RESEARCH ARTICLE

Detection Rate of Colorectal Adenoma or Cancer in Unselected Colonoscopy Patients: Indonesian Experience in a Private Hospital

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Abstract

    <u>Background</u>: **Colorectal cancer is currently the third most common cancer in Indonesia, yet colonoscopy - the most accepted mode of screening to date - is not done routinely and national data are still lacking. <u>Objective</u>: To determine the detection rate of colorectal cancers and adenomas in unselected patients undergoing colonoscopy for various large bowel symptoms at the Digestive Disease and GI Oncology Centre, Medistra Hospital in Jakarta, Indonesia. <u>Materials and Methods</u>: Colonoscopy data from January 2009 to December 2012 were reviewed. New patients referred for colonoscopy were included. Data collected were patient demographic and significant colonoscopy findings such as the presence of hemorrhoids, colonic polyps, colonic diverticula, inflammation, and tumor mass. Histopathological data were obtained for specimens taken by biopsy. Associations between categorical variables were analyzed using chi-square test, while mean differences were tested using the t-test. <u>Results</u>: A total of, 1659 cases were included in this study, 889 (53.6%) of them being men. Polyps or masses were found in 495 (29.8%) patients while malignancy was confirmed in 74 (4.5%). Patients with a polyp or mass were significantly older (60.2 *vs* 50.8 years; p<0.001; t-test) and their presence was significantly associated with male gender (35.0% *vs* 23.9%; prevalent ratio [PR] 1.71; 95% confidence interval [CI] 1.38-2.12; p<0.001) and age >50 years (39.6% *vs* 16.6%; PR 3.29; 95% CI 2.59-4.12; p<0.001). Neoplastic lesions was found in 257 (16.1%), comprising 180 (11.3%) adenomas, 10 (0.6%) in situ carcinomas, and 67 (4.2%) carcinomas. <u>Conclusions</u>: Polyps or masses were found in 30% of colonoscopy patients and malignancies in 16.1%. These figures do not represent the nation-wide demographic status of colorectal cancer, but may reflect a potentially increasing major health problem with colorectal cancer in Indonesia.**

Keywords: Adenoma - colorectal cancer - colonoscopy - risk factors - screening - Indonesia

Introduction

    In Indonesia, colorectal cancer has in the last few decades become the third most common cancer in the country after lung and breast cancer, with a mortality of 18.958 patients (Globocan 2012), mostly thought to be influenced by several risk factors i.e., dietary changes and tobacco smoking. The high incidence, on the rise as it is now, is compounded by a lack of screening and awareness (Sudoyo et al., 2010).

    As most colorectal cancers are believed to arise from precancerous polyps or adenomas (Lengauer et al., 1998), basically an epithelial neoplasm with malignant potential, taking 5-10 years for the adenoma to progress into invasive cancer, the removal thereof by endoscopic polypectomy

is supposed to eliminate or lower occurrence of colorectal cancer (Winawer et al., 1993). Based on the Vienna classification, high-grade adenomas category 4 or 5.1 is indicated for curable resection (Schlemper et al., 2000), thus colonoscopy is now an accepted method for colorectal cancer screening worldwide (Whitlock et al., 2008).

    Many polyps are asymptomatic and are found incidentally during colonoscopy. If polyps are found at endoscopy, all of them should be removed and evaluated histologically (Cannom and Melton, 2014). about three-quarters of polyps arises in the rectum and sigmoid colon. They often occur as a single lesion, but more than 20% of patients have multiple polyps, often tubule-villous. Additionally, patients with proven malignancy may also have coexisting benign adenomas (synchronous polyps)

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and are likely to become malignant in the future if not removed. Colonic adenomas are found in up to 40% of persons by 60 years of age (Cappell, 2008). although not all colonic polyps are may progress to cancer; it is currently not possible to reliably identify those that will progress. Screening with colonoscopy for colon cancer or colonic polyps is therefore highly recommended in people aged more than 50 years old (Winawer et al., 2003). It is highly sensitive at detecting large polyps (more than 1 cm) (Rex et al., 1997).

Colorectal cancer screening is not routinely done in Indonesia and there is limited data on the prevalence of neoplastic polyps and its risk factors. Thus, this study-implemented in a private hospital with a digestive and oncology unit-is aimed at evaluating the presence of neoplastic polyps and the risk factors among non-selected patients undergoing colonoscopy for various large bowel symptoms.

Materials and Methods

Study design and subjects

This was a cross-sectional study done at the Digestive Disease and GI Oncology Centre, Medistra Hospital, a private hospital in Jakarta, involving unselected patients undergoing outpatient colonoscopy for various reasons between January 2009 and December 2012. Data was collected on the patients' demography and colonoscopy findings including the presence of hemorrhoids, polyps, diverticula, inflammation, or tumor mass.

