ADAPTATIVE RADIOTHERAPY BASED ON FUNCTIONAL IMAGING AND RADIOBIOLOGICAL MODELS - ARTIFIBio.com

PROTECTION

Under Trade Secret
Priority Data: 2024/04/23
Owners: Servizo Galego de Saúde (SERGAS) and Galician Public Foundation for Biomedical Research Galicia Sur (FPGIBGS)
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BACKGROUND

In the last years, there were big steps in the treatment of Head and Neck Cancer (HNC), but local relapse rates are still very high. For this reason, multicentric research is need to overcome them, focused on quantifying tumour response of HNC patients by functional images like Positron Emission Tomography (PET)/Computed Tomography (CT) and Magnetic Resonance Imaging (MRI). Multimodality imaging offers much more information about tumour behaviour than the individual datasets on their own (malignancy, oxygenation or tumour density).

The relationship between different types of images must be studied in detail in order to establish a minimum set of data required to personalize the radiotherapy treatment and to optimize the treatment for each patient. Taking into account, the use of all these image modalities is considered the ideal starting point for the simulation of the radiotherapy patients, although it is not yet available due the highly distorted images from MRI caused by diffusion.

ACHIEVEMENTS AND RESULTS

A software has been developed that allows the correction of the distortion caused by diffusion through the usage of reverse gradients and thus the program allows the combination of the images obtained with MRI and PET.
Therefore, this software enables the identification of the metabolically most active areas in the tumour and those with higher level of oxygenation. These two parameters are useful to identify the tumour areas in which radiotherapy is less effective and adjust the radiotherapy plan to concentrate it on such areas.

PURPOSES AND ADVANTAGES

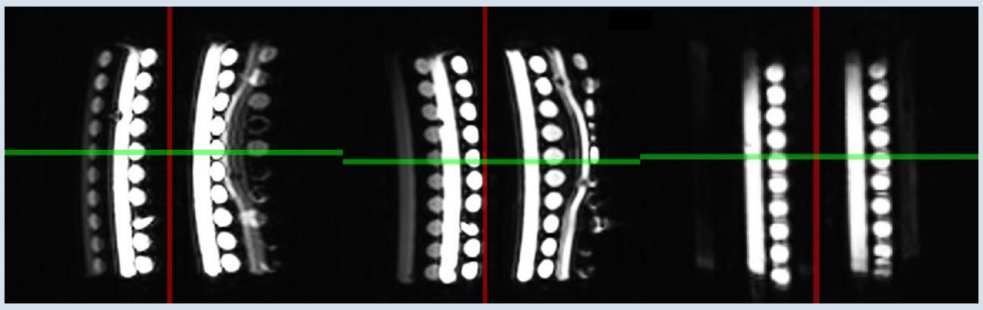
The **competitive profile of the product is unique** and fills a gap in the market that so far has not been satisfied. There is no application in the market using MRI images due to the distortion problem caused by the diffusion, and although there are some programs that allow the study of PET images, none of them offers the combination of PET and MRI.

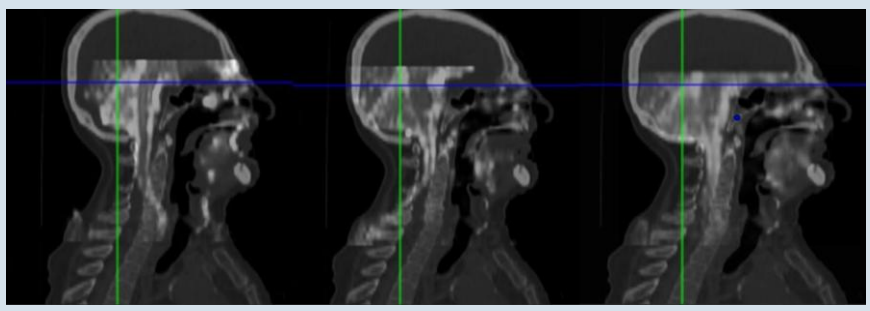
- Combination of the two modalities of imaging, PET and MRI, enabling to obtain more information that the simple sum.
- Images of patient were obtained with radiotherapy immobilization systems from the outset, which has allow to record both imaging modalities and get voxel to voxel information.

COLLABORATION OFFER

This offer can be formalized through a "Partnership Agreement" for the co-development of this technology or a "License Agreement" for the direct use of the proposed technology. If you are interested in this offer or need more information, please contact us.

DWMRI
Reversed gradient method





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