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Preface



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The advent of multidetector computed tomography (MDCT) in recent years has sparked its use as a principal screening study for polytrauma patients and is increasingly commonly obtained in non-traumatic emergency department (ED) patients. The chest radiograph continues to be performed as a screening study in the polytrauma setting and for patients presenting to the ED with complaints related to the thorax. However, CT provides a significant improvement in sensitivity for detection of both traumatic and nontraumatic acute thoracic pathologies, which has fostered its common use in these settings. A thorough knowledge of the spectrum of pathology, the common and atypical CT appearances, and the influence of CT observations on management is required for contemporary imaging assessment.

In the blunt trauma patient, CT is essential to directly assess the thoracic vessels, pericardial fluid, and to potentially demonstrate airway and esophageal injuries. CT is far more sensitive than radiography for detection of pneumothorax, pleural fluid,

and lung parenchymal injury. CT can document sites of active thoracic bleeding or vascular injury to direct surgical or angiographic intervention. Also, recent studies have shown that CT can play a valuable role in delineating the trajectory of penetrating thoracic injury and can help determine the need for further imaging investigation of mediastinal structures and for surgical exploration. In most polytrauma patients multiple CT studies are usually indicated and inclusion of the chest as part of a general survey (total body CT) is being increasingly used in trauma centers. Even when the admission chest radiograph shows no definitive injury, CT can confirm the impression of normality with a higher level of accuracy or detect subtle but important pathology not revealed on the chest film. Several articles in this issue focus on traumatic chest pathology from both blunt and penetrating mechanisms.

The use of CT for patients presenting with chest pain to the ED is increasing, because this approach can diagnose or exclude a wide variety of acute thoracic pathology. In these patients, MDCT has

the potential to assess the aorta, pulmonary arteries, and coronary arteries simultaneously, the so-called "triple rule-out." It now appears that 40- or 64-slice units will be required for consistently performing high quality studies for this application. MDCT has become the definitive test to rapidly assess for pulmonary embolization being accurate, rapidly obtained, and cost-effective. Several articles

in this issue discuss specific applications of MDCT in acute nontraumatic mediastinal and nonmediastinal chest pathology.

The opening article is intended to provide the radiologist with a "refresher" overview of typical clinical presentations of common nontraumatic ED emergencies to better integrate these findings with imaging observations.