Utility of immature granulocyte percentage in pediatric appendicitis.

published by rlgriff on Mon, 09/08/2014 - 11:19am

Title
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Publication Type
Journal Article

Year of Publication
2014

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Journal
J Surg Res

Volume
190

Issue
1

Pagination
230-4

Date Published
2014 Jul

ISSN
1095-8673

Keywords
Adolescent, Appendicitis, C-Reactive Protein, Cell Differentiation, Child, Female, Granulocytes, Humans, Leukocyte Count, Logistic Models, Male

Abstract

**BACKGROUND:** Acute appendicitis is the most common cause of abdominal surgery in children. Adjuncts are used to help clinicians predict acute or perforated appendicitis, which may affect treatment decisions. Automated hematologic analyzers can perform more accurate automated differentials including immature granulocyte percentages (IG%). Elevated IG% has demonstrated improved accuracy for predicting sepsis in the neonatal population than traditional immature-to-total neutrophil count ratios. We intended to assess the additional discriminatory ability of IG% to traditionally assessed parameters in the differentiation between acute and perforated appendicitis.

**MATERIALS AND METHODS:** We identified all patients with appendicitis from July 2012-June 2013 by International Classification of Diseases-9 code. Charts were reviewed for relevant demographic, clinical, and outcome data, which were compared between acute and perforated appendicitis groups using Fisher exact and t-tests for categorical and continuous variables, respectively. We used an adjusted logistic regression model using clinical laboratory values to predict the odds of perforated appendicitis.

**RESULTS:** A total of 251 patients were included in the analysis. Those with perforated appendicitis had a higher white blood cell count (P=0.0063), C-reactive protein (CRP) (P<0.0001), and IG% (P=0.0299). In the adjusted model, only elevated CRP (odds ratio 3.46, 95% confidence interval 1.40-8.54) and presence of left shift (odds ratio 2.66, 95% confidence interval 1.09-6.46) were significant predictors of
perforated appendicitis. The c-statistic of the final model was 0.70, suggesting fair discriminatory ability in predicting perforated appendicitis.

**CONCLUSIONS:** IG% did not provide any additional benefit to elevated CRP and presence of left shift in the differentiation between acute and perforated appendicitis.

DOI 10.1016/j.jss.2014.04.008
PubMed ID 24793450