

Radiological evaluation of the chest trauma with chest X-ray and non-contrast CT-Scan (NCCT) of chest

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Abstract: Background: Chest trauma is a common presentation in emergency departments and requires prompt and accurate diagnostic evaluation. Chest X-ray (CXR) and noncontrast chest computed tomography (CT) scan are two commonly used imaging modalities in the assessment of chest trauma. This study aimed to perform a comparative analysis of the efficacy of CXR and chest CT scan in patients with chest trauma. **Material and Methodology:** A retrospective analysis was conducted on a cohort of patients presenting with chest trauma who underwent both CXR and chest CT scan. The diagnostic accuracy of CXR and chest CT scan in detecting various chest injuries, including rib fractures, pulmonary contusions, pneumothorax, hemothorax, and mediastinal injuries, was compared. Sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), and overall diagnostic accuracy were calculated for each modality. **Results:** Non contrast Chest CT scan outperformed CXR in the detection of chest trauma-related injuries. CXR showed limitations in identifying subtle or occult injuries compared to chest CT scan. Chest CT scan exhibited higher sensitivity, specificity, PPV, NPV, and overall diagnostic accuracy for rib fractures, pulmonary contusions, pneumothorax, hemothorax, and mediastinal injuries. However, it is important to consider the radiation exposure associated with chest CT scan, especially in young patients and pregnant women. CXR, being a radiation-free modality, may still have a role in the initial screening and triage of chest trauma cases. **Conclusion:** chest CT scan is a more sensitive and accurate imaging modality for evaluating chest trauma compared to CXR. It provides detailed information about the extent and nature of injuries, aiding in appropriate management decisions. However, the choice of imaging modality should be made based on a careful assessment of individual patient factors, clinical suspicion, and radiation considerations. Further prospective studies are warranted to validate these findings and optimize the diagnostic approach to chest trauma evaluation.

Keywords: Chest trauma, Chest X-ray, Non contrast Chest CT scan. (NCCT)