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Anticonvulsant Drug May Boost Functional Recovery after a Stroke

May 24, 2022 0

- Scientists at the Ohio State University report that gabapentin treatment may enhance recovery of movement after a stroke by helping neurons on the undamaged side of the brain take up the signaling work of lost cells.
- Their study carried out in mice, mimicked ischemic stroke in humans. Results showed that daily gabapentin treatment for six weeks after a stroke restored fine motor functions in the animals' upper extremities. Functional recovery also continued after treatment was stopped, the researchers found.
- Gabapentin also appeared to have an effect in the stroke-affected brain on non-neuron cells that influence the timing of message transmission. An examination of their activity after the drug treatment suggested these cells can dynamically change their behavior in response to variations in synaptic communication, further enabling smooth sprouting of axons that were compensating for the lost neurons.

Handheld Device Could Painlessly Identify Skin Cancers and Cut Unnecess

By HospiMedica International staff writers

Posted on 05 May 2022

Skin biopsies enable early cancer treatment but force doctors to carve away small lumps of tissue for laboratory testing, leaving patients with painful wounds that can take weeks to heal. In recent years, aggressive diagnostic efforts have seen the number of biopsies grow around four times faster than the number of cancers detected, with about 30 benign lesions now biopsied for every case of skin cancer that's found. Now, researchers are developing a low-cost handheld device that could cut the rate of unnecessary biopsies in half and give dermatologists and other frontline physicians easy access to laboratory-grade cancer diagnostics.

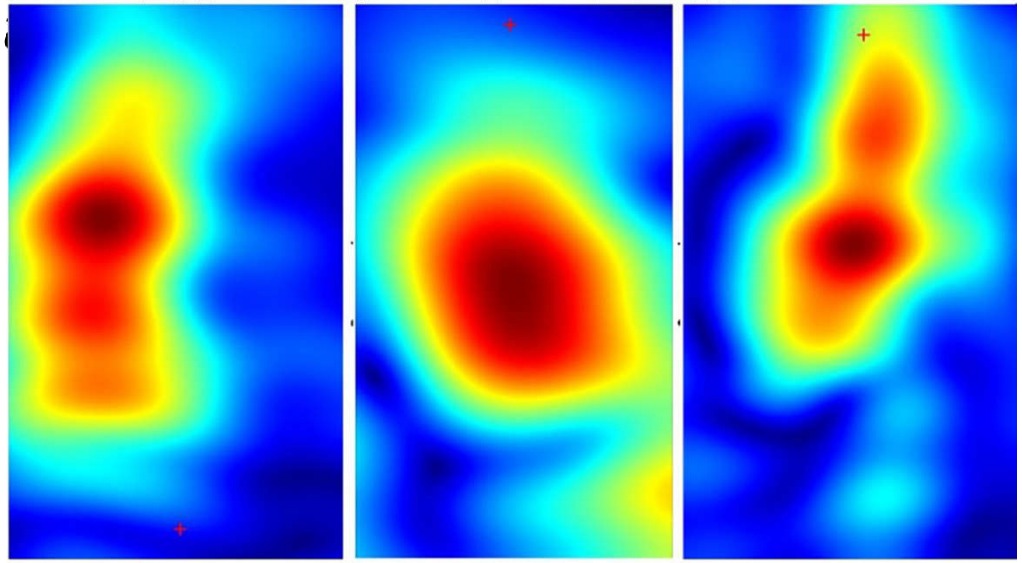

Image: Handheld device detects carcinoma (left), squamous cell carcinoma (middle), and actinic keratosis (right)

- The device developed by researchers at Stevens Institute of Technology (Hoboken, NJ, USA) uses millimeter-wave imaging - the same technology used in airport security scanners - to scan a patient's skin.
- Healthy tissue reflects millimeter-wave rays differently than cancerous tissue, so it's theoretically possible to spot cancers by monitoring contrasts in the rays reflected back from the skin. To bring that approach into clinical practice, the researchers used algorithms to fuse signals captured by multiple different antennas into a single ultrahigh-bandwidth image, reducing noise and quickly capturing high-resolution images of even the tiniest mole or blemish.

Unlike many other imaging methods, millimeter-wave rays harmlessly penetrate about 2mm into human skin, so the team's imaging technology provides a clear 3D map of scanned lesions. Future improvements to the algorithm powering the device could significantly improve mapping of lesion margins, enabling more precise and less invasive biopsying for malignant lesions. The team used a tabletop version of their technology to examine 71 patients during real-world clinical visits, and found their methods could accurately distinguish benign and malignant lesions in just a few seconds. Using their device, the researchers could identify cancerous tissue with 97% sensitivity and 98% specificity - a rate competitive with even the best hospital-grade diagnostic tools.

