Accuracy and time efficiency for the detection of thoracic cage fractures: volume rendering compared with transverse computed tomography images

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OBJECTIVE: To compare the accuracy and time efficiency of volume rendering (VR) compared with transverse images of multidetector-row computed tomography data to identify thoracic cage fractures. METHODS: Computed tomography scans of 50 patients with acute blunt chest trauma were retrospectively analyzed by using VR and transverse images. The number, location, and type of rib and sternal fractures revealed by these viewing methods were compared, and the time needed for diagnosis was measured. RESULTS: Thirty of 50 patients had a total of 178 rib fractures. The mean sensitivity, specificity, and accuracy for their detection were similar for transverse (96%, 100%, and 99%) and VR (98%, 100%, and 100%) images. Three sternal fractures were correctly diagnosed with VR, and 1 was missed on transverse images by both readers. The time to read VR images (mean of 105 seconds) was significantly reduced compared with the time needed for transverse image reading (mean of 167 seconds; P < 0.001). CONCLUSION: Volume rendering of computed tomography data depicts thoracic cage fractures with a high accuracy similar to that of transverse images but is considerably faster.