

New cancer treatment to debut in city

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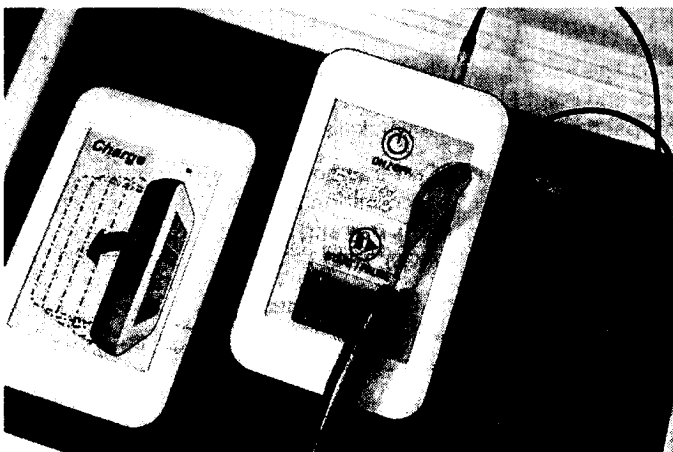
It could be huge leap forward in slowing tumors

Dr. Boris Pasche, the new president and CEO of the Barbara Ann Karmanos Cancer Institute, recalls working on a new treatment for insomnia in the late 1990s when a wild idea occurred to him: What if exposing people with cancer to radiofrequency electromagnetic fields could slow the growth of their tumors?

It had never been tried before, but Pasche, who was in training to become an oncologist, and his colleague, Dr. Alexandre Barbault, had already discovered that radiofrequencies could be used to help people with insomnia get better rest.

“One morning, I woke up and I said, ‘What if we could identify

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The TheraBionic P1 device has been approved by the U.S. Food and Drug Administration to treat people with stage 4 hepatocellular carcinoma. ERIC SEALS/DETROIT FREE PRESS

Cancer treatment

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tumor-specific frequencies?' "Pasche said.

What they soon learned is each type of cancer they tested responded to its own set of radiofrequencies. A specific set of frequencies seemed to affect breast cancer cells, another set for liver cancer, yet another distinct set for thyroid cancer, pancreatic cancer and ovarian cancer cells, too.

Complete disappearance of the disease

"The frequencies were always the same when you had a patient with breast cancer, whether they were young or old, had advanced or earlier disease," Pasche said. "We found a similarity in the frequencies, no matter the type of breast cancer — HER2, triple negative, ER/PR positive. ... To my surprise, indeed, because I trained as an oncologist and I thought we should see different frequencies based on type. We did not. They were very similar.

"But ovarian cancer was exhibiting a different frequency."

The response could be measured by pulse pressure, he explained. A person with a particular type of cancer would have a stronger pulse when exposed to the radiofrequencies associated with that cancer.

"We designed and developed devices that allowed us to precisely identify where the peak of this response was," Pasche said. "So having discovered that, we took a leap and said what if we were giving these frequencies to patients with cancer? So we started a small feasibility study that was conducted in Switzerland."

Of the 28 patients tested in that first study, seven had stage 4 breast cancer and had run out of treatment options, Pasche said.

"Two of the seven patients had an incredible response. The first one had a complete response," he explained. "She had metastases to the left femoral bone, metastases to the right adrenal gland, was suffering from pain and was on a high-dose of morphine. Within three weeks of starting treatment, the pain disappeared. She stopped taking the morphine and a PET scan showed a complete disappearance of the disease, which lasted 11 months.

"We were blown away. And we said, 'Oh my God! This works!' That was around 2005-2006."



Dr. Boris Pasche, the new president and CEO of the Barbara Ann Karmanos Cancer Institute, holds the TheraBionic P1 device he invented. It uses radiofrequency electromagnetic fields. ERIC SEALS/DFP

How the radiofrequency treatment works

Now, nearly two decades later, the idea of treating cancer by exposing patients to a specific set of radiofrequencies — and the device Pasche and Barbault invented to deliver those frequencies — has won approval from the U.S. Food and Drug Administration to treat people with advanced stage hepatocellular carcinoma, the most common type of liver cancer, who have failed other first- and second-line therapies.

