

# Botox to treat 'suicide' headaches

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A new treatment that uses Botox may offer hope to people who suffer from cluster headaches - otherwise known as 'suicide headaches' because the pain drives patients to consider suicide. Credit: Geir Mogen/NTNU Communication Division

"I hit myself in the head to distract myself from the pain when I have a cluster headache. The pain is indescribable hell, and in desperate moments, I have hit my head against a brick wall and hit myself in the head with a cell phone," says Hilde Vollan (34), a PhD candidate in bioinformatics at the University of Oslo.

Four years and four months ago, her life turned upside down when she started getting cluster headaches. Her life has been transformed – once, she was an active student with many friends, but she now lives a life in the dark at home with her parents. She has two to five cluster headaches every day, and also suffers from migraine and tension headaches. If she dares to go out for a walk, she always brings someone who can support her, and a bag of pills – including an oxygen bottle, a mask to breathe with and migraine medicines she takes by injection. Her attacks can come in the middle of the street or inside a store.

"For years, I have tried to hide when the [pain](#) takes over, because people are scared and shocked to see me suffer such pain. But I've stopped hiding now. It's not my fault that I get such bad headaches," says Vollan.

Now, Vollan will participate in a pilot study at the Norwegian University of Science and Technology (NTNU) where she will help in the testing of a new treatment.

## **Men more susceptible than women**

"We also call this a suicide headache, because many sufferers become suicidal," says NTNU senior consultant and researcher Erling Tronvik.

"This is the most extreme form of a headache, and the intensity of the pain is worse than what migraine [patients](#) experience. I've had patients

tell me that they bang their head against the wall because of the pain. Others say that they put their thumb in a pair of pincers while they pull with all their might, all in a desperate attempt to deflect the intense pain," says Tronvik, who is also affiliated with the Norwegian National Headache Centre at St. Olavs Hospital in Trondheim.

Unlike migraines, which mostly afflict women, cluster headaches mainly occur in men. About 5000 Norwegians suffer from cluster headaches. Some have daily seizures for a few months each year, while others have attacks several times a day, every day of the year.

## **Crippled by pain**

"People who get these headaches daily are crippled by the pain. It's an extremely challenging disease for both doctors and patients," Tronvik says.

Until now, it has been difficult to help these patients. Scientists do not know why some people get cluster headaches. A number of patients have found relief from injections of migraine medicine and the use of oxygen, but this treatment does not help most sufferers. The illness leaves patients with a tremendous sense of helplessness.

But now Tronvik, in collaboration with physician Daniel Bratbak at St. Olavs Hospital and Professor Ståle Nordgård at NTNU, has come up with an entirely new treatment. The gear they have developed looks a pistol with a very thin barrel, just the thickness of a knitting needle. The barrel is inserted up through the nose of the patient, and by passing through a natural hole in the nasal wall, the mouth of the barrel comes to a bundle of nerves behind the sinuses.

The surgeon pulls the trigger of the pistol, which shoots a dose of Botox to the area around the nerve bundle. The whole process takes about a

half-an-hour.

## **In search of patients**

"Botox is a neurotoxin that stops the flow of impulses along the nerves. In theory, the connection between the two nerves in the bundle is reduced or eliminated. The effect lasts from three to eight months. Then the patient has to get another injection. We designed the equipment ourselves, and Botox has never been used for this anywhere else," says Tronvik.

The researchers strongly believe in their treatment method, in part because a new study unrelated to their work has shown an effect by using an electric current to paralyse the nerve bundle.

"But that approach requires a lengthy operation," Tronvik says. Now he's in search of ten patients for a [pilot study](#).

If the method proves to be effective, the researchers will extend the experiment to include 30 to 40 [cluster headache](#) patients and approximately 80 migraine patients. The treatment uses an MRI of the patient's head to make certain that the surgeon knows exactly where the nerve bundle is. A navigation tool, composed of three small spheres on the pistol, and a plate with three spheres mounted on the patient's head, enables the surgeon to find the nerve bundle using the MRI image.

## **Tested on two patients**

"A computer sends light signals to all the spheres to form precise points. We don't miss, but anyone who wants to participate in the study must accept the risk that it could happen, because this has never been done

before. If the Botox hits an area near the nerve bundle, it could cause temporary double vision, or weaken the ability of the patient to chew. But with the use of the MRI and our navigation tools we can hit the [nerve bundle](#) without any problem. We hope that this treatment method can help give patients a life without such great pain," says Tronvik.

Provided by Norwegian University of Science and Technology

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