

Sniffing out the side effects of radiotherapy may soon be possible

February 21 2013

Researchers at the University of Warwick and The Royal Marsden NHS Foundation Trust have completed a study that may lead to clinicians being able to more accurately predict which patients will suffer from the side effects of radiotherapy.

[Gastrointestinal side effects](#) are commonplace in radiotherapy patients and occasionally severe, yet there is no existing means of predicting which patients will suffer from them. The results of the pilot study, published in the journal *Sensors*, outline how the use of an [electronic nose](#) and a newer technology, FAIMS (Field Asymmetric Ion Mobility Spectrometry) might help identify those at higher risk.

Warwick [Medical School](#), working in collaboration with the School of Engineering and The Royal Marsden [NHS](#) Foundation Trust (led by Dr J Andreyev), carried out a pilot study to look into the relationship between levels of [toxicity](#) in the gut and the likelihood of experiencing [side effects](#).

Dr Ramesh Arasaradnam, of Warwick Medical School and [Gastroenterologist](#) at University Hospitals Coventry & Warwickshire, outlines the results of the study. "In the simplest terms, we believe that patterns in toxicity levels arise from differences in a patient's gut microflora. By using this technology we can analyse stool samples and sniff out the chemicals that are produced by these microflora to better predict the risk of side effects."

The success of the [pilot study](#) will lead to a broader investigation into the possible uses of these technologies and could be truly significant in helping clinicians inform patients receiving pelvic radiotherapy, before treatment is started.

Dr Arasaradnam explains what this could mean for radiotherapy patients, "In essence, we will be able to predict those who are likely to develop severe gut related side effects by the pattern of gut fermentation that are altered as a result of radiotherapy. This will enable future directed therapy in these high risk groups."

Dr James Covington, from the Warwick School of Engineering adds, "This technology offers considerable opportunities for the future. This shows just one application of being able to inform treatment by 'sniffing' patients. We foresee a time when such technology will become as routine a diagnostic test as checking blood pressure is today."

It is further evidence of the ongoing collaboration between Warwick Medical School and School of Engineering. This technology, first developed at Warwick in the early 1990s has been in continuous development ever since, producing some of the most sophisticated chemical sensors and sensor systems available today.

In 2009, the same high tech gas sensor was taken from the automotive world and used to research into quicker diagnosis for some gastrointestinal illnesses and metabolic diseases.

More information: www.mdpi.com/1424-8220/12/10/13002

Provided by University of Warwick

Citation: Sniffing out the side effects of radiotherapy may soon be possible (2013, February 21) retrieved 10 May 2024 from <https://medicalxpress.com/news/2013-02-sniffing-side-effects-radiotherapy.html>

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