

# Marcus Gerbezius (1658–1718) and his first description of a complete atrioventricular block

Marcus Gerbezius (1658–1718) in njegov prvi opis simptomatike kompletnega preddvorno-prekatnega srčnega bloka

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## Izveček

**Ozadje:** Marcus Gerbezius, ugleden slovenski zdravnik in znanstvenik s preloma 17. v 18. stoletje, je leta 1717 objavil članek v letnem glasilu nemške akademije naravoslovcev v Halleju, v katerem je opisal bolnika s klinično sliko ekstremne bradikardije zaradi popolnega preddvorno-prekatnega srčnega bloka.

**Metode:** Metodologija zgodovine medicine, analiza arhivskega gradiva, dokumentov in različnih objav.

**Rezultati:** Predstavitev življenja in dela Marcusa Gerbeziusa, pomen njegovega pionirskega odkritja, kar je danes v svetu bolj znano kot Adams-Stokesov sindrom.

**Zaključek:** Gerbčevo spoznanje je bilo objavljeno skoraj 50 let pred Morgagnijevim in okoli 150 let pred Adamsovo oziroma Stokesovo objavo istega sindroma, zato bi bilo potrebno Gerbeziusa vključiti v eponim bolezenske motnje kot »sindrom Gerbezius-Morgagni-Adams-Stokes« ali sindrom GMAS.

## Abstract

**Background:** In the year 1717, Marcus Gerbezius, a distinguished Slovenian physician and scientist from the turn of the 17th to the 18th century, published an article in the annual journal of the German Academy of Natural Scientists in Halle, in which he described a patient with a clinical presentation of extreme bradycardia due to a complete atrioventricular block.

**Methods:** Methodology of history of medicine, analysis of archival materials, documents, and various publications.

**Results:** Presentation of the life and work of Marcus Gerbezius, emphasizing the significance of his pioneering discovery of what is known today as Adams-Stokes syndrome.

**Conclusion:** The article by Gerbezius was published almost 50 years before Morgagni's, and about 150 years before Adams' or Stokes' articles on the same subject; therefore, the name of Gerbezius should be included in the eponym name of the disorder "Gerbezius-Morgagni-Adams-Stokes syndrome" – GMAS syndrome.

## Introduction

Marko Gerbec (1658–1718), also known as Marcus Gerbezius in Latin, was a Slovenian physician and a pioneer of Slovenian scientific medicine. He completed his philosophical studies in Ljubljana (called Laibach at the time, a part of the former Austrian Empire) and studied medicine in Vienna, Padua and Bologna. In his paper, published in the annual journal of the German Academy of Natural Scientists (*Academia Caesarea Leopoldino – Carolina Naturae Curiosorum*) *Constitutio anni 1717*, he describes the histo-

ry and symptomatology of a patient with a slow steady pulse and seizures. Published 44 years before Morgagni and a century and a half earlier than Adams and Stokes, Gerbezius provided the world's first description of a complete atrioventricular block. We carefully studied and analysed his work and documents, different publications citing him, and other corresponding materials. We also followed other authors who published the same topic in world literature.

## Results

Marcus Gerbezius was born on 24 October 1658 in Šentvid, a village in Carniola near Stična and not far away from Ljubljana, which at that time was a part of the Austrian Empire, and now Slovenia. He died in Ljubljana on 9 March 1718. Not much is known about his early life. For his studies abroad, he was most likely granted a scholarship by the state due to a shortage of physicians – many of them were banished because of their Protestant faith at the time of the Counter-Reformation. Upon completing the study of philosophy in Ljubljana, he went to Vienna (Austria) to study medicine. Just before the arrival of the Turkish army in 1683, he left for Padua (Italy). Although he stayed there for only a short time, most likely one semester, he left a great impression, for his portrait is one of the 40 portraits of distinguished physicians, anatomists and pathologists of that era in the “*Sala dei Quaranta*” (Hall of the Forty) of Padua University. He then continued his studies at Bologna University (Italy), where the renowned anatomist Marcello Malpighi (1628–1694) was one of his professors. He also became a friend of Bernardino Ramazzini (1633–1714), the later pioneer of occupational medicine. Gerbezius graduated as Doctor of Medicine in 1684.<sup>1</sup> (Figure 1)

