Audit on the use of Abdominal X-rays in the Accident and Emergency Department of a major London teaching hospital.

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Introduction

The Abdominal X-ray (AXR) has long been regarded as overused, particularly in acute medical departments. Studies dating back to the 1960s have shown that in the majority of cases their results are negative or non-specific, thus do not aid diagnosis.1,2

In addition to having a low diagnostic yield, overuse of the AXR is a financial burden to the Trust, and an unnecessary source of radiation exposure to patients. The average AXR exposes a patient to the radiation dose equivalent to 50 chest x-rays.

We attempted to assess whether the Accident and Emergency (A&E) department of a London teaching hospital, is using the AXR investigation in an appropriate manner, facilitating a high diagnostic yield.

Standard & Target

• Feyler et al. 2001 (n=131): 12% indications conformed to Royal College of Radiology (RCR).3 AXR affected management in only 7%.4

• Morris-Stiff et al. 2006 (n=225): 32% conformed to RCR guidelines. 27% affected management. Increase to 77% if indications not covered by RCR guidelines were ignored.5

We propose a set of standards in conjunction with Morris-Stiff et al. 2006.

Target 1: 32% of indications within the RCR guidelines.
Target 2: An average diagnostic yield of 27% from all indications.

Methodology

Retrospective analysis of the AXRs (n=256) taken over a 100 day period (Oct 2009 – Jan 2010) in the A&E department. The AXRs and their reports were analysed:

• To assess which indications were most commonly cited.
• To assess the diagnostic yield of the AXR.
• To assess how the diagnostic yield varied depending upon the individual indication.

1. Assessed the percentage of AXRs that showed any abnormal findings, including non-specific and incidental findings.
2. Evaluated the patients’ discharge forms, to assess the percentage of AXRs which correlated with the diagnosis on discharge (i.e. ‘aiding making a positive diagnosis’).

Results

• 72% of the reported AXRs did not add any significant information.
• 21% showed some abnormality (includes non-specific findings, such as faecal loading and prominent segments of the bowel).
• Further analysis showed that 7% of AXR contributed to a diagnosis.
• 93% of AXR did not aid further clinical management.

• AXRs not reported
• AXRs with incidental (NON) findings
• AXRs with abnormal findings*

*Includes non-specific findings such as faecal loading and prominent segments of the bowel.

These AXR included incidental findings which were not related to the condition indicated on the radiograph request form.

Conclusion

• The AXR has been shown in a wide range of studies to be used indiscriminately as part of the basic work-up for abdominal pain.
• The diagnostic tool has been shown to rarely affect patient management.
• Other diagnostic tools in conjunction with a thorough history and examination, should be the mainstay of analysis for abdominal pain, with the AXR only being used in specific conditions.

Recommendations

There are a number of ways to facilitate better use of the AXR as a diagnostic tool:

• Staff education is important. Continual training and organising a review of the appropriate signs and symptoms requiring an AXR, particularly for the newer house officers would be beneficial.
  • Implementation of posters displaying guidelines for the use of the AXR according to the RCR guidelines.6

• Refine the RCR guidelines. The guidelines were not written specifically for use in A&E departments. Review by the RCR with respect to AXR use in this setting will likely reduce unnecessary referral for AXRs.

References