Service Priorities and Programmes

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Diagnostic value of ultrasonography in the diagnosis of acute appendicitis - an audit

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Introduction

Acute appendicitis is one of the most common abdominal surgical emergencies. Traditionally, acute appendicitis is diagnosed clinically. However, with the variability of clinical signs, the diagnosis of acute appendicitis is often challenging and delay in diagnosis could potentially lead to increased complications and morbidity. Ultrasonography is a diagnostic technique that has been reported to improve diagnostic accuracy and clinical outcome.

Objectives

To evaluate the role of ultrasonography in the management of patients presenting with suspected acute appendicitis

Methodology

A retrospective review of ultrasound examination for patients with clinical suspicion of acute appendicitis from 2008 to 2013 in Pamela Youde Nethersole Eastern Hospital was performed. All patients were scanned using a high frequency probe with standard compression techniques over the right iliac fossa. Ultrasound diagnosis of appendicitis was made if a tubular, non-peristaltic and non-compressive blind ending structure measuring over 6mm in diameter was seen. Patient demographics, ultrasound findings, operative findings, histology results and clinical record were reviewed. The outcome was audited and the pathology report was used as the gold standard for a diagnosis of acute appendicitis. The diagnostic accuracy was calculated.

Result

A total of 995 patients underwent ultrasound examination during this period. Average age was 33.4 years (6 - 98) with a male to female ratio of 1: 3.75. 16.2% (n=161) of patients had a positive diagnosis of acute appendicitis by ultrasonography of which 89.4% (n=144) were confirmed as appendicitis. 96.9% (n=156) of the 161 patients had operation performed. Perforation rate was 2.8% (4/144). Rate of negative appendicectomy was 7.7 % (12/ (144+12)). 83.8% (n=834) had no abnormality seen on ultrasonography. However, 5.9% (n=49) of these patients subsequently had

operation performed and had confirmed appendicitis. Perforation rate was 26.5% (n=13) The sensitivity of ultrasonography in the diagnosis of acute appendicitis was 74.6%, specificity was 97.9%, the positive predictive value was 89.4%, the negative predictive value was 94.1% and the overall diagnostic accuracy was 93.4%. The overall accuracy of ultrasonography in the diagnosis of acute appendicitis compares favourably with other reported studies. The diagnostic accuracy of ultrasonography is higher compared with other reported studies that based on clinical diagnosis alone. Conclusion Ultrasonography is a useful adjunct to patient management that helps in prompt diagnosis and early treatment of acute appendicitis. It could also help reduce false-negative appendicectomy and help identify other unsuspected conditions that may explain the patient's symptoms and direct further appropriate management.