

Comparison of the Chest X-Ray and Computerized Tomography Scans Requested from the Emergency Department

Authors : Sahabettin Mete, Abdullah C. Hocagil, Hilal Hocagil, Volkan Ulker, Hasan C. Taskin

Abstract : Objectives and Goals: An emergency department is a place where people can come for a multitude of reasons 24 hours a day. As it is an easy, accessible place, thanks to self-sacrificing people who work in emergency departments. But the workload and overcrowding of emergency departments are increasing day by day. Under these circumstances, it is important to choose a quick, easily accessible and effective test for diagnosis. This results in laboratory and imaging tests being more than 40% of all emergency department costs. Despite all of the technological advances in imaging methods and available computerized tomography (CT), chest X-ray, the older imaging method, has not lost its appeal and effectiveness for nearly all emergency physicians. Progress in imaging methods are very convenient, but physicians should consider the radiation dose, cost, and effectiveness, as well as imaging methods to be carefully selected and used. The aim of the study was to investigate the effectiveness of chest X-ray in immediate diagnosis against the advancing technology by comparing chest X-ray and chest CT scan results of the patients in the emergency department. Methods: Patients who applied to Bulent Ecevit University Faculty of Medicine's emergency department were investigated retrospectively in between 1 September 2014 and 28 February 2015. Data were obtained via MIAMED (Clear Canvas Image Server v6.2, Toronto, Canada), information management system which patients' files are saved electronically in the clinic, and were retrospectively scanned. The study included 199 patients who were 18 or older, had both chest X-ray and chest CT imaging. Chest X-ray images were evaluated by the emergency medicine senior assistant in the emergency department, and the findings were saved to the study form. CT findings were obtained from already reported data by radiology department in the clinic. Chest X-ray was evaluated with seven questions in terms of technique and dose adequacy. Patients' age, gender, application complaints, comorbid diseases, vital signs, physical examination findings, diagnosis, chest X-ray findings and chest CT findings were evaluated. Data saved and statistical analyses have made via using SPSS 19.0 for Windows. And the value of $p < 0.05$ were accepted statistically significant. Results: 199 patients were included in the study. In 38,2% (n=76) of all patients were diagnosed with pneumonia and it was the most common diagnosis. The chest X-ray imaging technique was appropriate in patients with the rate of 31% (n=62) of all patients. There was not any statistically significant difference ($p > 0.05$) between both imaging methods (chest X-ray and chest CT) in terms of determining the rates of displacement of the trachea, pneumothorax, parenchymal consolidation, increased cardiothoracic ratio, lymphadenopathy, diaphragmatic hernia, free air levels in the abdomen (in sections including the image), pleural thickening, parenchymal cyst, parenchymal mass, parenchymal cavity, parenchymal atelectasis and bone fractures. Conclusions: When imaging findings, showing cases that needed to be quickly diagnosed, were investigated, chest X-ray and chest CT findings were matched at a high rate in patients with an appropriate imaging technique. However, chest X-rays, evaluated in the emergency department, were frequently taken with an inappropriate technique.

Keywords : chest x-ray, chest computerized tomography, chest imaging, emergency department

Conference Title : ICEM 2018 : International Conference on Emergency Medicine

Conference Location : London, United Kingdom

Conference Dates : April 24-25, 2018