A historical lesson from Franciscus Sylvius and Jacobus Sylvius

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Abstract

Objectives: One of the most commonly used eponymous terms in neuroscience and gross anatomy is *Sylvius*. The 2 most recognized uses of this term today are the sylvian fissure for the lateral cerebral sulcus and the sylvian aqueduct for the cerebral aqueduct. There is some controversy surrounding these terms because there were 2 famous anatomists named *Sylvius* after whom these structures could easily have been named. The purpose of this article is to provide a brief historical review of these 2 scientists and offer an observation on the historical use of the name *Sylvius* as an anatomical term.

Discussion: Franciscus Sylvius was a popular teacher at the University of Leiden. One of his most famous students, Thomas Bartholinus, published F Sylvius' neuroanatomical work on the lateral cerebral sulcus. Although this structure had been known from antiquity, Bartholinus' description linked F Sylvius' name to the structure. As well, the description of the cerebral aqueduct was also published in other influential anatomy texts as an attempt by students to honor F Sylvius' name, despite the fact that this structure had been described more than a century before. Jacobus Sylvius was a successful but reportedly disliked anatomist at the University of Paris. Although he urged his students to learn from dissection rather than lectures or books, he had an unyielding devotion to Galen's teachings. His most famous student, Vesalius, went on to refute many of Galen's ideas as documented in his later publications. The rift between teacher (J Sylvius) and student (Vesalius) may have resulted in the marginalization of J Sylvius as a figure immortalized in anatomical texts. This may be the probable reason that J Sylvius' name is not associated with anatomical terms.

Conclusion: The lesson from this brief review of the 2 Dr Sylviuses may be that a teacher's historical legacy being preserved as an eponym may have more to do with his or her likability than productivity during his or her lifetime.

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Introduction

One of the most commonly used eponymous terms in neuroscience and gross anatomy is *Sylvius*. The 2 most recognized uses of this term today are the sylvian fissure for the lateral cerebral sulcus and the sylvian aqueduct for the cerebral aqueduct, although there are at least 10 other neurologic/anatomical terms that are less commonly used that also incorporate this name. Interestingly, although it is one of the most popular eponymous terms in use today, there is controversy surrounding it because there were 2 famous anatomists named *Sylvius* after whom these structures could easily have been named. The purpose of this article is to provide a brief historical review of these 2 anatomists and how they relate to the historical use of the name *Sylvius* as an anatomical term.

Discussion

At the time that these men lived, students would often attach their professor's name to structures to honor them, even if they were not the first to describe the structures. This appears to be the case for the 2 most common uses of this eponymous term. That the surface of the cerebrum is convoluted was well known by the time these men lived, being described more than a thousand years before by Erasistratus and also probably Herophilus.¹ The first specific depiction of the lateral cerebral fissure was by Fabrici d'Acquapendente (better known as *Hieronymous Fabricius*) in 1600.^{2,3} The cerebral aqueduct was first described in 1521 by Berengarius Carpensis, and the term *aqueduct* was first used in reference to this structure in 1587 by Arantius.⁴ Therefore, how did the name *Sylvius* get associated with these structures? History may hold an unusual lesson for us if the lives of these 2 famous anatomists are compared.

Franciscus Sylvius

The man to whom these terms are usually ascribed was François de le Bœ (1614-1672), who is usually known by his Latinized name, Franciscus Sylvius.^{5,6} (Fig 1) F Sylvius, although born in Germany, spent most of his life and professional career at the University of Leiden in the Netherlands. He was a very popular and respected teacher; and he was famous for his

Fig 1. Franciscus Sylvius (1614-1672).

descriptions of neuroanatomy, especially the dural venous sinuses. Not only did F Sylvius teach anatomy, he was also a practicing physician who fathered the theoretical framework called *iatrochemistry* that modernized the Galenic humoral theory by integrating it with chemical information being discovered at the time. F Sylvius attracted many students from all over Europe. Several of his more notable students include DeGraaf (of graafian follicle fame); Stensen (of Stensen's duct fame); Swammerdam, who discovered red blood cells; and Van Horne, who discovered the thoracic duct in man. His most famous student was Thomas Bartholinus, who, during the process of updating the medical text written by his father, Caspar, first published F Sylvius' neuroanatomical work and very accurate description of the lateral cerebral sulcus (translated from Latin⁷):

The windings of the brain (which I first learnt of Franciscus Sylvius, a great anatomist) if you diligently examine the matter you shall find to descend a good depth and that the brain doth gape on each side, over and above that same middle division made by the Sickle, with a winding clift, which begins in the forepart, about the roots of the Eyes, whence according to the bones of the temples, it goes back above the root of the spinal marrow, and divides the upper part of the brain from the lower part.

This is the source of F Sylvius' name being attached to this structure. The term *Sylvius* got associated with

the cerebral aqueduct from the works of several Danish anatomists, including Bartholinus, Stensen, and Winslow. These men used F Sylvius' excellent, although by no means the first, description of the cerebral aqueduct and associated his name with it in their very influential anatomical texts.⁸ F Sylvius was actually the first to describe the *cavum septum pellucidum* that is sometimes known as the *Sylvian ventricle* or the *fifth ventricle of the brain*.⁷

It is possible that Bartholinus was originally not aware of Fabricius' previous work on cerebral convolutions when associating F Sylvius' name with what would be called the *lateral cerebral fissure*. Fabricius has depicted this deep indentation in his color renderings but had not actually described the fissure using words.^{2,3} This point was never addressed in later versions of Bartholinus' work. In the case of the cerebral aqueduct, it appears that the Danish authors' use of F Sylvius' name was a deliberate decision to honor him because its existence was apparently well known by the mid-1600s. Not only had Carpensis first described this structure nearly a century before F Sylvius was born, it had also been described by others (eg, Nicolo Massa in 1536⁸); and Arantius had even coined the term *aqueduct* for this passage in 1587.⁴

