MRI technique provides doctors with more reliable information about breast cancer

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Credit: Klaus Nielsen from Pexels

Breast cancer is a leading cause of cancer death in women. According to the World Health Organization, some 627 000 women died from it in 2018, accounting for about 15 percent of all cancer deaths among

women. Early detection is crucial to improve breast cancer outcomes and survival. There has been significant progress on this front in recent years thanks to various imaging techniques such as mammography and MRI.

Supported by the EU-funded IDentIFY project, scientists have set their sights on further improving the diagnosis of not only cancer but also other diseases like osteoarthritis. A team from the University of Aberdeen have recently invited healthy women from Aberdeen and Aberdeenshire to help in testing and calibration of a new scanner called fast field-cycling MRI (FFC-MRI), according to a news item.

The team hopes the technology will result in earlier diagnosis of breast cancer. The same news item notes that the machine utilises "a weak, switchable magnetic field along with pulses of radiowaves to generate data about subtle changes in the body's tissues. It will be especially useful to see how the appearance of breast tissues changes during the menstrual cycle, using the FFC-MRI scanner."

Volunteers needed

With the participation of healthy female volunteers who will undergo three separate breast scans throughout their menstrual cycle, the researchers will come up with a clear data profile for normal breast tissue. This will make it easier to detect the earliest indications of disease.

Quoted in the same piece, coordinator of IDentIFY Prof. David Lurie says: "Participants will play a vital role in progressing this new technology, by helping us understand more precisely the markers of healthy breast tissue."

A step change in MRI

As a new diagnostic technique, FFC-MRI is different from conventional MRI scanners. This is because the FFC-MRI scanner can alter its magnetic field, giving an extra dimension to the data collected from each patient, unlike traditional MRIs where the applied magnetic field must be held steady during image acquisition. The IDentIFY project website explains: "By deliberately switching the magnetic field during the collection of MR images, we are able to gain access to radically new types of endogenous contrast. This new contrast has shown strong potential in the diagnosis and monitoring of a wide range of conditions."

The IDentIFY (Improving Diagnosis by Fast Field-Cycling MRI) project was set up with the overall objective of enhancing the existing FFC-MRI technology so that it could be used as a routine tool for clinical applications. Project partners believe their technique will generate new quantitative disease biomarkers. This will help improve clinical diagnosis, treatment decisions and monitoring. The new technology will also be beneficial for manufacturers of medical imaging equipment and associated electronic devices.

More information: IDentIFY project website: www.identify-project.eu/

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