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The Potential Use of Faecal Dimeric M2 Pyruvate Kinase (Tumour M2-PK) in Screening for Colorectal Cancer

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Background. M2-PK is commonly over expressed in proliferating cells and its dimeric form is mainly predominant in tumour cells. It may therefore be a suitable biomarker for colorectal cancer screening. We conducted a pilot study to see if dimeric M2-PK in faeces enabled us to discriminate between patients with and without colorectal cancer or polyps.

Aim: To assess the sensitivity and specificity of faecal dimeric M2-PK (Tumour M2-PK) in patients with colorectal cancer or polyps.

Methods: A prospective study of 45 patients; 28 males and 17 females with a median age of 65 years (range 24-86) undergoing colonoscopy. Stool samples were tested by readily available sandwich ELISA with monoclonal antibodies against dimeric M2-PK.

Results: Thirteen patients underwent normal colonoscopy with a median faecal Tumour M2-PK level of 1.85 Uml^{-1} (range: 0.9-3.41). Eight patients had one or more polyps. Median faecal Tumour M2-PK level in five patients with > 1cm polyps was 5.32 Uml^{-1} (range 0.9-29.46) and 1.09 Uml^{-1} (range: 0.9-1.2) in three patients with <1cm polyps. Twenty-four patients with adenocarcinomas (left colon 20, right colon 4) had elevated median faecal Tumour M2-PK level of 11.43 Uml^{-1} (range: 1.71-111.75). At the cut-off level (median +2SD for normal population) of 3.43 Uml^{-1} the sensitivity of Tumour M2-PK was as follows: colorectal cancer 87.5%, >1cm polyps 60%, <1cm polyps 0%. The calculated specificity was 100%.

Conclusion: Faecal Tumour M2-PK assay has a high sensitivity and specificity for detecting colorectal cancer and large (>1cm) colorectal polyps. These results suggest that faecal Tumour M2-PK is a new promising, non-invasive screening tool. A larger study is now required.

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