NEWS RELEASE 24-MAY-2022

Scientists discover a potential new marker to personalized therapy for breast cancer

Peer-Reviewed Publication

UNIVERSITY OF SOUTHAMPTON

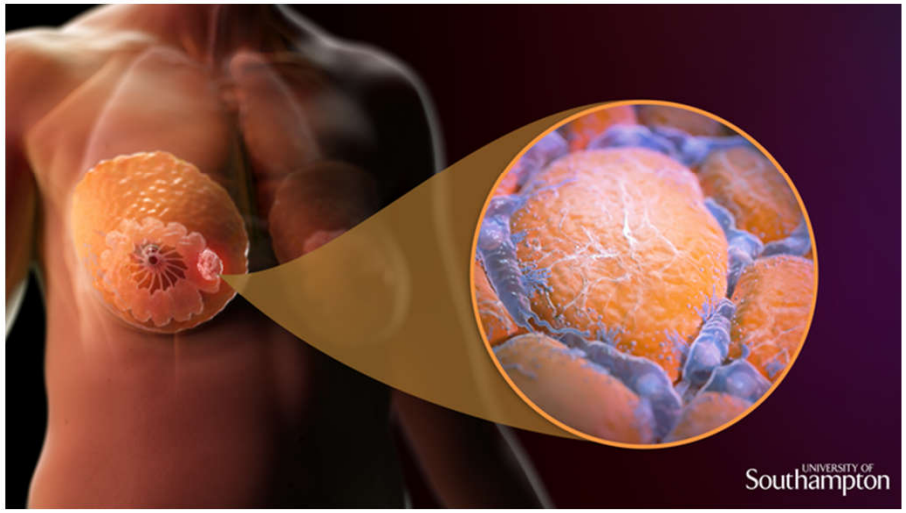

IMAGE: THE POSITION OF THE CROWN LIKE STRUCTURE IN THE HUMAN ANATOMY

- A new study from the University of Southampton has discovered that ‘crown-like structures’ surrounding breast tumours in overweight and obese patients could hinder their response to therapy. The findings of this study could potentially be used to improve personalised treatment for patients with HER2 positive overexpressed breast cancer.
- The research team assessed samples from a group of HER2+ breast cancer patients to investigate the link between high BMI and the formation of crown-like structures, and the subsequent effect of these on how patients responded to therapy with a drug called trastuzumab (Herceptin®). The results showed that patients that were overweight or obese had significantly more crown-like structures in their fat tissue surrounding the tumour, and that this was associated with a faster time to metastatic disease, an indication of how well the patients have responded to therapy.

- They then went on to identify a potential molecular biomarker, called CD32B, on the surface of the macrophages in these crown-like structures. When this marker was present in overweight and obese patients, their response to trastuzumab therapy was poorer.
- The research team are now looking at ways to change the behaviour of these crown-like structures to improve responses to breast cancer therapy.

Control sugar levels sooner to guard against heart attacks, new study finds

By Editor

11th May 2022

Cardiovascular disease, Research Type 2 diabetes

- The University of Surrey's study used Royal College of General Practitioners' Research and Surveillance Centre database to perform a comprehensive examination of glycaemic control achieved within the first year of diagnosis and subsequent blood sugar level variability with cardiovascular disease incidents.
- The result shows that controlling blood sugar levels within the first year of diagnosis reduces the incidence of major cardiovascular events. Furthermore, the team also found that individuals with varied blood sugar levels 12-months after diagnosis are more likely to experience dangerous cardiovascular events.
- Dr Martin Whyte, co-author of the study and Reader in Metabolic Medicine at the University of Surrey, said: "The period over which it took people to reduce their sugar levels after diagnosis was thought less important for major vascular protection. However, our observational study suggests that getting blood levels under control quickly – within the first 12 months after diagnosis – will significantly help reduce cardiovascular events."

Health

Canadian study offers important clue to why some back pain becomes chronic

Many take anti-inflammatory drugs for acute pain, but study suggests inflammation is key to healing

Peggy Lam · CBC News · Posted: May 20, 2022 4:00 AM ET | Last Updated: May 21

Chronic pain — especially in the lower back — is a common ailment, but scientists don't know why some back injuries resolve themselves while others cause suffering for years. A study conducted by researchers at McGill University and scientists from Italy suggests that blocking inflammation after injury might make that pain chronic — a finding that challenges the standard approach to treating pain.

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- In this study, researchers found that neutrophils, a type of white blood cell that helps the body fight infection and dominates the early stages of inflammation, play a key role in resolving pain.
- Jeffrey Mogil, researcher of the study and professor of psychology at McGill University, says standard medical practice for treatment of short lasting pain after injury might be the opposite of what we should be doing.

- The study, which was published in Science Translational Medicine last Wednesday, was conducted by nearly two dozen researchers who examined pain in three phases, using human blood cells and mice trials. They examined the blood cells of 98 patients with acute low back pain and looked for markers of inflammation. Three months later, they did the same test — comparing those who still had persistent pain and those who didn't.
- Researchers tested on mice and confirmed that blocking inflammation using drugs relieved them of pain short term, as judged by their sensitivity to touch. But the drugs prolonged the resolution of their pain — turning the acute pain into something more chronic.
- In the last phase of the study, they examined data of 500,000 people from the United Kingdom Biobank. Researchers found those taking anti-inflammatory drugs, like ibuprofen, naproxen, and diclofenac to treat their pain were much more likely to have pain two to 10 years later, an effect not seen in people taking acetaminophen or anti-depressants


Thank
you!