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Can the clinical history distinguish between organic and functional dyspepsia? (Structured abstract)

[Abstracts of quality assessed systematic reviews]

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Abstract and Commentary for: Moayyedi P, Talley N J, Fennerty M B, Vakil N. Can the clinical history distinguish between organic and functional dyspepsia? JAMA. 2006;295(13):1566-1576. [Ovid Full Text](#) | [Bibliographic Links](#)

CRD summary

This review evaluated the accuracy of primary care physicians, gastroenterologists, or computer models in diagnosing organic dyspepsia. The authors concluded that neither clinical impression nor computer models adequately distinguished between organic and functional disease in patients referred for endoscopic evaluation of dyspepsia. This was a reasonably well-conducted review and, despite some methodological limitations, the authors' conclusions are likely to be reliable.

Record status

This record is a structured abstract written by CRD reviewers. The original has met a set of quality criteria. Since September 1996 abstracts have been sent to authors for comment. Additional factual information is incorporated into the record. Noted as (A:....).

Author's objective

The authors' objective was to evaluate the accuracy of primary care physicians, gastroenterologists, or computer models in making a diagnosis of organic dyspepsia.

Type of intervention

Category

Specific interventions included in the review

Studies of symptom questionnaires, computer-aided diagnoses or clinical assessment were included in the review.

Reference standard against which the new test was compared

Studies of endoscopy were included in the review. A small number of patients (less than 10%) could have the diagnosis made by barium meal rather than endoscopy. A record of symptoms or

clinical opinion was to have been made before endoscopy.

Participants included in the review

Studies of adult patients (older than 16 years) with upper gastrointestinal symptoms were included in the review. The patients could have been selected by age or by primary care physician's referral, but not any other criteria.

Outcomes assessed in the review

No inclusion criteria were stated with regard to the outcomes. The outcome measures used in the review were the sensitivity, specificity, positive and negative likelihoods ratios (LRs), and the diagnostic odds ratio (DOR).

Study designs of evaluations included in the review

Cross-sectional studies that evaluated a minimum of 100 patients were included in the review. Symptoms and diagnosis were to have been recorded prospectively. Case-control studies were excluded.

What sources were searched to identify primary studies?

MEDLINE (1966 to 2003), EMBASE (1988 to 2003), CINAHL (1982 to 2003) and the Cochrane Controlled Trials Register (December 2003) were searched; the search terms were reported. In addition, the bibliographies of identified studies were checked for further relevant articles.

Criteria on which the validity (or quality) of studies was assessed

The studies were assessed according to whether the assessors were blinded, cases were consecutive, and whether sample size was adequate. Based on these criteria, the studies were assigned a level from 1 (highest) to 5.

How were the inclusion criteria applied?

Two reviewers independently assessed articles for inclusion in the review. Any disagreements were resolved by consensus.

How were judgements of validity (or quality) made?

Although not explicitly stated, it appeared that quality assessment was carried out by one reviewer and checked by a second.

How were the data extracted from primary studies?

The data were extracted onto predefined forms and checked by a second reviewer. The sensitivity, specificity, positive and negative LR, and DOR were calculated for each study.

Number of studies included

Eighteen diagnostic accuracy studies, with a total of 13,751 participants, were included in the review.

How were the studies combined?

The results were grouped by medical condition, and positive and negative LRs and DORs were pooled using the DerSimonian and Laird method. The results for different methods of diagnosis (established by a primary care physician, specialist, or computer model) were analysed separately, and were combined when all studies gave similar conclusions.

How were the differences between studies investigated?

For the majority of the results, the authors did not state how differences between the studies were assessed. However, the results of statistical tests of heterogeneity were reported for each of the pooled analyses. The chi-squared test was used to assess heterogeneity in the pooling of DORs.

Results of the review

There was 94% agreement between reviewers for selection of studies (kappa statistic 0.87, 95% confidence interval, CI: 0.71, 0.94). Eleven studies were rated as level 1 evidence, five were rated as level 2 and two were rated as level 3.

Diagnosis of organic versus functional dyspepsia.

