Prospective Validation Of The APPEND Clinical Prediction Rule

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Introduction: Right iliac fossa (RIF) pain accounts for a significant proportion of acute admissions to general surgical services each year with appendicitis being one of the most common underlying diagnoses. The clinical diagnosis of appendicitis continues to challenge clinicians which is reflected in high negative appendicectomy rates. Clinical predication rules (CPRs) are one method used to diagnose appendicitis and reduce negative appendicectomy rates. The APPEND score is a CPR recently developed in the Counties Manukau population.

Aim: To prospectively validate the APPEND score.

Methods: All patients presenting with RIF pain were enrolled into the study over a six-month period. The study was powered to detect a 7% difference in negative appendicectomy rates which required 384 patients. The primary outcome was the negative appendicectomy rate. Secondary outcomes were the diagnostic indices of the CPR and number of radiological investigations performed. Results from the current prospective cohort were compared to those of the retrospective cohort used to develop the APPEND score.

Results: 437 patients with a mean age of 33 ± 16 were enrolled. The negative appendicectomy rate in the prospective cohort was 9.2% (95% CI: 5.3%, 13.2%) compared to a rate of 19.8% (CI 16.2, 23.4%) in the retrospective cohort. After adjusting for confounders, age, gender, ethnicity, APPEND score, HR, SBP and temperature, the odds of a negative appendicectomy was 2.3 times higher in the retrospective cohort. An APPEND score of ≥ 5 was 87 % specific for ruling in appendicitis with a positive predictive value of 94%, while a score of ≤1 was 100% sensitive in ruling out appendicitis with a negative predictive value of 100%. There was no significant difference between the number of CT scans performed in the two populations.

Conclusion: The APPEND clinical prediction rule was a useful tool in the diagnosis and management appendicitis which showed significant reduction in the number of negative appendicectomies.