Utility of Reconstructed Spinal Imaging in Trauma Patients

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Introduction

CT is the modality of choice to evaluate patients with major trauma. There is little literature on the optimal CT protocol for spinal imaging in trauma patients.(1) One small study in the surgical literature suggests that the axial images from the routine trauma body CT may be adequate to assess patients with possible spine trauma. (2)

Methods

We reviewed all dedicated CTs of the thoracolumbar spine reconstructed from trauma CTs of the chest, abdomen and pelvis (CAP) performed between 7/1/13 and 7/2/14. All CT scans were performed on a 128-slice helical CT scanner (SOMATOM Definition Edge, Siemens Healthcare).

The CAP CT protocol initially consisted of 3 mm axial images in lung and soft tissue algorithms as well as reformatted 2 mm coronal images in soft tissue algorithm.

Reconstructed spine studies consisted of 1 mm axial images in bone algorithm, 3 mm axial images in bone and soft tissue algorithms, and reformatted 2mm sagittal and coronal images in bone and soft tissue algorithms.

The majority of the spine CTs were read by a radiologist other than that reading the body study. Cases in which it was clear that evaluation of the spine on the body CT was deferred to the dedicated spine study were excluded from review.

Results

Of the over 600 trauma CTs performed between 7/1/13 and 7/2/14, 214 dedicated spine studies reconstructed from the CAP exam met our criteria for inclusion. Discrepancies between the body and spine readings were identified in 45 (21%) of these cases. Twenty-seven of these discrepancies (13% of all cases) occurred before the change in CAP protocol. Eighteen discrepancies (8 % of all cases) occurred after the sagittal reformatted images in soft tissue algorithm were added to the CAP protocol. Only 1 of the nine cases was read as normal on the CAP study

Two of the nine patients (1 % of all patients) required surgical intervention. One patient was deemed not to be a surgical candidate on medical grounds. This patient was placed on spine precautions. Thus, the management of 3 patients (1.4% of all patients) was altered by the use of dedicated spinal imaging.

Conclusions

Initial data suggests that reformatted images of the thoracolumbar spine obtained from trauma body CT exams yield no additional clinically significant information.

Learning Objectives

CAP CT with 3 mm axial sections and 2 mm coronal and/or sagittal reformatted images is a reliable screening study for spinal injury in trauma patients. Reserving dedicated reconstructed spinal CT for those patients with positive spinal findings on the CAP CT would likely increase the efficiency of the emergency and radiology services in level 1 trauma centers.

References

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