A Case of Basilar Artery Aneurysm Rupture from 1836: Lessons in Clinical Observation and the Natural History of the Disease

Andreas K. Demetriades[1,2], Takashi Horiguchi[2], James T. Goodrich[3], Takeshi Kawase[2]

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- Basilar artery aneurysm
- Early 19th century cerebral localization
- Early 19th century neurosurgery
- History of neurosurgery
- Natural history of subarachnoid hemorrhage
- Subarachnoid hemorrhage

From the [1]Department of Neurosurgery, King's College Hospital, London, United Kingdom; [2]Department of Neurosurgery, Keio University, Tokyo, Japan; and [3]Division of Pediatric Neurosurgery, Children's Hospital at Montefiore, Albert Einstein College of Medicine, Bronx, New York, USA

To whom correspondence should be addressed: Andreas K. Demetriades, M.Phil. [E-mail: andreas.demetriades@gmail.com]

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Although credit is given to Sir William Gull for highlighting the clinical picture of subarachnoid hemorrhage in 1859, we discuss a case presented by Mr. Egerton A. Jennings, Fellow of the Linnaean Society, published 23 years earlier in the 1836 edition of the *Transactions of the Provincial Medical and Surgical Association*. This case, probably the first reported in the English language of a basilar aneurysm rupture, is of medico-historical interest. Jennings provided a remarkably accurate and detailed description of the patient, who experienced coma as a result of the severity of subarachnoid hemorrhage. The detailed clinical observations on initial assessment and the description of the patient's deterioration to the time of death are a succinct representation of the natural history of this disease. The author's discussion provides evidence of a philosophy committed to medical education and progress at the time based on principles of rational observation, meticulous clinical acumen, insight into experimental physiology, and the awareness of ethical boundaries. In provincial 1836 England, similar to most of Europe, cerebral localization was elementary. Nonetheless, this case report highlights the attempt at linking structure to function by means of observation on the effects of lesioning. It provides evidence of an established thought process already in progress in England in the 19th century. It is characteristic that this thought process came from a surgical practitioner. The cultivation of practical observation in British surgical culture would allow the late 19th century surgeon scientists to match the contributions of British neurologists with landmark steps in the development and establishment of neurosurgery.

INTRODUCTION

The Provincial Medical and Surgical Association was founded in July 1832 by Sir Charles Hastings in the Boardroom of the Worcester Infirmary. The aim was to create an association "both friendly and scientific for the sharing of knowledge between doctors." The weekly journal, *The Transactions of the Provincial Medical and Surgical Association*, dates to 1832 (Figure 1). The aim of the journal was to represent in an adequate manner medical science in the provinces and to serve as an organ of communication between the members of the different associations throughout the kingdom (Figure 2). The Provincial Medical and Surgical Association was renamed the British Medical Association in 1856 and is still active today, and the journal became the *British Medical Journal* in 1857.

One of the first reported cases in medical journals of the English language of a basilar aneurysm rupture appeared in the first volume of the second edition of *The Transactions of the Provincial Medical and Surgical Association* (4). The detailed clinical observation and description of the patient's progress make this case report a significant contribution to the knowledge of the natural history of this disease.

CASE REPORT

Mr. Egerton A. Jennings, Fellow of the Linnaean Society, was surgeon to the Leamington Charitable Bathing Institution, which was located in what is now called Royal Leamington Spa. This spa town in central Warwickshire experienced one of the most remarkable expansions of English towns in the 19th century, largely owing to the medicinal properties of its waters. Jennings reported on a 54-year-old man named John Beard, a former serviceman of strong constitution who had complained of headaches for a few months. These headaches were never severe enough to prevent him from working and were mainly noticeable on Sundays when he was not occupied with work. However, he "frequently experienced great weariness of the limbs, which, occasionally, *went to sleep*."

On December 15, 1831, while the patient was asleep, his wife was alarmed by his peculiar breathing noise. He suddenly awoke "supposing he had been violently struck at the back of the neck. He could scarcely breathe and he was confident he was going to die." At that point, he almost immediately became "insensible," and the doctor was called. Jennings' description of his initial observations is worth quoting verbatim:

"I saw him about twelve o'clock, and was forcibly struck with the peculiar character of the respiration. It consisted of alternate violent spasmodic inspirations and slight groans. There was no stertor. Inspiration had the character of a violent sob; expiration was attended with a long continuous groan."

