عنوان مقاله:

Feasibility of using Medical Imaging Interaction Toolkit in volumetric studies to accurate diagnosing of vascular emboli by Extended NURBS-based Cardiac-Torso phantom

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خلاصه مقاله:

Introduction: Important complications of venous thromboembolism (VTE) are a longer hospital stay, readmission, recurrence of the emboli, complications of anticoagulant therapy and death in a sever condition. In present study, the volume measurement accuracy of the medical imaging interaction toolkit (MITK) software on determining VTE in computed tomography images was evaluated. Methods: Several VTEs, ranged from ۰.۱ to ۲۰ mm, were simulated in the arteries of a XCAT Phantom. Then, the MITK software was used for localization and volume measurement of the produced VTEs on the images of the simulated phantom. Results: The scatter plot and correlation coefficient were showed a high correlation between the calculated emboli volume measures by MITK software with those designed in the XCAT Phantom (r=۰.۹۸; p<۰.۰۰۱), The differences of the calculated measures and the simulated clots were mostly related to the clot volumes less than ۰.۱ ml (mainly due to the inability of the software to measure the range), which may be clinically ignored. However, a difference of about ۰.۰۱ ml for the clot volumes greater than ۰.۱ ml was in acceptable range. Conclusion: MITK software may be used for volume measurement studies in medical diagnosis, also for VTE accurate measurement to achieve a more accurate diagnosis and to eliminate the need to onsite .diagnosis by the imaging system due to MITK capability on running in a personal computer

کلمات کلیدی:

Emboli, Medical diagnosis, MITK software, Venous thromboembolism, volumetry, XCAT phantom