

MS as a vascular disease: Eureka moments throughout history

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We all know the Greek word “eureka”. Loosely translated, it means “I’ve found it.”

Eureka has become synonymous with “epiphany” (in the non-religious sense of the word), variously [defined](#) as an intuitive grasp of reality through something (as an event) usually simple and striking; an illuminating discovery, realization, or disclosure; or a revealing scene or moment.

The first “eureka moment” in science is ascribed to [Archimedes](#). In approximately 250 BC, the Greek mathematician noted that his bath water rose several inches and slopped over the edges as he stepped into the tub. While most other mortals would have simply picked up the bar of soap and got on with it, Archimedes had the sudden epiphany that the volume of bath water he displaced was equal to the volume of his body.

That simple observation, which changed the physics and mathematics of measurement forever, became known as “Archimedes’ Principle”. (Greek lore has it that, in his excitement, Archimedes ran through the streets naked, yelling, “Eureka!”)

Let us now fast-forward to November 21, 2009, when a eureka moment shook the world of Multiple Sclerosis.

Appearing on CTV’s W5, the network’s medical specialist, Avis Favaro, told the compelling story of a [discovery](#) so amazing, so seemingly out of the blue, that viewers, including me, were left speechless.

Read more on the W5 webpage: [The Liberation Treatment](#)

In a nutshell, Dr. Paolo Zamboni, an Italian vascular surgeon at the University of Ferrara, has accumulated convincing ultrasound evidence that every MS patient he has examined, some 120 in all, have blockages in one or more neck or chest veins that drain blood from the brain back to the heart. Healthy subjects, or patients with neurological diseases other than MS, do not show these anomalies.

Not only does the venous blood not drain properly in patients with MS, it often backs up in the diseased vessels (called retrograde flow), causing congestion of the veins deep in the brain.

Dr. Zamboni postulated that, as a result of this reversed blood flow, the thin-walled veins leak blood into the surrounding brain tissue, resulting in active MS lesions, called plaques. In suggesting this, he drew from his knowledge of previously published autopsies on the brains of MS patients showing that plaques always form along venous pathways, and that a vein is always in the centre of an MS plaque! Recent MRI studies have [reconfirmed these observations](#).

How does leaking blood cause MS plaques? Blood is rich in iron; when iron gets into the brain tissue it is very toxic, causing inflammation around the insulating cells (myelin sheaths) that coat delicate nerve bundles. The result is a “short-circuiting” of electrical activity in the nerves and, in the worst case scenario, cell death.

Could iron toxicity from leaked blood be at the root of MS? Dr. Zamboni thinks it is.

He well may be right, according to Dr. Mark Haacke, affiliated with Hamilton's McMaster University and Detroit's Wayne State University. Using a special technique called [susceptibility weighted imaging \(SWI\)](#), Haacke and his colleagues discovered that MS plaques contain significant amounts of iron.

But isn't MS primarily an autoimmune disease? Professor Zamboni believes that inflammation of the brain tissue, caused by the iron, is the primary event that secondarily turns on the immune system, adding to the damage. Opening the blocked veins to prevent further blood leakage and iron deposition, rather than giving immunosuppressive drugs, should be the best way to treat MS and prevent further attacks.

Now, in a "proof of concept" study, published in the Nov. 24th edition of the *Journal of Vascular Surgery*, Dr. Zamboni and his team report on the outcome of unblocking the veins in 65 patients. Thirty-five patients with the less severe, remitting-relapsing form of the disease, followed for at least 18 months, experienced a dramatic improvement in their symptoms and energy. Those whose veins remained open in the months after the procedure had no further MS attacks, and came off their steroids and other medications. At the same time, their MRI scans showed a dramatic drop in the number of MS plaques.

Perhaps with an eye on history, Dr. Zamboni's co-author, Dr. Fabrizio Salvi, has dubbed the unblocking operation the "liberation procedure": liberating the veins from blockage while (hopefully) liberating the patients from their disease. Yet, Dr. Zamboni is not claiming a cure. He is simply asking the medical world to put skepticism aside, reproduce his vein flow studies and assess his unblocking treatment as quickly as possible. The knowledge that hundreds of thousands of MS patients might benefit from his discovery weighs heavily on him.

Happily, researchers at the University of Buffalo have taken up the challenge, with Stanford University scientists about to do likewise. In Canada, McMaster's Dr. Haacke is inviting MS patients to send him their MRI scans for his review.

And what is the reaction of the National MS Societies in Canada and the United States? If their official [response](#) to Dr. Zamboni's research was any cooler, icicles would form on their spokespersons' lips. Why am I not surprised? These organizations are big money operations, run by risk-adverse professionals and fundraisers who are absolutely petrified of making a mistake and prematurely backing a losing horse. Their interests are also heavily intertwined with those of Big Pharma, which has invested billions of dollars in developing immunosuppressive treatments for MS, such as [Betaseron](#).

In a similar vein (excuse the pun), when Australian researchers Robin Warren and Barry Marshall published striking evidence in the 1980s that a previously unclassified bacterium, now called [Helicobacter pylori](#), was the main cause of stomach and duodenal ulcers, they were greeted by a wall of silence.

At the time, the scientific community universally believed that stress and hyperacidity were the culprits. Not surprisingly, the importance of this contrarian discovery was further minimized by drug companies with a vested interest in chronic antacid therapies, not in a curative course of antibiotics.

Happily, the two researchers persisted in their work and converted the scientific community into believers. As a reward for shifting the paradigm, they received the [2005 Nobel Prize in Medicine](#). It appears that some Eureka moments take a long time to be considered as such.

In discussing "[The Scientific Method](#)", Dallas Baptist University professor, Dr. David Naugle, provides us with two memorable quotes: Sherlock Holmes once said to Watson: "You see, but you do not observe!" And Helen Keller similarly stated to a friend: "How tragic it is to have sight, but to lack vision!" Naugle goes on to point out that by overlooking the smallest clue or detail, we may miss the key to solving the problem.

Well put. Paolo Zamboni had the vision to observe what was always there, something simple and striking, yet unseen by everyone else. He came, he saw, he had an epiphany. Let us hope that when the final study results come in, we will all join Dr. Zamboni in shouting, "Eureka"!