

General Category

1st Place Winner Chloe Darrow – The Evergreen School

Stroke Treatments Through the Years

When my dad was 17 he was in a car accident, and suffered from a stroke. It was 1989, so stroke treatments weren't very developed. The style was to hope for the best, then help patients with rehabilitation. My dad lost some control over his left arm, and it is constantly moving. I used to laugh about his so-called "wiggly arm", but as I've gotten older I've realized how much of an impact it has on his life. One day when we were getting frozen yogurt, and I looked over at him with his bowl in the crook of his elbow, awkwardly trying to spoon in toppings, and I felt really bad. I know that if the accident had been even 10 years later his life today would be completely different.

Dr. Lucy Sutphen is a general internist who has been treating patients for over twenty years. She helped me to understand stroke treatment developments that have happened over time. In Dr. Sutphen's words, "Over the past 25 years or so, stroke treatment has changed significantly. Initially, little was done except to get patients involved in rehabilitation to regain as much function as possible. Now, tissue plasminogen activator (tPA) is used if the patient gets to a hospital within four hours of onset of symptoms."¹ Discoveries like these have changed people's lives.

This January, researchers at University of Texas have found a way to use Vagus Nerve Stimulation (VNS) to help with rehabilitation for people who have lost control over their limbs. VNS works by sending electrical pulses through the Vagus Nerve.² The researchers at the University of Texas mimicked the effects of a stroke in rats, and then gave those specimens VNS. Within a few weeks the mice showed great results.² If this study had happened about 40 years ago, it could have greatly helped my dad, and many others in his situation.

Even though my dad's stroke wasn't caused by a blood clot, there are many people who run into a lot of problems with them. For a long time, the main way to break down blood clots was using a tPA.¹ Now, researchers at the University of Missouri have developed a new compound to help. When the compound (MMP-9), is combined with tPA it creates a longer time window for stroke patients.³ After testing MMP-9 on mice, the researchers proved that it could be the next big thing in stroke treatments.³

For a very long time, doctors have been unable to control blood vessels rupturing because of inflammation.⁴ This may be about to change. Researchers at the Icahn School of Medicine have developed a HDL nanoparticle to deliver statin medication to patients. To test the nanoparticle, they gave it to mice with inflamed blood vessels. The study showed that the nanoparticle was highly effective in lowering inflammation, and therefore reducing the risk of repeated heart attacks or strokes.⁴

Every day, new developments are being made to help people like my dad. Looking at how treatments have changed over the years, there is immense hope for stroke patients. Because of the studies above, life is better for everybody involved. Breakthroughs are being made all the time, and who knows, maybe in ten years strokes won't even be a problem.

Reflective Paragraph

Biomedical Research is very important for the public to be informed about, because it's crucial for people to know all the work that goes behind their health. Biomedical Research changes our lives every day, and many people have no idea. None of our medication today could exist without it, and what we know about the human body would be very limited. Writing this essay opened my eyes to a whole new world, and I think it would be amazing for kids to experience this too. Biomedical Research is happening everywhere, all the time, and because of it, the possibilities for learning are endless.

Bibliography

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