Meta-analysis: the diagnostic value of alarm symptoms for upper gastrointestinal malignancy

CRD summary
This review assessed the diagnostic value of alarm symptoms for upper gastrointestinal malignancy. The authors concluded that the diagnostic value was not optimal as approximately one in four patients had no alarm symptoms at the time of diagnosis. This conclusion may not be reliable as the review pooled studies, the methodological quality of which had not been assessed, using inappropriate pooling methods.

Authors' objectives
To assess the diagnostic value of alarm symptoms for upper gastrointestinal (GI) malignancy.

Searching
MEDLINE was searched in August 2003; some search terms were reported. Further studies were located by reviewing the reference lists of selected studies.

Study selection
Study designs of evaluations included in the review
No inclusion criteria for study design were specified. Cohort studies and case studies were included in the review.

Specific interventions included in the review
Studies that measured alarm symptoms for upper GI malignancy were eligible for inclusion.

Reference standard test against which the new test was compared
Studies using endoscopy to confirm the absence or presence of upper GI malignancy were eligible for inclusion.

Participants included in the review
There were no inclusion criteria for the participants. In most of the included cohort studies the participants had been referred for endoscopy by their general practitioner, but the reasons for referral and patient selection criteria varied.

Outcomes assessed in the review
To be included, the studies had to report, or allow calculation of, the number of patients and prevalence of alarm symptoms in patients with and without upper GI malignancy.

How were decisions on the relevance of primary studies made?
Two reviewers assessed abstracts for inclusion. A third reviewer was consulted in cases of disagreement.

Assessment of study quality
The authors did not state that they assessed validity.

Data extraction
The authors did not state how the data were extracted for the review, or how many reviewers performed the data extraction.

Methods of synthesis
How were the studies combined?
Cohort studies and case studies were combined separately. The authors stated that they used an approximation to the inverse variance approach to calculate pooled estimates of sensitivity, along with specificity, positive predictive value and negative predictive value for the cohort studies. However, they appeared to have calculated these measures by pooling participants across the studies. Analyses were performed for individual alarm symptoms and for 'any alarm symptom'.

How were differences between studies investigated?
No method for investigating differences between the studies was reported. Differences between studies within analysis groups were not discussed.

Results of the review
Nine cohort studies (16,161 participants) and 17 case studies (1,552 participants) were included in the review.

Case studies.
The pooled sensitivities for the individual alarm symptoms were: dysphagia, 40% (95% confidence interval, CI: 36, 43; 5 studies), anaemia or bleeding, 27% (95% CI: 24, 31; 4 studies), nausea or vomiting, 21% (95% CI: 18, 25; 11 studies); weight loss, 41% (95% CI: 37, 44; 15 studies). For 'any alarm symptom', the sensitivity was 94% (95% CI: 92, 96; 11 studies).

Cohort studies.
The mean prevalence of upper GI malignancy was 2.8%. Pooled sensitivities and specificities for the individual alarm symptoms were: dysphagia, sensitivity 25% (95% CI: 17, 23; 3 studies) and specificity 94% (95% CI: 93, 94); anaemia or bleeding, sensitivity 17% (95% CI: 12, 23; 4 studies) and specificity 90% (95% CI: 89, 90); nausea or vomiting, sensitivity 27% (95% CI: 18, 35; 2 studies) and specificity 78% (95% CI: 76, 80); weight loss, sensitivity 24% (95% CI: 18, 30; 5 studies) and specificity 93% (95% CI: 92, 93). For 'any alarm symptom', the pooled sensitivity was 75% (95% CI: 67, 82; 5 studies) and the pooled specificity was 79% (95% CI: 78, 80).

Authors' conclusions
The diagnostic value of alarm symptoms was not optimal. Other factors should be taken into account. The risk of upper GI malignancy in any individual without alarm symptoms was very low, but approximately one in four patients with upper GI cancer had no alarm symptoms at the time of diagnosis.

CRD commentary
A review question was clearly stated, but the inclusion criteria were only loosely defined. The search was limited to one database, thus increasing the likelihood that relevant studies were missed. It was unclear whether there were any language restrictions and no attempts were made to minimise publication bias. Details of the individual studies were presented, but study quality was not assessed. In combining individual study results, the cohort studies and case studies were appropriately pooled separately. However, unsuitable methods appear to have been used to estimate the pooled measures, and heterogeneity was not investigated. The authors' conclusions follow broadly from the results presented. However, the validity of the included studies was unclear and the methods used to pool them appear inappropriate. Therefore, the results and conclusions of this review may not be reliable.

Implications of the review for practice and research
Practice: The authors stated that when estimating a patient's risk of having upper GI cancer, factors such as age and family history should be considered in addition to alarm symptoms.

Research: The authors stated that research is needed to investigate the value of a diagnostic tool incorporating factors such as age, gender and smoking as well as alarm symptoms.
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