Nonspecific Abdominal Pain in Pediatric Primary Care: Evaluation and Outcomes

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ABSTRACT

OBJECTIVE: To describe the characteristics of children with nonspecific abdominal pain (AP) in primary care, their evaluation, and their outcomes.

METHODS: Between 2007 and 2009, a retrospective cohort of children from 5 primary care practices was followed from an index visit with AP until a well-child visit 6 to 24 months later (outcome visit). Using International Classification of Disease, 9th Revision (ICD-9), codes and chart review, we identified afebrile children between 4 and 12 years old with AP. Use of diagnostic testing was assessed. Multivariable logistic regression was used to model the association of index visit clinical and demographic variables with persistent pain at the outcome visit, and receipt of a specific diagnosis.

RESULTS: Three hundred seventy-five children presented with AP, representing 1% of the total population of 4- to 12-year-olds during the study period. Eighteen percent of children had persistent pain, and 70% of the study cohort never received a specific diagnosis for their pain. Seventeen percent and 14% of children had laboratory and radiology testing at the index visit, respectively. Only 3% of laboratory evaluations helped to yield a diagnosis. Among variables considered, only preceding pain of more than 7 days at the index visit was associated with persistent pain (odds ratio 2.15, 95% confidence interval 1.19–3.89). None of the variables considered was associated with receiving a specific diagnosis.

CONCLUSIONS: Most children with AP do not receive a diagnosis, many have persistent pain, and very few receive a functional AP diagnosis. Results support limited use of diagnostic testing and conservative management consistent with national policy statements.

KEYWORDS: abdominal pain; functional gastrointestinal disorders; primary care

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WHAT'S NEW

In this large study of children with nonspecific abdominal pain in primary care, we found persistent pain is common, and clinicians may underrecognize functional gastrointestinal disorders in this population of children.

ABDOMINAL PAIN (AP) is one of the most common complaints to pediatricians and accounts for 2% to 4% of primary care visits annually.[1] Almost all children experience AP at some point, and the estimated prevalence of chronic AP in school children is 10% to 19%.[2–4] The most common causes of AP in children include functional gastrointestinal disorders (FGIDs), constipation, and gastroenteritis, but many children present to primary care physicians with AP with no immediately identifiable cause. A few small studies have examined the diagnoses that children with AP have received when presenting to primary care and emergency departments and report that 15% to 35% receive a nonspecific AP diagnosis.[5–8]

Despite the prevalence of nonspecific AP, we lack longitudinal studies that examine the clinical course of children with AP beyond the initial visit, the evaluations these children receive, or their outcomes. In most children, AP is benign and self-limited.[9] However, some children develop chronic or recurrent pain. Chronic AP can cause significant impairment in children and increase the risk of functional disorders in adulthood if not adequately addressed.[10,11] A growing body of literature has examined the care of children with functional AP, but data are based primarily on studies in subspecialty settings.[12,13] Furthermore, clinicians have been criticized for the overly aggressive diagnostic evaluation and subspecialty referral of children with AP.[14] Testing and subspecialty referrals for AP have also been reported as inconsistent[15] and without an evidence base.[16,17]

The Rome III criteria were developed to help classify functional AP disorders and better guide management. Specifically, there are 5 pediatric AP-related FGIDs, including childhood functional AP, which is pain for at least 2 months without evidence of an inflammatory, anatomic, metabolic,

or neoplastic process.[18,19] Additionally, guidelines from the American Academy of Pediatrics (AAP) and the North American Society of Gastroenterology, Hepatology and Nutrition (NASPGHAN) support a conservative approach to children with chronic AP.[20,21] Despite this, FGIDs are underdiagnosed, and it is unclear how frequently primary care physicians are using the Rome III criteria to characterize functional AP disorders. Multiple small studies of psychological treatments for FGIDs have shown efficacy in reducing pain and limiting functional impairment,[22–25] but these treatments are used infrequently, in part because primary care physicians may not be adequately classifying functional disorders and matching children to appropriate treatments.

An improved understanding of the clinical course of children with AP is necessary in order to accurately diagnose children with FGIDs, avoid unnecessary testing, and match children with appropriate treatment. To help achieve this goal, we described the population of children presenting with AP in primary care, their management, and their clinical course.