He returned to Ljubljana in his home country Carniola (at that time the Slovenian part of the Austrian Empire) soon after his graduation, began working as a provincial physician and remained working in Ljubljana until his death in 1718. Besides that, he was also working as a physician at two monasteries close to Ljubljana – the Cistercian abbey in Stična and the Carthusian abbey in Bistra. In 1688, only four years after graduation, he was admitted to the German Academy in Halle “*Academia Naturae Curiosorum*” with the academic name Agesilanus. He was a gifted observer and researcher, who published many of his observations in the Academy’s periodicals “*Miscellanea-Ephemerides*”. There are no fewer than 78 “*Observationes*” written by him in the periodicals of this Academy. He was often cited as the German Gerbezius. Giovanni Battista

Morgagni (1682–1771), a renowned Italian pathologist, makes 11 references to Gerbezius in his notable work “*De sedibus et causis morborum per anatomen indagatis*”, where he describes a patient with a complete atrioventricular block.<sup>2,3</sup>

While being an active member of the German Academy, Gerbezius played a very important role in the scientific and cultural life in Ljubljana as well. In 1693 he was the founding member of the *Academia Operosorum Labacensium* (Academy of the Industrious Residents of Ljubljana) and served as its president between 1712 and 1713. He was given the academic name *Intentus*. The *Academia Operosorum* is an early forerunner of the contemporary Slovenian Academy of Sciences and Arts. Gerbezius was also the founder of the first professional medical organization in Slovenian lands named after St. Cosmas and St. Damian. The members were physicians as well as surgeons. He maintained a good relationship with surgeons, even though they were widely regarded as of lesser rank, because they were not academically educated. He was also familiar with the works of an esteemed French surgeon Ambroise Paré (1510–1590).<sup>4</sup>

Marcus Gerbezius was an outstanding physician and a successful researcher. He had an extensive medical knowledge and, based on his library catalogue, we can assume he was seeking for more and more. He left his books to the Ljubljana Seminary Library.<sup>5</sup> Unfortunately, many of them were sold during the Napoleonic Wars in the early 19<sup>th</sup> Century, but his catalogue was preserved. It lists, among many others, works of renowned authors such as Ovid, Vergil, Baglivi, Caesalpinus, Helmont, Mattioli, Malpighi, Paré, Ramazzini, Sydenham, Sylvius Jacques, Vesalius etc. In his works, Gerbezius referenced well-known physicians Amatus Lusitanus, Sylvius François, Caesalpinus, Faber, Galen, van Helmont, Hippocrates, Sydenham, and others. Among surgeons he cited Paré and Barbette.

The greatest influence on him was the so-called “English Hippocrates”, Thomas Sydenham (1624–1689), who was also very meticulous in his writing. In Sydenham’s opinion, theoretical knowledge alone is

**Figure 1:** Marcus Gerbezius (1658–1718) painted by Rudi Španzel in 1997 (From the Medical Faculty of University of Ljubljana)



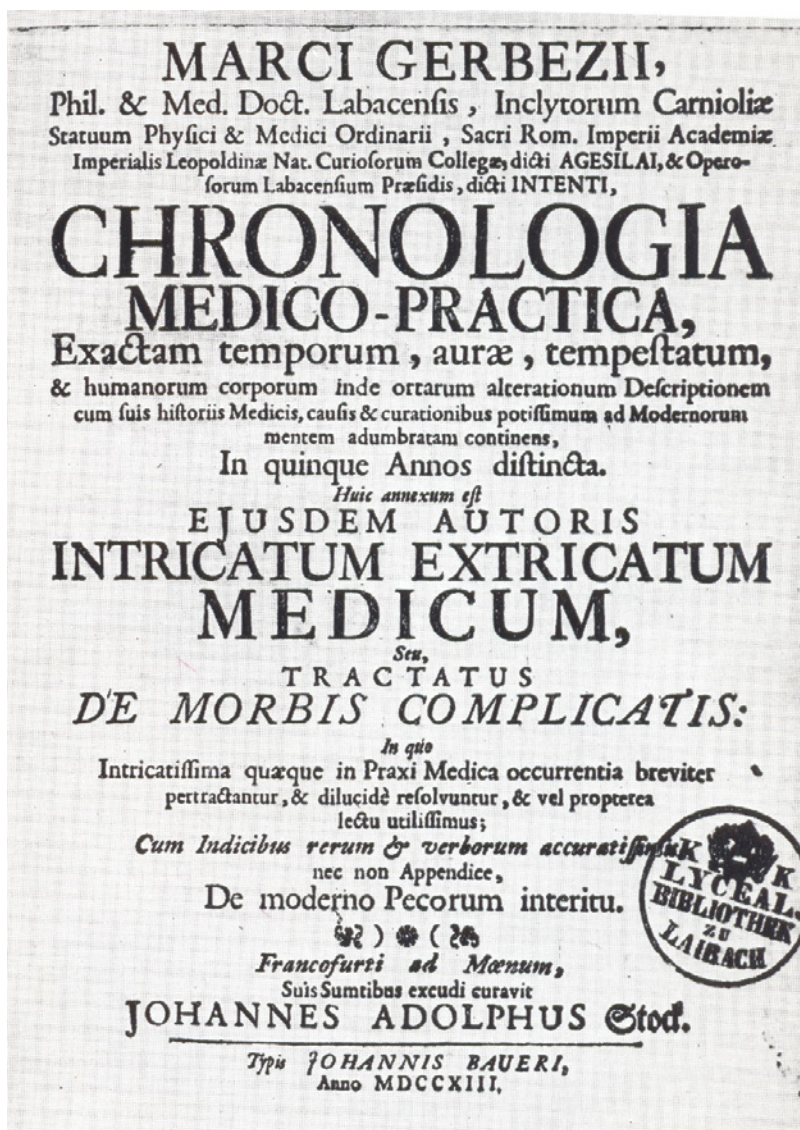
not enough. Only through extensive clinical experience can a physician react correctly, and effectively fight the disease. He states that every physician needs to know the symptoms, gain enough experience not to miss them, and to assess them properly. Every doctor should distinguish symptoms of the disease from accidental findings.<sup>6</sup>

