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Is it safe to discharge intussusception patients after successful hydrostatic reduction?

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Abstract

Purpose: The aim of this study was to evaluate whether discharge from the emergency department (ED) after successful hydrostatic reduction (HR) of intussusception is safe.

Methods: We conducted a single institution review of patient records with a diagnosis code of intussusception from 1995 to 2006. Data collected included age, clinical presentation, imaging, surgical interventions, pathology, recurrence, and disposition. Statistical analysis utilized χ^2 tests, where $P \leq .05$ was considered significant.

Results: A total of 309 patients with intussusception were identified. One hundred twenty-three patients (39.8%) required surgical intervention, 138 (44.6%) patients were managed nonoperatively as inpatients, and 48 (15.5%) were treated nonoperatively and discharged from the ED. There were 18 recurrences (5.8%). Recurrence rates did not significantly differ between patients who required operative reduction and those who were managed nonoperatively with HR and either observed as inpatients or discharged from the ED. Seven patients with recurrences required surgical intervention, and 1 of those children had a pathologic lead point, which was nonneoplastic.

Conclusions: Recurrence rates do not differ between children observed as inpatients and those discharged home after successful HR. Missed neoplastic pathologic lead points were not found in the patients who required an operation after a recurrence. Our data suggests that it is safe to discharge patients selectively from the ED after successful HR.

The management of patients with intussusception after successful hydrostatic reduction (HR) is variable. Historical recommendations include a 48-hour observation period in the hospital [1]. However, recent series support short-term emergency department (ED) observation quoting low recurrence rates and absence of adverse events when outpatient management is used [2,3]. Despite convincing retrospective evidence that discharge from an ED after successful HR is safe, this has yet to be incorporated into a management guideline for intussusception. We chose to analyze our own institution's experience in treating children with intussusception with the goal of developing an evidence-based treatment algorithm.

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1. Methods

This study was approved by the Children's Hospital of Wisconsin Institutional Review Board (#06/185, GC #246). Medical records of patients 0 to 18 years of age with the diagnosis of intussusception from 1995 to 2006 were reviewed. Asymptomatic patients with incidentally found intussusceptions on axial imaging were excluded if no further intervention for the intussusception occurred. Data collected included age, presenting symptoms and physical examination findings, diagnostic studies, surgical intervention, pathology, recurrence, and patient disposition. Recurrences were defined as subsequent intussusceptions diagnosed at our institution during the review period. Patient disposition was recorded as admission to the surgical service, admission to a pediatric service, or ED discharge. A pediatric radiologist performed all documented HR using either barium or water-soluble contrast. During the chosen 10-year review period, radiologists at our institution were only performing reduction enemas using contrast. Follow-up data were from 3 to 10 years. Statistical analysis was performed using χ^2 tests, where a P value of $\leq .05$ was considered significant.

2. Results

A total of 309 patients with the diagnosis of intussusception were identified. Of these, 261 (84.5%) patients were admitted to the hospital, including 123 (39.8%) that required surgical intervention and 138 (44.6%) who were admitted to the hospital after successful HR for observation. Of the 138 patients observed as inpatients after successful HR, 73 were admitted to the surgical service and 65 were admitted to a pediatric service. The average length of stay for the patients observed as inpatients after successful HR was 1.6 days. The remaining 48 (15.5%) patients were discharged from the ED after successful HR (Fig. 1).

The recurrence rate of all patients, including those managed surgically at the time of presentation, was 5.8%. After successful HR alone, the recurrence rate was 7.5%. Table 1 summarizes the recurrence rates based on disposition groups after successful HR. There were no statistically significant differences in the recurrence rates between patients who were observed and discharged from the ED after successful HR and patients who were admitted and observed as inpatients. Similarly, in the patients who were admitted, recurrence rates did not differ statistically between the groups admitted to the pediatric and the surgical service.

Table 2 lists the outcomes of patients who had a recurrence of intussusception after successful HR. Of the 14 patients, 6 patients (42.8%) recurred within 72 hours of initial HR. All other recurrences happened between 10 days and 21 months after initial reduction. All patients with recurrences underwent a second attempt at HR, which was successful 78% of the time. A total of 3 patients required eventual surgical exploration. Of these, 1 had a pathologic lead point (PLP) (Meckel's) and 2 were idiopathic.

None of the patients discharged from the ED or admitted for observation had delayed complications from HR or intestinal ischemia. None of the patients discharged from the ED returned later with a missed diagnosis of malignancy. To further investigate which patients are at the highest risk of having a recurrence due to a missed PLP, we stratified patients by age (Table 3). Because idiopathic intussusception most commonly affects children younger than 3 years [4], older children with an intussusception are at a higher risk of PLPs [4-8]. When our patient population was separated into children 3 years or younger (n = 248, or 80.2%) and older than 3 years (61, or 19.8%), PLPs were resected in 8.9% (n = 22) and 27.9% (n = 17) in each age group, respectively (P = .0002). The etiology of PLPs varied between the 2 age groups primarily in the incidence of neoplastic lesions, with all 11 neoplastic PLPs occurring in the older children ($P <$

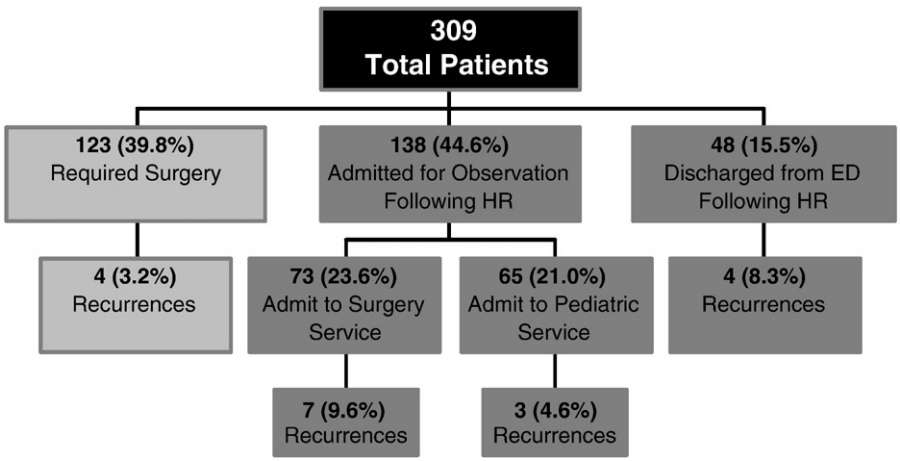

Fig. 1 Patient disposition and recurrence rates. The flowchart outlines patient management and disposition. Recurrence rates are shown for each group.