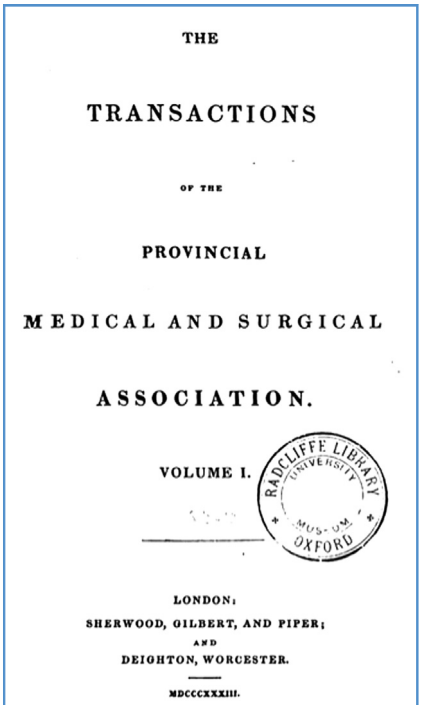
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Figure 1. The weekly journal, *The Transactions of the Provincial Medical and Surgical Association,* dates to 1832 and was renamed the *British Medical Journal* in 1857; it is still in circulation today.

After this initial inspection, Jennings proceeded with his examination: "There was complete resolution of all the limbs; when lifted from the bed, they fell as though dead, and appeared quite insensible when pinched or pricked. Common sensation and motion appeared, however, to exist in the face, for, on tickling the cheek with a feather, the muscles contracted, and on introducing fluids into the mouth, the lips and cheeks moved, but he could not swallow."

Jennings reported, in what may seem a precursor to today's Glasgow Coma Scale assessment, the following: "The pupils were not unnaturally dilated, and contracted on the application of light. When spoken to very loudly, and requested to put out his tongue, he made an effort to do so, but did not get it beyond his lips. He gave no other indication of consciousness."

Other important observations were as follows: "He was in a profuse perspiration. As he lay, the head was evidently drawn backwards, arching the neck considerably, and when the neck was straightened, it directly returned into the same position when left to itself. The pulse was 80, small and rather hard."

Jennings' next step was to take 50 oz of blood from the arm immediately. This bloodletting evidently relieved the patient, who, again according to a Glasgow Coma Scale–like assessment, "opened his eyes, spoke, said the back of his head and neck were in pain, breathed more calmly, put out his tongue, and moved his limbs." Jennings mentioned a gradual improvement over the first 30 minutes after bloodletting, but when at that time the patient tried to rise from his bed, he experienced severe nausea, which was immediately followed by a collapse into unconsciousness. His breathing, in particular, "returned to its previous state, becoming more difficult; occasionally, a considerable length of time elapsing between the respirations… respiration became slower and more labored, until about seven o'clock, when he died."

The author provided a postmortem description of the gross anatomic appearances of the brain and spinal cord, as observed 7 hours after death: "A large blood clot was found covering the medulla oblongata and just extending to the tuber annulare, but not at all covering it. On carefully opening this clot, a small aneurism of the basilar artery was discovered. This aneurism, which was about the size of a pea, had given way, and been the source from whence the haemorrhage had taken place. The clot involved, at their origins, the 6th, 7th, 8th and 9th pair of nerves, and, of course, must have produced great pressure upon them, and, also, upon the medulla oblongata."

Observation of the surrounding anatomic areas showed a relatively thin blood clot all along and around the spinal cord as well as some clots on the surface of the cerebellum. The brain parenchyma itself was found to be "remarkably injected": "In many places, the medullary matter presented exactly the appearance of a white surface sprinkled over with red sand; or, as M. Lallemand has characteristically named it, the '*injection sable.*'"

The author tried to correlate the autopsy findings to the clinical picture and made the following nine explanatory inferences:

1. The *sudden onset* of the headache corresponded to the moment the aneurysm gave way.
2. The *site* of sudden-onset headache, he believed, corresponded to the location "where the aneurism had suddenly given way."
3. The pressure of the clot on the *medulla oblongata* was responsible for the "resolution of the muscles of voluntary motion, supplied by the spinal nerves."
4. The "extraordinary character of the respiration" was due to the involvement of the *respiratory nerves* in the clot.
5. With the "fifth pair of nerves not being included in the mischief," motion and sensation were preserved in the *face.*

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At a late branch-meeting of the Provincial Medical and Surgical Association at Bridgewater, it was unanimously resolved. "That the meeting take this opportunity of strongly stating their satisfaction that the PROVINCIAL MEDICAL AND SURGICAL JOURNAL has been established, and pledge themselves to give their cordial support to the Editors in their laudable undertaking."

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Figure 2. Contemporary announcement regarding the establishment of the Provincial Medical and Surgical Association, renamed the British Medical Association in 1856. The British Medical Association remains active today.

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