Colonoscopy procedure

Conventional, white light-based colonoscopy was performed on all patients using adult high-definition a video fiber optic colonoscopy with an auxiliary water jet (CFQ160AL, Olympus, USA). Polyps were removed by snare-loop polypectomy at the bottom of the stalk or by biopsy forceps. Flat or sessile polyps were removed by performing a submucosal lifting technique with the injection of saline solution into the submucosal layer. Polypectomy was not performed in patients with known contraindications such as anticoagulant therapy and known bleeding disorders.

Diagnosis of polyps

Tissue specimens were taken either by biopsies of a suspicious lesion or by polypectomies. Histopathology evaluation was done by a gastrointestinal pathologist on each specimen and was classified according to the World Health Organization Classification. High-grade dysplasia or in situ carcinoma was defined by the considerable loss of nuclear polarity with irregular glandular architecture with no involvement beyond the muscularis mucosae. Submucosa invasive early colorectal cancer was defined as malignant lesions that invade the submucosa layer, while cancer was defined as invasion of malignant cells beyond the muscularis mucosae.

Statistical analysis

Demographic and clinical findings were presented descriptively. Prevalence of neoplastic polyps or colorectal cancer was defined based on histopathological assessment. Association between categorical variables were analyzed using the Chi-square test, while mean differences were tested using the t-test. A p value of less than 0.05 was considered statistically significant. Statistical analyses were done by using the SPSS software version 17.0 (SPSS Inc., Chicago, Illinois, USA).

Results

There were 1659 cases retrieved from the endoscopy database; 889 (53.6%) among them were men. Polyps or mass were found in 495 (29.8%) patients (Table 1). Lesion was mostly found in the colon (55.8%), followed by rectum (32.7%), in both colon and rectum (10.7%), and terminal ileum or anus (0.8%). Patients with polyp or mass were significantly older (60.2 *vs* 50.8 years; p<0.001; t-test). The presence of polyp or mass was significantly associated with male sex (35.0% *vs* 23.9%; the prevalent ratio [PR] being 1.71; 95% with a confidence interval [CI] of 1.38-2.12; p<0.001) and age >50 years (39.6% *vs* 16.6%; PR 3.29; 95% CI 2.59-4.12; p<0.001).

Histopathology data were not available in 59 patients and they were excluded from the analysis. Therefore, the total population for final diagnosis was 1600 patients. Overall, neoplastic lesions were found in 257 (16.1%), which consisted of 180 (11.3%) adenomas, 10 (0.6%) in situ carcinomas, and 67 (4.2%) carcinomas (Table 2).

Table 1. Characteristics of the Study Subjects (N=1659)

Characteristic	Mean±SD	N	%
Male		889	53.6
Age (years)	53.6±15.8		
Presence of polyps or mass		495	29.8
Presence of hemorrhoids		1079	65
Presence of inflammation (colitis/ ileitis)		524	31.6
Presence of diverticle		227	13.7
History of colorectal cancer		35	2.1

Table 2. Final Diagnosis of Colonoscopic Findings (N=1600)*

Diagnosis	n	%
Inflammatory polyp	141	8.8
Tubular adenoma	127	7.9
Villous adenoma	7	0.4
Tubulovillous adenoma	26	1.6
Flat adenoma	1	0.1
Serrated adenoma	19	1.2
Hyperplastic polyp	23	1.4
Juvenile polyp	3	0.2
In situ carcinoma	10	0.6
Adenocarcinoma	62	3.9
Mucinous adenocarcinoma	2	0.1
Signet ring cell carcinoma	1	0.1
Neuroendocrine carcinoma	2	0.1
Hemorrhoid	478	29.9
Colitis or ileitis	463	28.9
Diverticulosis	21	1.3
Normal colon	138	8.6
Others	76	4.8
Total	1600	99.9

*The total percentage was not 100% due to rounding of decimal numbers

Discussion

Colonoscopy, despite its high sensitivity for colorectal cancer screening, is not done routinely in Indonesia, in part because of its relatively prohibitive cost-but more often due to the unavailability of fiber optic endoscopic facilities and trained personnel. The endoscopy unit is usually found only in big referral or provincial hospitals, which is why screening colonoscopy is not yet a general recommendation in the country. Germany was the first country to offer colonoscopy as a screening tool of colorectal cancer to all citizens aged 55 years of age and older (Pox et al., 2012). However, many countries in the world neither recommend nor will their governments pay for screening colonoscopy.

