

Retrospective Analysis of Appropriateness in Abdominal Radiograph Utilization in a District Hospital Emergency Department

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INTRODUCTION

Abdominal radiographs (AXRs) are frequently performed in the Emergency and Trauma Department (ETD), yet their clinical value remains uncertain¹. Adherence to the Royal College of Radiology (RCR) iREFER Guidelines for appropriate AXR utilization remains poor, potentially leading to unnecessary imaging.

METHODOLOGY

This retrospective chart review evaluated 423 patients who underwent abdominal radiography at the Emergency and Trauma Department of Hospital Bintulu between January 1 and December 31, 2023. The appropriateness of AXR indications was determined based on the 8th Edition iREFER guidelines for plain abdominal radiography². Appropriate indications included suspected bowel obstruction, acute exacerbation of inflammatory bowel disease, palpable abdominal mass, constipation, acute or chronic pancreatitis, ingestion of sharp or toxic foreign objects, ingestion of small smooth objects (e.g., coins, batteries), and blunt or penetrating abdominal trauma.

This study highlights the overutilization of abdominal radiography, resulting in unnecessary hospital expenditures and unjustified radiation exposure, with AXR delivering approximately 40 times the radiation dose of a chest radiograph. Targeted training for junior and senior physicians is essential to enhance adherence to evidence-based guidelines and optimize the use of AXR.

Keywords: Abdominal radiograph, Appropriateness, Retrospective analysis

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RESULTS

Among the abdominal radiographs (AXRs) performed, only 27.2% met the appropriateness criteria outlined in the referenced guidelines. ETD physicians had lower odds of ordering inappropriate AXRs than surgical or other departments (OR: 0.382, 95% CI: 0.204–0.715). Increasing patient age was associated with a higher likelihood of inappropriate AXR requests (OR: 1.013, 95% CI: 1.003–1.023). However, no significant association was observed between inappropriate AXR ordering and either patient gender or the requesting clinician's level of experience.

DISCUSSION

Our findings indicate that most abdominal radiographs (AXRs) performed in the Emergency and Trauma Department (ETD) were not appropriately indicated. ETD physicians demonstrated greater adherence to AXR guidelines and awareness of its limitations compared to other medical disciplines. Notably, the higher rate of inappropriate AXR requests among older patients suggests a more lenient approach to imaging in adults than in younger populations. Contrary to expectations, clinician experience did not reduce inappropriate AXR ordering, highlighting a persistent gap in guideline adherence and a potentially ingrained culture of reliance on AXR despite its limited diagnostic utility.

CONCLUSION