True 3D Viewer Facilitates Accurate Diagnosis of Lung Infarction

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Abstract: True 3D Viewer provides interactive 3D visualization improving diagnostics and evaluation. We present a 23-year-old female to describe the utility of True 3D Viewer in making an accurate diagnosis of lung infarction enabling appropriate clinical management.

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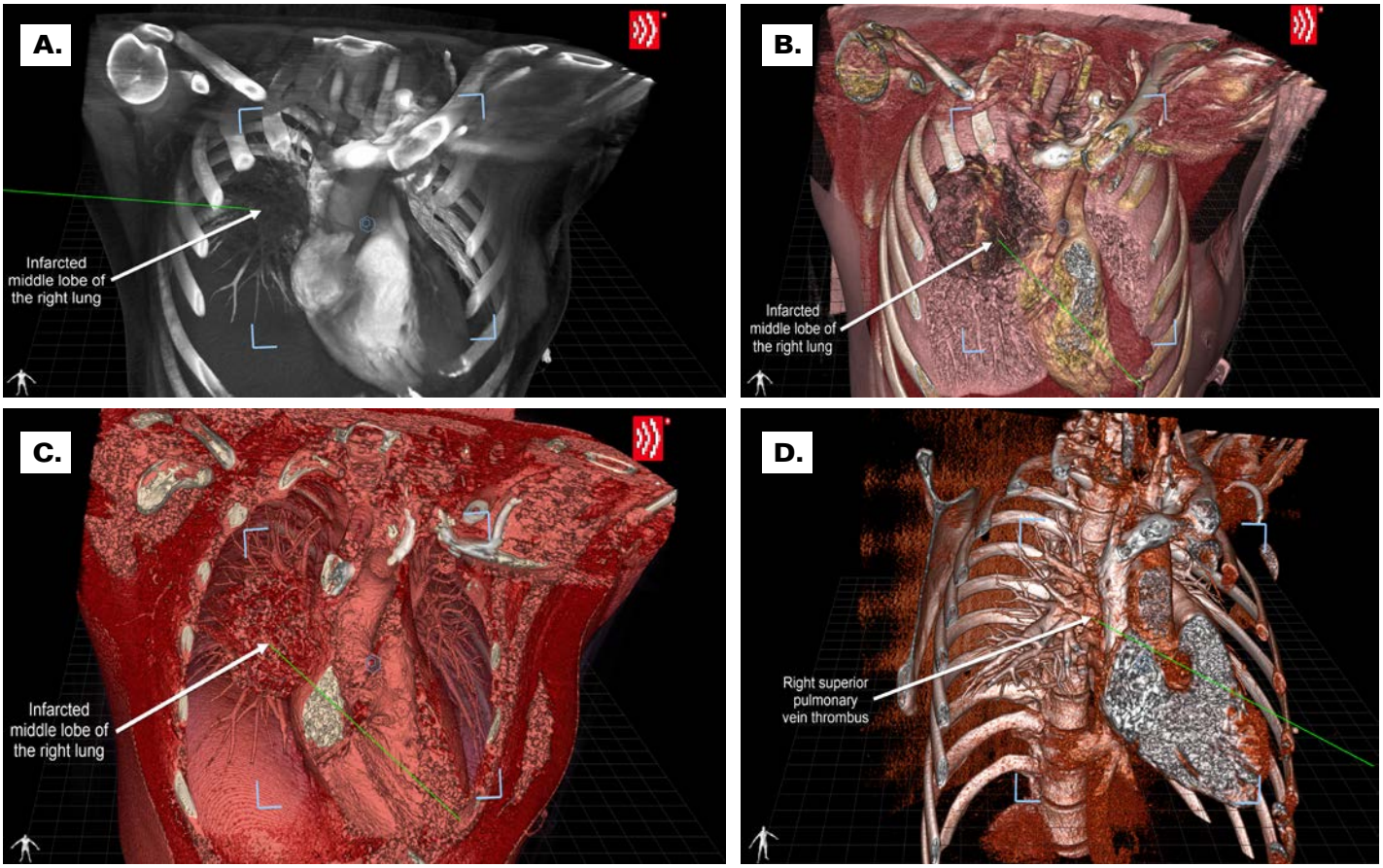

Figure 1. CT viewed on True 3D Viewer demonstrates mural thickening, and irregularity of the right upper and middle lobe arteries with intraluminal filling defect as well as the anterior margin of the distal right pulmonary artery. A. Intuitive 2D view. B. True 3D view. C. True 3D view. D. Complete obstruction of the right superior pulmonary veins noted on True 3D view.

True 3D Viewer

True 3D Viewer (EchoPixel, Inc., Santa Clara, CA, USA) is an interactive, three-dimensional (3D) visualization (I3DV) platform with 510(k) clearance from the U.S. Food and Drug Administration.[1] Computed tomography (CT), magnetic resonance, and XA standard DICOM/DICOMDIR files along with specific DICOM ultrasound datasets (GE vivid E90, E9; Philips E33, GI, 3DDCM) can be visualized in 3D space on the stereoscopic display with the use of 3D glasses with built-in head tracking. The I3DV platform allows users to rotate the imaging datasets

in multiple planes, as well as dissect, segment, and measure using a stylus. Six preset viewing modes (intuitive 2D, True 3D, C-arm slab, haptic annotation, radiology, and surgery) allow for the images to be differentially analyzed and enhanced as required for optimal viewing and evaluation.[2,3] A toolset allows for several functions including surface and volume measurements, region growing segmentation, region of interest selection, volume editing, and transfer function presets. Finally, True 3D Viewer can be paired with a 3D projector allowing multi-disciplinary team pre-procedural planning, patient and family education for true informed consent, and training of medical students, residents, fellows, and other medical professionals[2,3]

Clinical Images

A 23-year-old female had febrile neutropenia following induction therapy for recently diagnosed B-Cell acute lymphoblastic leukemia. Right suprahilar opacity noted on chest X-ray with round consolidation in the anterior segment of the right upper lobe was diagnosed as invasive aspergillus pneumonia by CT. There was concern for a thrombus in the adjacent pulmonary vein. The patient was afebrile on antifungal therapy, but complained of right-sided chest numbness, cough that exacerbated pleuritic chest pain and new onset shortness of breath. CT was reviewed again on True 3D Viewer and demonstrated mural thickening, and irregularity of right upper and middle lobe arteries with intraluminal filling defect as well as the anterior margin of the distal right pulmonary artery (**Figure 1A, 1B, 1C, Supplemental Material 1**). Complete obstruction of the right superior pulmonary veins was also observed (**Figure 1D**). True 3D Viewer facilitated accurate diagnosis in our patient with excellent spatial orientation and visualization and must be considered for evaluation of lung pathologies and other complex conditions.[3] ■

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