

MARK's Quadrant scoring system: a symptom-based targeted screening tool for gastric cancer

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Abstract

Background Gastric cancer is notably one of the leading causes of cancer-related death in the world. In Malaysia, these patients present in the advanced stage, thus narrowing the treatment options and making the surgery nearly impossible for successful curative resection. Failure to identify high-risk patients and delay in diagnostic endoscope procedure contributed to the delay in diagnosis. The aim of the study was to develop and validate a scoring system (MARK's Quadrant) which can identify symptomatic patients who are at risk for gastric cancer.

Method A 3-phase approach was undertaken: Phase 1: development of the weighted scoring system; Phase 2: estimating positive predicting value of MARK's Quadrant; and Phase 3: a) testing the validity of MARK's Quadrant in an open-access endoscope system; and b) comparing its usefulness compared to conventional referral system.

Results In phases 1 and 2, MARK's Quadrant with weighted symptoms was developed. The sensitivity of MARK's Quadrant is 88% and the specificity is 45.5% to detect cancerous and precancerous lesions of gastric. This was confirmed by the prospective data from phase 3 of this study where the diagnostic yield of MARK's Quadrant to detect any pathological lesion was 95.2%. This score has a high accuracy efficiency of 75%, hence comparing to routine referral system it has an odds ratio (95%CI) of 10.98 (4.63-26.00), 6.71 (4.46-10.09) and 0.95 (0.06-0.15) ($P < 0.001$ respectively) for cancer, precancerous lesion and benign lesion diagnosis respectively.

Conclusion MARK's Quadrant is a useful tool to detect early gastric cancer among symptomatic patients in a low incidence region.

Keywords Open-access endoscope, targeted screening, early gastric cancer