

New high-definition narrow band imaging versus conventional high-definition white light colonoscopy for detection of colorectal adenomas: a randomised controlled trial with tandem colonoscopy

SH Liu, YK But, YF Lam, SJ Hsu, WK Seto, FN Hung, WK Leung
Department of Medicine, The University of Hong Kong, Queen Mary Hospital, Hong Kong

Introduction: Adenoma detection is important in colonoscopy as polypectomy has been shown to reduce the subsequent incidence and mortality of colorectal cancer. Narrow band imaging (NBI), an image-enhanced imaging system of the endoscopy, is developed to improve the diagnostic performance of the endoscopy. We tested whether the new generation of NBI colonoscopy would improve detection of colorectal adenoma when compared with high-definition white light (HD-WL) in a randomised tandem colonoscopy study.

Methods: Patients were recruited from those undergoing scheduled colonoscopy for symptoms, screening, or surveillance. Colonoscopists involved were all experienced operators. Patients were randomised to the new NBI or HD-WL colonoscopy. Tandem colonoscopy was immediately performed in all patients by using the same assigned colonoscope. NBI was used on both withdrawals in the new NBI group and standard WL examination was used in the HD-WL group. The primary endpoint was adenoma detection rate, which was defined as the proportion of patients with at least one adenoma detected on first pass examination. Lesions detected on second-pass examination were considered to be missed lesions.

Results: A total of 360 patients were randomised to receive the new NBI or HD-WL. Both the adenoma and polyp detection rates were significantly higher in the NBI group than in the HD-WL group (adenoma: 48.3% vs 34.4%, $P = 0.01$; polyps: 61.1% vs 48.3%, $P = 0.02$). The mean number of polyps detected per patient tended to be higher in the NBI group (1.49 vs 1.13, $P = 0.07$). There was no significant difference in the adenoma miss rates between the two groups (21.8% vs 21.2%). Eleven (6.5%) patients in the new NBI group and 16 (9.7%) patients in the HD-WL group were found to be adenoma on tandem colonoscopy only ($P = 0.32$). Multivariate analysis found that the use of NBI (odds ratio [OR] = 2.09; 95% CI, 1.32-3.30), increasing age (OR = 1.05; 95% CI, 1.03-1.07), and male patients (OR = 3.03; 95% CI, 1.92-4.78) were associated with adenoma detection.

Conclusion: Our results suggested that the new NBI was superior to the conventional HD-WL in detecting colorectal adenoma.

Effects of cigarette smoke on 5-hydroxytryptamine metabolism in human bronchial epithelial cells

JCW Mak^{1,2,3}, WKW Lau¹, MSM Ip^{1,3}

¹ Department of Medicine

² Department of Pharmacology and Pharmacy

³ Research Centre of Heart, Brain, Hormone and Healthy Aging
The University of Hong Kong, Hong Kong

Introduction: Serotonin (5-hydroxytryptamine, 5-HT) plays an important role in pulmonary functions. It is synthesised from tryptophan by aromatic 1-amino acid decarboxylase (AADC) and released at the sites, which binds to 5-HT receptors at the postsynaptic ends. Excess or turnover 5-HT will be recycled back into cells via 5-HT reuptake transporter (SERT), stored or subsequently metabolised by monoamine oxidase A (MAO-A) inside the cells. With the influence of smoking on serotonergic neurons, we hypothesised that there may be a potential 5-HT analogue in cigarette smoke. We aimed to study the effect of 5-HT on interleukin (IL)-8 release and the effects of cigarette smoke on the metabolism of 5-HT in human bronchial epithelial cells.

Methods: Serotonin in aqueous phase cigarette smoke solution was firstly determined by HPLC (Waters) with fluorometric detection and further confirmed by The ESI-MS and MS/MS chromatography. Cigarette smoke medium (CSM) was generated by bubbling smoke from two cigarettes into 20 mL serum-free medium, which was regarded as 100%. The human bronchial epithelial cell line (BEAS-2B) was cultured to 80% confluence in complete keratinocyte-SFM before treatment with either 5-HT or 2% CSM. Release of a pro-inflammatory marker, IL-8 was determined by ELISA. MAO-A and MAO-B activity were measured by MAO Glo assay kit (Promega, WA, US).

Results: A 5-HT analogue in aqueous phase cigarette smoke was discovered using LC-MS/MS approach. In support, exposure to 5-HT caused elevation of IL-8 at both mRNA and protein levels. Reduced monamine oxidase activity was observed after treatment with CSM, indicating the presence of 5-HT.

Conclusion: Our data suggest that accumulation of 5-HT in bronchial epithelia may occur in smokers, resulting in chronic inflammation in patients with chronic obstructive pulmonary disease.

Acknowledgement: This research was supported by Hong Kong RGC_GRF 2012/2013 (HKU773612M).