which would explain the patient's intense pain. Likely, its rapid growth in the final phase also contributed to the pain:

*"A great and continuous heart palpitation, with an increasing arterial blood supply, tore the aforementioned artery causing an aneurysm."*

Here, the author tries to explain the pathophysiology of the aneurysm attributing it to the heart's persistent and forceful pulsation, distinguishing it from those caused by "the surgeon's negligence."

## DISCUSSION

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Although some authors cite Saporta as the first to describe an abdominal aortic aneurysm, an examination of his manuscript clearly shows this is not the case; it, however, refers to a thoracic aortic aneurysm.

The author describes the case report of a symptomatic thoracic aortic aneurysm. In the patient's physical examination, a pulsatile tumor is observed underneath the left scapula. This description is of a symptomatic aneurysm causing pain and growing rapidly.

It is almost certainly a syphilitic aneurysm, given the historical period. The text states the patient was around 50 years old. In the mid-16<sup>th</sup> century, atherosclerotic aneurysms were virtually nonexistent, and most aneurysms would have been signs of tertiary syphilis.

The manuscript offers a differential diagnosis that includes a tumor of cancerous etiology and edema.

The author's impression is later corroborated by a colleague who performs an autopsy. They find a thoracic aortic aneurysm extending to the ribs and vertebrae, causing erosion. These are all classic symptoms of an inflammatory or infectious aortic aneurysm.

The author also tries to differentiate between aneurysms caused by "the carelessness of the surgeon, who cuts the artery instead of the vein," and true aneurysms, caused by "a greater amount of blood..." or "as if from a bodily cause." However, this explanation is somewhat incomplete. It was a contemporary of Saporta, Jean François Fernel in Paris (France) who provided a definitive differentiation between post-traumatic aneurysms or pseudoaneurysms and true aneurysms.

Saporta clarifies that aneurysms occur in arteries, not veins, and are typically palpable underneath the skin. At that time, William Harvey had not yet published his work demonstrating systemic circulation.

Jean Fernel, in his 1554 work *Universa Medicina*, merely notes that "aneurysms are dilatations of the arteries filled with blood, and they sometimes occur in external parts, such as the hands, feet, around the throat, and chest" (2).

Andreas Vesalius provides a clinical description of an aneurysm similar to that of Saporta (1557) (3).

## CONCLUSIONS

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Based on the analyzed works, we can conclude that Antoine Saporta was the first to document the earliest complete description—both clinical and anatomical—of an aortic aneurysm, specifically a likely syphilitic thoracic aortic aneurysm.

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