It is called a TheraBionic P1 device, and it uses a metal, spoon-like instrument that acts almost as an antenna to transmit the radiofrequencies throughout a person's body when attached to a lightweight box a little larger than a cellphone.

Patients put the spoon in their mouth and rest it on the top of their tongue. They press a button on the box to begin transmitting radiofrequencies pre-programmed to target the patient's cancer cells. The treatment is painless. It feels only like you have a spoon in your mouth.

It should be used for an hour at a time, three times a day, and is completely portable.

"When you put the spoon in the mouth, the whole body becomes the antenna," said Pasche, who also is chair of the Department of Oncology at Wayne State University School of

Medicine. “So you deliver a fairly homogeneous level of radiofrequency electromagnetic field from top to toe. That’s why we have seen shrinkage of tumors in the bones, in the brain, in the lungs, in the liver. So it’s really a systemic targeted therapy.

“We’ve had patients who go for a walk (while using the device). The patient we had with us for 16 years was walking his dogs with it. Many people after a long time get in the habit of integrating that into their daily routine.”

The 16-year patient, he explained, had stage 4 thyroid cancer that had metastasized to the lungs. The man was out of treatment options, and tried TheraBionic in a clinical trial.

“Ultimately, he was treated for 16 years and 10 months on the device,” Pasche said. “With this treatment, we saw suddenly a disease that stopped growing, and he did not have any progression of disease. He just passed away, actually, this past year.”

Months — or years — of longer life

With Pasche now at the helm of Karmanos, it means the Detroit-based cancer center will be the first in the nation to use the technology in the first quarter of 2024. After that, he said, other oncology programs nationally are likely to also begin trying it.



Shields

It isn’t likely to cure patients of cancer, but it could give them months to years of a longer life, said Dr. Anthony Shields, associate center director and clinical sciences leader of the gastrointestinal and neuroendocrine multidisciplinary team at Kar-

manos.

Pasche said the device offered a 34% increase in overall survival compared with historical controls in patients with stage 4 hepatocellular carcinoma.

“With any new treatment, people always ask: Is this going to get rid of my cancer? And the unfortunate answer for most of our treatments is no,” Shields said. “This is not a cancer that we expect will completely disappear with treatment — although I think there is one case where it did.

“For the most part, this kind of treatment will slow the growth of the tumor. In a minority of patients, it will shrink the tumor. And, hopefully, in a reasonable fraction of patients, it’ll prolong their survival and give them good time with very limited side effects, which is something a lot of our patients often are looking for. I

have lots of patients that refuse to get chemotherapy just because they don’t want the side effects associated with that. They want to have quality time in the time they have left.”

Testing ahead for pancreatic cancer

For people with liver cancer, especially, the treatment options can be quite limited because the drugs that would be used to stop tumor growth are toxic to the liver.

“This device, because of its good toxicity profile, can be used in people with more advanced cancer and whose livers have been damaged by cirrhosis or other things,” Shields said. “So it provides a really nice, new option for a number of patients who have very limited options.”

Although TheraBionics is only FDA-approved for treatment of liver cancer right now, trials are about to get underway testing it in patients who have pancreatic cancer, Shields said.

“We are doing more studies with it alone and in combination with other treatment,” he said. “We are working to open a study where it would be used in people with pancreas cancer who will be receiving fairly standard chemotherapy but in addition will be getting treatment with this device to see how we can further improve the response rate in that group of patients.”

Pasche envisions another, potentially revolutionary use for the device: a diagnostic and screening tool for cancer, particularly for such types as pancreatic and ovarian cancers, which can be asymptomatic until a person has developed advanced-stage disease.

“We have, actually, a patent that has already been approved for the use of this as a diagnostic screening, especially for diseases that are difficult to detect at an early stage,” Pasche said. “We believe this will be the next generation of studies that we may start here at Karmanos.

“The idea would be to select high-risk individuals and have these tests done. It takes only 10 minutes, and they either sit down or they lie down with the spoon and device. And then you process this data and find out whether the exhibit changes in pulse pressure versus not when exposed to the frequencies associated with the cancer.

“We’re very excited about the potential not only as a therapy, but as a diagnostic and screening tool.”

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