

Purpose: To develop a freeware tool for analysis of dynamic contrast enhanced (DCE) CT and MR studies.

Methods: The DCE Tool was developed as FREEWARE to work as a plugin for the the ClearCanvas 2.0SP1 framework. It combined the .NET Platform and the MATLAB MCR to provide robust DCE analysis. The software was designed to support CT and MR studies with display capability of DCE data. The analysis included simple metrics on time-intensity curves as well as on compartmental modeling analysis. Easy export of results to spreadsheet file was also a design requirement.

Results: The DCE Tool has been developed to process DCE CT and MR studies. DICOM images from CT and MR studies can be loaded to the software and a 4D time browser is available to view the images. Region of interest tool is available which produces time intensity curves, for which the DCE Tool provides analysis on area under curve, initial slope and peak etc. It also provides analysis using the 1-compartment model, 2-compartment model, the ATH (adiabatic tissue homogeneity) model for CT, as well as the Toft's model for MR study. Pixel-by-pixel analysis is available and functional maps can be generated. Numerical and graphic results can readily be exported to EXCEL files. The tool has been used by a number of researchers for phantom and pre-clinical studies. The DCE Tool is available for free download at www.thedcetool.com.

Conclusions: The DCE Tool has been developed for DCE CT and MR studies. It provides analysis based on density intensity curves as well as tracer kinetic modeling. The DCE Tool is potentially an invaluable research tool for CT and MR perfusion studies.

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