Based on the results of 4 studies, the pooled positive LR for primary care physicians was 1.3 (95% CI: 1.2, 1.4; heterogeneity, $P=0.39$) and the pooled negative LR was 0.66 (95% CI: 0.55, 0.79; heterogeneity, $P=0.23$). Based on the results of 5 studies, the pooled positive LR for specialists was 1.9 (95% CI: 1.5, 2.5; heterogeneity, $P<0.001$) and the negative LR was 0.40 (95% CI: 0.24, 0.66; heterogeneity, $P=<0.001$). Based on the results of 9 studies, the pooled positive LR for computer models was 1.6 (95% CI: 1.4, 1.9; heterogeneity, $P=<0.001$) and the negative LR was 0.45 (95% CI: 0.37, 0.55; heterogeneity, $P=<0.001$). When the primary care physician, specialist or computer assessed the patient as having organic dyspepsia, the pooled LR was 1.6 (95% CI: 1.4, 1.8). When the primary care physician, specialist or computer assessed the patient as having functional dyspepsia, the pooled LR was 0.46 (95% CI: 0.38, 0.55). The pooled DOR was 4.0 (95% CI: 2.8, 5.7; heterogeneity, chi-squared 190, $P<0.001$).

Diagnosis of peptic ulcer disease.

Based on 3 studies, the pooled positive LR for primary care physicians was 2.2 (95% CI: 1.8, 2.5; heterogeneity, $P=0.95$) and the negative LR was 0.63 (95% CI: 0.51, 0.79; heterogeneity, $P=0.10$). Based on 4 studies, the pooled positive LR for specialists was 2.9 (95% CI: 2.1, 4.0; heterogeneity, $P<0.001$) and the negative LR was 0.48 (95% CI: 0.43, 0.52; heterogeneity, $P=0.72$). Based on the results of 6 studies, the pooled positive LR for computer models was 1.9 (95% CI: 1.6, 2.3; heterogeneity, $P<0.001$) and the negative LR was 0.34 (95% CI: 0.25, 0.47; heterogeneity, $P<0.001$). When the results of all three methods of diagnosis were combined, the pooled positive LR was 2.2 (95% CI: 1.9, 2.6) and the negative LR was 0.45 (95% CI: 0.38, 0.53). The pooled DOR was 5.2 (95% CI: 0.38, 7.2; heterogeneity, chi-squared 56, $P<0.001$).

Diagnosis of oesophagitis.

Based on 4 studies, the pooled positive LR for primary care physicians was 2.3 (95% CI: 1.6,

3.2; heterogeneity, $P < 0.001$) and the negative LR was 0.58 (95% CI: 0.43, 0.79). Based on 4 studies, the pooled positive LR for gastroenterologists was 4.5 (95% CI: 2.3, 8.9) and the negative LR was 0.48, (95% CI, 0.35, 0.65). Based on 7 studies, the pooled positive LR for computer models was 1.7 (95% CI: 1.5, 2.1) and the negative LR was 0.48 (95% CI: 0.36, 0.63). When the data for all three methods of diagnosis were combined, the pooled positive LR was 2.4 (95% CI: 1.9, 3.0) and the negative LR was 0.50 (95% CI: 0.42, 0.60). The pooled DOR for clinical opinion alone was 6.7 (95% CI: 3.7, 12.0; heterogeneity, chi-squared 76, $P < 0.001$).

Was any cost information reported?

No.

Author's conclusions

Diagnosis based on clinical impression or computer models incorporating demographics, risk factors, history items and symptoms cannot adequately distinguish between organic and functional disease in patients referred for endoscopic evaluation of dyspepsia.

CRD commentary

The study objective was set out clearly at the beginning of the review, and the inclusion criteria were clearly defined in terms of the participants, index test, reference standard test and study design. Appropriate sources were searched for studies, although it was unclear whether any language restrictions were applied. The study selection and data extraction processes were carried out by two reviewers, which helps to reduce the risk of bias. The validity of the included studies was assessed using appropriate criteria. Adequate study details were given, and the statistical pooling of studies that used a similar method of diagnosis seemed appropriate. However, statistical heterogeneity was detected and was not investigated; the pooling of studies that used different methods of diagnosis may not have been appropriate. This was a reasonably well-conducted review and, despite these methodological limitations, the authors' conclusions are likely to be reliable.

What are the implications of the review?

Practice: The authors stated that clinical history is still important in patients presenting with dyspepsia, not only to determine the location of the epigastric pain or discomfort, but also to establish that history does not suggest other disorders. In addition, the reason for consultation should be considered so that any concerns the patient may have about possible ischaemic heart disease or cancer can be dealt with.

Research: The authors stated that future research should investigate whether adding response to interventions, such as adding acid suppression to the clinical history, improves diagnostic accuracy across a broad range of patients.

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