Clinical utility of diagnostic tests for constipation in adults: a systematic review

Rao S S, Ozturk R, Laine L

CRD summary
This review assessed the usefulness of diagnostic tests in the work-up of patients with constipation. The authors concluded that there is a lack of evidence supporting blood tests, radiography and endoscopy, and that further research is required. The limited search strategy and poor reporting of review methodology mean that the completeness and accuracy of the data presented are uncertain.

Authors' objectives
To assess the utility of commonly used diagnostic tests in differentiating between patients with functional constipation, its subtypes, and organic disorders.

Searching
MEDLINE was searched from inception to 2004 for articles published in full in the English language; the search terms were reported. The bibliographies of retrieved articles were checked for additional articles.

Study selection

Study designs of evaluations included in the review
Studies that scored 3 points of more on quality criteria were eligible for inclusion. No other inclusion criteria for the study design were specified.

Specific interventions included in the review
Studies assessing the following diagnostic tests were eligible for inclusion: haematology and biochemical profiles; plain abdominal X-ray; barium enema; flexible sigmoidoscopy or colonoscopy; colonic transit studies; anorectal manometry; balloon expulsion test; defecography.

Reference standard test against which the new test was compared
No inclusion criteria relating to the reference standard of diagnosis were reported. None of the included studies used a reference test.

Participants included in the review
Studies of adults with constipation or matched controls were eligible for inclusion. The primary studies included patients undergoing surveillance for colonic cancer, patients awaiting anorectal myomectomy who had had a barium enema, patients with a definite diagnosis on barium enema, and patients with negative tests and lack of response to treatment. Details of the patients in many of the included studies were not reported.

Outcomes assessed in the review
Studies that reported the number of patients with organic disease or the number with an abnormal physiologic test were eligible for inclusion.

How were decisions on the relevance of primary studies made?
Two authors independently reviewed potentially relevant articles for inclusion.

Assessment of study quality
The included studies were scored for methodological quality using the following criteria: appropriateness of population (clinical cohort or case-control); verification (comparison with a reference standard or not); blinding of test interpretation; patient selection (consecutive or not); data collection (prospective or not); adequacy of reporting of test, reference standard and population details. The maximum possible score from these 8 items was not explicitly stated.
The authors did not state how many reviewers performed the quality assessment.

**Data extraction**
Two reviewers independently extracted the data and any differences were resolved through consensus. Data were extracted on the diagnostic test performed and the percentages with normal and abnormal tests.

**Methods of synthesis**
How were the studies combined?
The studies were grouped by test type and combined in both a narrative and tables.

How were differences between studies investigated?
Differences between the studies were discussed in the text.

**Results of the review**
A total of 29 studies were included in the review. No studies addressed the utility of biochemical or haematological tests, or plain abdominal X-ray. One study (563 patients) assessed colonoscopy and two (96 patients and 26 controls) assessed barium enema. The remaining studies assessed one or more methods of physiologic testing: 10 studies (805 patients and 21 controls) assessed colonic transit testing, 9 studies (665 patients and 61 controls) assessed anorectal manometry, 9 studies (608 patients and 67 controls) assessed the balloon expulsion test, and 10 studies (760 patients and 56 controls) assessed defecography.

No study assessed the routine use of blood tests or abdominal X-ray. No study reported the use of a reference standard to confirm diagnosis.

Flexible sigmoidoscopy or colonoscopy (1 study; quality score of 3). One retrospective study of colonoscopy for cancer surveillance found colonic cancer in 1.4% of patients and polyps in 14.6%.

Barium enema (2 studies; quality scores of 3 and 4).

In one study no patients with constipation were diagnosed with organic disease, while in the other, constipation was just as likely to be present in patients with a normal test as in those where the test was abnormal (odds ratio 0.94, 95% confidence interval: 0.61, 1.44).

Physiological testing.
Studies of physiological testing showed differences in population, methodology and interpretation. Few studies assessed tests blindly and few were prospective series of consecutive patients.

Colonic transit time (10 studies, quality scores of 3 to 5): studies of colonic transit testing showed a prevalence of 38 to 80% for slow transit constipation.

Anorectal manometry (9 studies; quality scores of 4 or 5): studies of anorectal manometry showed a prevalence of 20 to 75% dyssynergia.

Balloon expulsion test (9 studies; quality scores of 3 to 5): studies of balloon expulsion testing showed impaired expulsion in 23 to 67% of patients.

Defecography (10 studies; quality scores of 3 to 5): studies of defecography reported abnormalities in 25 to 90% of patients and dyssynergia in 13 to 37%.

**Authors' conclusions**
There is a lack of evidence on the utility of blood tests, radiography and endoscopy in the routine investigation of
patients with constipation. Colonic transit, anorectal manometry and balloon expulsion tests reveal physiological abnormalities in many patients with constipation, but no single test adequately defines pathophysiology. Large, well-designed, prospective studies are required to determine the utility of all tests.

CRD commentary
This review addressed a broad question. The inclusion criteria applied were broad but appropriate to the question and the available literature; population, index test and outcome measures were defined. The search strategy used was limited to English language studies listed in a single bibliographic database, and this might have resulted in the omission of relevant data from the review. No assessment of publication bias or attempt to identify unpublished studies was reported. The methodological quality of the included studies was assessed using appropriate criteria, and the results of the assessment were presented and discussed in the text. The description of the review methodology was limited, so the potential for introducing error and bias during the review process is uncertain. The authors' use of a narrative summary was appropriate given the considerable differences between the included studies, and their conclusion that further research is required follows from the data presented.

Implications of the review for practice and research
Practice: The authors stated that there is insufficient evidence to support the routine use of haematological or biochemical tests, X-rays or endoscopy in the investigation of constipated patients without alarm features. They further stated that there is evidence to support the use of physiological tests to define pathophysiologic subtypes and aid treatment, but that no single test can provide a clear pathophysiologic basis for constipation.

Research: The authors stated that although the lack of a reference standard complicates research in this area, large, well-designed, prospective studies with adequate follow-up and using more uniform test methodology are required to produce reliable estimates of diagnostic yield.

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Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract
contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.