Gerbezius was a true scientist. He did not trust other authors blindly. Instead, he paid attention to the details and drew conclusions from his own observations. One should bear in mind that in his lifetime little was known about pathology. Scientists explained all phenomena in terms of Hippocrates' four temperaments and bodily fluids. In 1761 Morgagni led the way to more accurate anatomy and pathology. Gerbezius tries to explain disease with rational causes and to complement the theory of temperaments with explanations. His role-model Sydenham proposes a theory of origin of the disease. He divides the causes in two groups. The first group contains all external influences that we can feel and prove in the atmosphere. They depend on the season, the climate, changing winds, etc. He calls these external conditions "*constitutio annua*". The other group of disease-causing influences was

unknown to Sydenham. He suspects they emanate from the earth, causing an "impure atmosphere", and names them "*constitutio epidemica*". Gerbezius agrees with Sydenham on this matter and considers his annual reports as *constitutio annua*. He describes very thoroughly the changing of winds over Ljubljana. However, Gerbezius goes further than that. He tries to explain what is behind these mysterious agents of *constitutio epidemica*. He speculates about volatile substances and warns about unhealthy air from underground. Moreover, he warns about dust and small invisible particles in the air (*corpuscula*) long before the microbiological era. In addition, Gerbezius believes that nutrition, physical activity and psychological factors, such as sleep hygiene and peace of mind, have a great influence on the course of the disease.<sup>7</sup>

In his works, Gerbezius advises caution in drinking alcohol and emphasizes its harmful effects. From his notes we may conclude that he knew the thermometer, constructed by Galileo Galilei (1564–1642) and introduced for individual use by Santorio Santorio (1561–1636) from Capodistria at the beginning of the 17<sup>th</sup> Century. Gerbezius was using it, even if it was only gradually gaining significance in medical practice. He did not believe in the power of astronomical occurrences, such as eclipses, to cause illness. Moreover, in his belief, a person can transmit disease to others; not through "spells" (*fascinatio*), but through exhaling impure air. He refers to "*volatile bodies*". He is, in a way, talking about aerosolized droplets. He provides us with a description of epidemic typhus (*typhus exanthematicus*). Often he performed autopsies on his deceased patients to make sure he knew the cause of their death.<sup>8</sup> Although a dedicated scientist, Gerbezius never neglected his humanist side. He treated the poor as earnestly as the wealthier patients.