Jacobus Sylvius

The other famous Dr Sylvius lived over a century before F Sylvius. Jacques Dubois (1478-1555), better known by his Latin name, Jacobus Sylvius, was a French physician and anatomist at the University of Paris⁹ (Fig. 2). J Sylvius was the first in France to demonstrate from human cadavers.¹⁰ Like his namesake a hundred years later, he was also a very successful teacher and was even considered by many during the early part of his career as the foremost anatomist of his time. He simplified and reduced to common understanding much of the obscure teachings of his favorite author, Galen.⁷ He gave separate names to many muscles, which Galen merely numbered, that are still used today including *brachialis*, *tibialis*, *peroneus*, *rhomboidei*, *serrati*, *lumbricoides*, *soleus*, *biceps*, and *triceps*. He also applied a similar naming scheme to blood vessels, coining many terms that are still used: *jugular*, *subclavian*, *phrenic*, *axillary*, *renal*, *spermatic*, *pudic*, *femoral*, *popliteal*, *gastro-epiploic*, and *superior* and *inferior mesenteric*. Almost strangely, he did not name the nerves, but referred to them by number, as Galen did, which

Fig 2. Jacobus Sylvius (1478-1555).

may, in part, explain why we still number the cranial and spinal nerves.

Nowhere is the lateral cerebral fissure mentioned in J Sylvius' writings. Furthermore, although he described what would later be called the *cerebral aqueduct*, this observation was published nearly 25 years after that of Berengarius.⁷

J Sylvius presents a bit of a paradox. On one hand, he urged his students to learn from dissection rather than just from lectures or books. In his textbook, *Manual of Anatomy* (1555), he wrote the following in the introduction (translated from Latin⁷):

I would have you look carefully and recognize by eye when you are attending dissections or when you see anyone else who may be better supplied with instruments than yourself. For my judgment is that it is much better that you should learn the manner of cutting by eye and touch than by reading and listening. For reading alone never taught anyone how to sail a ship, to lead an army, nor to compound a medicine, which is done rather by the use of one's own sight and the training of one's own hands.

On the other hand, although he modernized some of his terminology, J Sylvius had an unyielding devotion to Galen's teachings and disliked most criticism of Galen. This is strange because, in some circumstances, Galen's ideas directly opposed readily observable anatomical truth. When confronted with an observable fact that contradicted Galen, J Sylvius went so far as to claim that the human body had changed over the centuries, accounting for the dissimilarity.¹¹

J Sylvius had many famous students; but by far, his most famous student was Andreas Vesalius, who is considered by many as the founder of modern human anatomy and who went on to refute many of Galen's ideas. When Vesalius pointed out many of Galen's mistakes in his monumental 1543 text, the *De Humani Corporis Fabrica*, J Sylvius thought this attack impious. This caused a rift between teacher and student and prompted an extended and acerbic argument between the two of them. In 1551, J Sylvius even went so far as to try to undermine Vesalius' reputation in the court of the Holy Roman Emperor Charles V, where Vesalius was a royal physician (translated from Latin¹²):

I implore his imperial Majesty to punish severely, as he deserves, this monster born and bred in his own house, this worst example of ignorance, ingratitude, arrogance, and impiety, to suppress him so that he may not poison the rest of Europe with his pestilential breath.... If this hydra rears some new head, destroy it immediately; tear and tread on this Chimera of monstrous size, this crude and confused farrago of filth and sewage, this work wholly unworthy of your perusal, and consign it to Vulcan.

Because Vesalius had anatomical fact on his side, the fantastic claims that J Sylvius used to try to defend Galen led to his professional demise.

There was also a disagreeable side to J Sylvius' character.⁹ Having come from poverty, he was infamous for his frugality, intolerance, and vindictiveness. It was rumored that he fed his servants only bread and water and refused to keep a fire going during the cold Parisian winters. In his later years, his students often ridiculed him. Therefore, it appears that although J Sylvius was a brilliant man, he was not well liked by his students. This can be exemplified by the fact that one of them wrote a mock epitaph in charcoal on the wall of the church in which he was buried (translated from the Latin⁷):

In this grave lies old Sylvius, during his day
He never gave aught without getting full pay;
And though dead as a herring, so naught could be worse,
He is vexed he can't charge you for reading this verse.

Both his petulant demeanor and blind support of Galenic tenets, even when they were clearly wrong, played a large role in J Sylvius' marginalization in the anatomical community. This is a likely reason that his name is not associated with anatomical terms, although he did describe the cerebral aqueduct well more than a

hundred years before F Sylvius. This has led a few to claim that it is J Sylvius (and not F Sylvius) that should be ascribed to the eponymous term.¹³ In a strange twist of fate, the valve of the inferior vena cava, which actually was first described by J Sylvius, is almost universally associated with the eponymous term *Eustachian valve*. Bartholmeo Eustachius was Vesalius' contemporary and considered one of the other great founders of modern human anatomy. He, like Vesalius, was also an outspoken critic of Galen.

Conclusion

In many respects, the professional lives of the 2 Dr Sylviuses had many similarities. Both of these men made important contributions to anatomy and were practicing physicians. They were also considered successful teachers. So then, why is only one of them immortalized with eponymous terms? There does appear to be one major difference between these 2 men that may offer some explanation to this question. One was well liked by his students, who went on to publish works in honor of their teacher, whereas the other was unpopular and even went so far as to alienate his most famous student, Vesalius, who was a formidable author. The lesson from this brief historical glimpse at the 2 Drs Sylvius may be that a teacher's historical legacy being preserved as an anatomical eponym may have more to do with popularity and likability with his or her students than productivity during his or her lifetime.

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