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Is it possible to sneeze your way out of epilepsy?

IN BYGONE DAYS

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Christian Munch, Edvard Munch's father, was a military doctor in Christiania (old name for Oslo) in the 19th century and was interested in new treatment methods. In an 1866 article in *Norsk Magazin for Lægevidenskaben*, he wrote about the use of sneezing powder as a treatment for epilepsy and how sneezing could reduce seizure susceptibility.

Throughout history, countless remedies have been tried to prevent epileptic seizures. Substances believed to have antiepileptic properties included mistletoe from oak trees (gathered at full moon), ground human bone (preferably from the atlas, the first vertebra), goat liver, seal genitalia, blood products, peonies, wormwood, plantain, oxymel and porridge poultices with vinegar and honey (1).

In the first modern monograph on epilepsy, originally published in 1857, Edward Sieveking writes at the end of the treatment chapter: 'there is scarcely a substance in the world, capable of passing through the gullet of man, that has not at one time or another enjoyed a reputation of being an anti-epileptic'(2).

Who was Christian Munch?

Figure 1 Dr Christian Munch (1817–89), Edvard Munch's father. Photo: Mekonnen Wolday/Munch's house/CC BY-SA

Christian Munch (1817–89) (Figure 1) was the son of parish priest Edvard Storm Munch (1780–1847) and Johanne Sophie Hofgaard (1791–1861). In the first half of the 19th century, he was part of the intellectual circle surrounding Johan Sebastian Welhaven (1807–73). He completed his medical degree in 1841 and worked as a military doctor alongside running a private practice. In

1861, he married Laura Cathrine Bjølstad (1838–68), who was 20 years his junior. After she died of tuberculosis at just 31 years old, Laura's younger sister, Karen Bjølstad (1839–1931) helped him with his five children and the house.

Laura's death affected him deeply. He was grief-stricken and became consumed by religious contemplation. His melancholy and mood swings often impacted on his children, and his dogmatic Christianity came to form a barrier between him and Edvard (3). He died of pneumonia in 1889, at the age of 72.

Sneezing and trigeminal nerve stimulation to prevent seizures

In 1866, Munch wrote in *Norsk Magazin for Lægevidenskaben* about a treatment for epilepsy that was at the time being tested at the University of Edinburgh by Dr Laycock, a professor of mental pathology. The method involved inducing sneezing in patients.

Laycock had a theory that epileptic seizures were caused by a sudden interruption of blood circulation to the brain. He believed that circulation was regulated by the cerebellum, which in turn was under the regulatory influence of the cranial nerves, the brainstem and the cerebrum.

> ***«To provoke this reaction, experiments were conducted using various substances known to irritate the respiratory tract, including ammonia, snuff and sneezing powder»***

According to the professor, the *medulla oblongata* could serve as a substrate for epilepsy treatment, since this part of the brainstem is connected to the respiratory system. This could be achieved by irritating branches of the fifth cranial nerve (the trigeminal nerve), which branch out in the Schneiderian membrane (the mucous membrane of the maxillary sinus).

To provoke this reaction, experiments were conducted using various substances known to irritate the respiratory tract, including ammonia, snuff and sneezing powder (2).

Sneezing induced by cinchona bark and hellebore

Under the direction of Laycock, Dr Saidler conducted clinical trials on patients admitted to Millholme House asylum, including eight women and one man. They were given a powder mixture of cinchona bark and white hellebore, also known as white sneeze root, to be inhaled through the nose three times daily. This induced intense sneezing for ten minutes. If the sneezing did not stop after that, the patients were instructed to inhale cold water (2).

Seven of the eight women became entirely seizure-free within eight days of treatment, despite previously experiencing daily seizures. The man's seizures initially worsened, but they then stopped completely for five to six months and

his mental state improved. However, after one year, his condition had returned.

According to Laycock, the sneezing method could also be used for migraines, delirium and depression, but it had no effect on *paralysis generalis*.

Munch expressed scepticism about the long-term efficacy of the treatment, noting that short-term improvement following the introduction of a new remedy is not uncommon in this patient group (2).

Long history

We can smile indulgently at Laycock's theories about the cause of epileptic seizures and how sneezing was supposed to reduce seizure susceptibility. But the idea of sneezing as a treatment for epilepsy was actually far from new. As early as the 4th century, Diocles recommended provoking sneezing just before bedtime in people with epilepsy – in addition to ingesting vinegar and wormwood (4). In 1685, King Carlos II of Spain (1661–1700) received the following treatment for epilepsy (Box 1):

Box 1 Treatment for epilepsy given to King Carlos II of Spain (5)

– Drawing half a litre of blood from the arm
– An emetic and two laxatives
– Enemas of antimony, holy bitter, rock salt, mallow leaves, violets, beets, chamomile flowers, fennel seeds, flax seeds, cinnamon, cardamom seeds and aloe
– Shaving and anointing the head
– Sneezing powder made from hellebore root
– Flower powder of milk thistle
– White wine, absinthe and anise
– Extracts of thistle leaves, mint, rue and angelica
– Anointing the feet with Burgundy pitch and pigeon dung
– Frequent bloodletting and cleansing
– Extract of skull
– A mixture of Raleigh's antidote, pearl julep and ammonia

The idea that epileptic seizures are caused by reduced blood flow to the brain was also not new. For many years, well into the 20th century, masturbation was considered one of the main causes of epilepsy. This was based on the belief that during masturbation, the genitalia 'stole' blood from the brain, causing it to become hypoxic. In extreme cases, clitoridectomy was performed on women and castration on men (6).

«We have had patients with epilepsy who report that they can stop an impending seizure by pinching themselves hard on the arm or pressing a fingernail into the philtrum»

The theory that sneezing could prevent epileptic seizures is not as far-fetched as it might initially seem – provided that the sneezing actually irritates branches of the trigeminal nerve. Extensive clinical experience suggests that stimulation of peripheral nerves can help terminate seizures. We have had patients with epilepsy who report that they can stop an impending seizure by pinching themselves hard on the arm or pressing a fingernail into the philtrum. In doing so, they send afferent impulses centrally, which in some cases appears to 'distract' the epileptic process.

For patients with drug-resistant epilepsy who are not candidates for epilepsy surgery, we now offer a treatment based on precisely these principles – namely, intermittent electrical stimulation of the vagus nerve. How such stimulation of peripheral nerves prevents seizure activity is still not fully understood (7).

Inducing sneezing to reduce seizure susceptibility in people with epilepsy therefore has a long history. Although the method can be said to have some theoretical basis, it is today mainly of historical interest.

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