He survived all of his children; the cause of their premature death is unknown. He left a substantial sum of money for humanitarian work in his hometown Ljubljana and some money was intended for scholarships.<sup>9</sup>



**Figure 2:** Title page of the Gerbezius' publication (in 1713) where five of his medical practical chronologies were published and also his works *Intricatum extricatum medicum* and *The moderno Pecorum interitu* (From the Institute of the History of Medicine University of Ljubljana Medical Faculty)

## Discussion

Marcus Gerbezius published 78 "*Observationes*" in the periodicals of German Academy of Natural Scientists "*Miscellanea-Ephemerides*", 9 books under the title of "*Chronologia medico-practica*" in the years 1697, 1698, 1699, 1700 and 1713 (Figure 2), and 8 annual reports "*Constitutiones Epidemica Labacensis*" from the year 1709 to 1717. The last one was issued in 1718, posthumously. His "*Constitutiones*" are actually annual medical reports, valuable because they contain information about infectious and other diseases in early 18<sup>th</sup> Century Ljubljana. He describes many cases, including a few from the field of cardiology. The first one was published in the year 1692 under the title *Pulsus mira inconstantia*. Gerbezi-

us reports a case of temporary cardiac arrest with syncopal attacks.<sup>10</sup> Another report is particularly important: in the *Constitution* for the year 1717 he provides a description of an extremely slow pulse rate of his patient, who besides that, suffered from seizures. He observes the patient carefully and writes down every detail.<sup>11</sup> The *Constitution* was published under the title of "*Constitutio anni 1717 a D. D. Marco Gerbezio Labaco 10 decem. Descripta*."<sup>12</sup> He reports that the patient has a slow but regular pulse, dizziness, syncope and occasional epileptic seizures, which are known to characterize a presentation of a complete atrioventricular block. He wrote: "*Rarius tamen quid observaveram in duobus subjectis circa pulsum: nimirum quod unus eorum melancholico-hypochondriacus qua sanus communiter habuerit pulsum adeo tardum, ut priusquam subsequens pulsus consequebatur antecedentem, facile apud alium sanum tres pulsationes praeterierint ... Vir alias erat robustus, et in actionibus accuratus; sed tardissimus, saepius vertiginosus, et subinde leviter insultibus epilepticis obnoxius ...*"

"... had such a slow pulse that the pulse of a healthy person would beat three times before his pulse would beat for a second time," and added "... very sluggish, frequently dizzy, and from time to time subject to mild epileptic attacks."<sup>13</sup>

Nowadays, Marcus Gerbezius is well known among Slovenian physicians and very well respected. In 1703 he also wrote a report on the first splenectomy done in Ljubljana, which was published in the scientific bulletin *Miscelanea Curiosa*.<sup>14</sup> The "Marko Gerbec Award" is the highest and most prestigious award, presented by the Slovenian Medical Society. A memorial plaque on the house where he was born was unveiled in his honour in 1971. In Ljubljana, on the house where he worked, a statue was unveiled in 1998. In addition to that, a facsimile of his graphic portrait is used as the background of diplomas, issued to honorary members of the Slovenian Society of Cardiology.<sup>15</sup>

Marcus Gerbezius was an enlightened physician, scientist and medical writer. He maintained an extensive library and was up to date with the knowledge of his era. Thro-

ugh careful and dedicated medical practice he was able to recognize unusual bradyarrhythmia with epileptic seizures and described it very precisely. His description was first published in 1717 and remains Gerbezius' professional credo. It is the first such description in medical literature and was first cited in 1731 by Swiss pathologist Jean Jacques Manget (1652–1742) in his work *Bibliotheca scriptorium medicorum veterum et recentiorum*.<sup>16</sup> In 1761 it was published in the work of well-known Italian pathologist Giovanni Battista Morgagni (1682–1771) *De sedibus, et causis morborum*<sup>17</sup> where Morgagni describes classical mitral stenosis and heart block and he makes 11 references to the Gerbezius description. Over a hundred years later, Irish physicians Robert Adams (1791–1875)<sup>18</sup> and William Stokes (1804–1878)<sup>19</sup> published their description of the complete atrioventricular block, Adams in 1827 and Stokes in 1846. The syndrome was named after them: Adams-Stokes Syndrome or Mogagni-Adams-Stokes Syndrome. To

restore the correct time sequence and give rightful credit to the discoverer Gerbezius, the condition should be hereafter known as “Gerbezius-Morgagni-Adams-Stokes Syndrome” or simply “Syndrome GMAS” as it has been used in Slovenia and also in former Yugoslavia since 1977.<sup>13,20,21</sup>

In the last decades, various internationally recognized cardiologists such as Acerno and Lüderitz have recognized Gerbezius' importance and added him to historical overviews of the development of cardiology in the world.<sup>16,22,23,24</sup> This recognition confirms the fact that Gerbezius is one of the first well-known arrhythmologists in the world, and the Slovenian Medical Society is proud of him and tries to widen awareness of his work in the world.

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