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Using sugar to detect malignant tumours

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Ordinary sugar could become a contrast agent of the future for use in magnetic resonance tomography examinations of tumours. Malignant tumours show higher sugar consumption than surrounding tissue.

"If sugar replaces metal as a contrast agent in the body, it can also have a positive psychological effect and make patients calmer," says Linda Knutsson, senior lecturer at Lund University in Sweden.

A tumour's properties can be examined by injecting a small amount of sugar into it, and then measuring how much sugar the tumour consumes. The more sugar the tumour consumes, the more malignant it is.

Linda Knutsson is working with a team from Johns Hopkins University in the USA, which has developed a new imaging technique for magnetic resonance tomography. The collaboration has resulted in the new imaging technique being combined with the testing of natural sugar as a replacement for metal in contrast agents.

There is no similar clinical research in this area. It is the first time a non-synthetic contrast agent has been used in human magnetic resonance tomography examinations, and the results are promising. The uptake of sugar is higher in the tumour than in healthy tissue according to the results of tests carried out by Lund University and the Johns Hopkins team in the USA. The tests were carried out on three persons with a brain tumour and four healthy persons and published in the research journal Tomography in December last year. A more detailed study on a large group of patients is to commence soon in Lund.

"Metal-based contrast agents cost more than sugar-based agents. Accordingly, this could lead to a reduction in medical care costs," says Linda Knutsson.

A disadvantage is that sugar-based contrast agents cannot be used in examinations of diabetes patients.

More information: Dynamic Glucose-Enhanced (DGE) MRI: Translation to Human Scanning and First Results in Glioma Patients. *Tomography*, December 2015, Volume 1, Issue 2: 105-114 DOI: 10.18383/j.tom.2015.00175

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