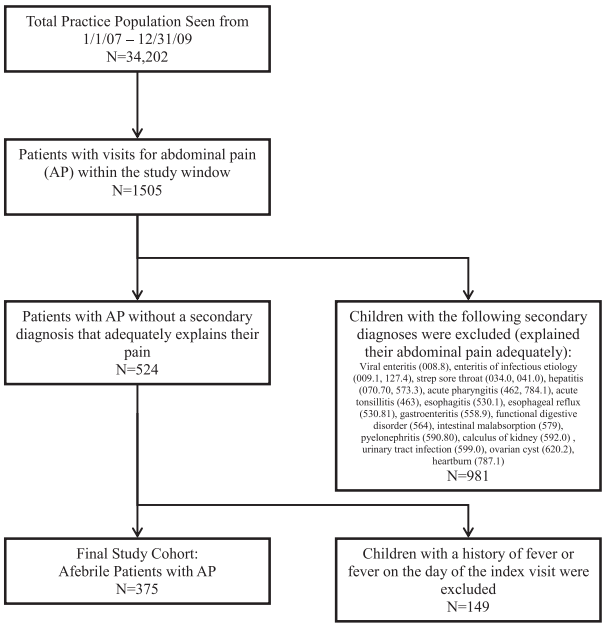

Figure. *Narrowing of practice population to study cohort.*

METHODS

STUDY POPULATION AND SETTING

Eligible patients were drawn from 5 primary care practices from The Children's Hospital of Philadelphia (CHOP) Pediatric Research Consortium (PeRC), a primary care practice–based research network.[26,27] Children aged 4 to12 years at the time of study entry were identified using AP-related International Classification of Disease, 9th Revision (ICD-9), codes at an index visit between January 1, 2007, and December 31, 2009. We searched using ICD-9 codes for AP not otherwise specified and chronic AP (789.00 to 789.09). Because of our broad interest in children with AP, we also searched for children with the 5 AP-related FGID diagnoses at the index visit (functional dyspepsia, 536.8; FGID, 536.9; functional constipation, 564.09, irritable bowel syndrome, 564.1, abdominal migraine, 346.2) but found none; nor did we find any other functional digestive-related codes (564). For simplicity, and consistent with prior work,[5] we refer to this cohort of children in our study as having nonspecific AP. We focused on children ages 4 to 12 years because they are the group most commonly affected by AP.[2]

By manual chart review, we performed a 6-month look back to ensure that none of the cohort had a visit for AP in the preceding 6 months and that our data set accurately captured the index visit. To ensure that any follow-up was also captured, children included in the study cohort needed to have at least one well-child visit 6 to 24 months after the index visit (outcome visit). Well visits were chosen as the outcome visit because they include a detailed review of systems and pain assessment. In contrast, sick visits are variable in their content. Children with fever or a secondary diagnosis at the index visit that indicated a likely cause of the AP were excluded. The Figure outlines the eligible patient pool and the ICD-9 codes used to exclude patients to obtain the final study cohort.

DATA COLLECTION

Data were collected using chart review and supplemented by the automated extraction of data from electronic health records. Using a standardized abstraction form, clinical information was collected regarding children's AP and associated symptoms; physical examination, laboratory, and radiology studies and results; and primary care follow-up. Chart review included visits 6 months before the index visit, the index visit, and all subsequent care through June 30, 2012. Charts were reviewed by the research team and any ambiguous cases were resolved by consensus. Study data were collected and managed using REDCap electronic data capture tools hosted at The Children's Hospital of Philadelphia.[28]

OUTCOME VARIABLES

The 2 primary outcomes were persistent AP (defined as pain at the outcome visit) and receipt of a specific diagnosis for the AP at or before the outcome visit. We also evaluated the number of children in the cohort who went on to receive a diagnosis consistent with the Rome III criteria. The secondary outcomes were the frequency of laboratory and radiology evaluations at the index visit and their results (classified as normal, incidental finding, abnormal but no impact on clinical management, abnormal and contributed to diagnosis). We considered patients diagnosed with constipation via radiograph if the clinician's documentation referenced the radiograph as diagnostic.

INDEPENDENT VARIABLES

Independent variables considered included patient age, race (black, white, other), insurance type (Medicaid, non-Medicaid), gender, and duration of pain at the index