There has not been a study on compliance nor knowledge regarding colorectal cancer in Indonesia, but, in analogy to a study in Malaysia (Hilmi et al., 2010) on a population with a structure and culture much like that in Indonesia, the authors surmised that similarities would have been found-that knowledge and awareness regarding this disease are low.

In our series, we found colorectal neoplasms in 16.1% of those undergoing colonoscopy, a striking figure unexpected by many, for the population of a developing country usually associated with low colorectal cancer risk, reflecting a change in, as suspected, a change in lifestyle. This rate is still somewhat lower than a study performed among 1819 symptomatic and asymptomatic patients undergoing elective colonoscopy, which identified 764 (42%) as having at least one superficial colorectal neoplasm (Soetikno et al., 2008). In that study, asymptomatic patients were defined as those who underwent average risk-screening colonoscopy for colorectal cancer as well as patients who had surveillance colonoscopy because of personal or family history of colorectal neoplasm or cancer. Symptomatic patients were those who had anemia, rectal bleeding, constipation, diarrhea, positive fecal occult blood test, weight loss, abdominal discomfort, and inflammatory bowel disease. Previously, a study among 3121 asymptomatic persons aged 50-75 years (Soetikno et al., 2014) (who were almost exclusively males), found that 391 (12.5%) of them had hyperplastic polyps; while 842 (27%) had 1 or more tubular adenoma less than 1 cm in diameter; and 329 (10.5%) had at least 1 advanced neoplastic lesion, defined as an adenoma of 10 mm or more, a villous adenoma, adenoma with high-grade dysplasia, or invasive cancer (Lieberman et al., 2003).

In this study, tubular adenoma was the most common type of adenoma followed by tubullovilous and villous adenomas (5.7%), consistent with findings reported in the literature. Serrated adenoma, previously classified as hyperplastic polyps, was found in a small proportion. It is important to note here that the aforementioned type of adenoma, with an incidence of 18% in another study, was then reclassified as serrated adenoma (Torlakovic et al., 2003) and regarded as benign lesions (Winawer et al., 1997) and not a risk for proximal neoplasia (Imperiale et al., 2000).

An interesting finding is that the majority of age of patients found to have malignancy of the large bowel in this series are in the age bracket of 55 years and older, different from that found by Sudoyo (Abdullah et al., 2012) in a study on native Indonesians based on the annual report of the Indonesian Society of Anatomic Pathology. The apparent discrepancy could be due to the fact that the latter data were delved from a compilation of pathology laboratories across the country. Almost all of the younger cases (40 years and younger) presented at stage III and IV.

What is the implication of this study? It now accepted that screening colonoscopy plays a major role in the lowering of the incidence of colorectal cancer in a population, significantly more effective than the much cheaper FOBT or fecal occult blood test. A study on a large population (Brenner and Stock, 2014) reported that screening sigmidoscopy and colonoscopy decreases mortality from colorectal cancer. In another study, Brenner (Hermann et al., 2014) concluded that the risk of developing colorectal cancer in a population was significantly reduced for up to 10 years after colonoscopy for any indication, the risk of which was found to be particularly low even for right-sided colon cancer. An important finding was that there was an inverse association between the rate of detection of adenomas and colorectal cancer, both in advanced stages and its mortality rate.

The study by Brenner was corroborated by Corley et al. (2014) stating that in 314,872 colonoscopies performed, the rate of adenoma detection was found to be in the range of 7.4 to 52.5%, and found it to be inversely associated with the risks of interval colorectal cancer, advanced-stage interval cancer, and mortality of interval cancer.

The findings of the abovementioned authors-and of this study-are particularly important for a large country such as Indonesia, in which the last official census in 2010 recorded a population of 237,424,363 people, scattered in 17,508 Islands, the majority (58%) of which live in the island of Java. Just recently embarking on a universal health coverage health for the whole population, a "small percentage" of cancer occurring in a population this size would undoubtedly have catastrophic consequences, both for the government and for the citizen on a more personal level. However, the effort would be, to say the least, a very big challenge for governments and private institutions-as previous reports (Chong et al., 2013; Adakan et al., 2014) can attest-especially when screening is done among the elderly and people from the lower economic income groups. Another challenge will be to increase awareness on screening among physicians and government official's themselves (Kilickap et al., 2012; Chen et al., 2013).

Thus the added value of the procedures, albeit costly, should be weighed against the burden of treating and caring for patients presenting at advanced stages of their disease.

Aside from the burden of screening, much has still to be done on colorectal cancer in Indonesia, among others regarding genetic polymorphism and susceptibility among the various ethnic populations of Indonesia in the model as reported in Saudi Arabi (Adakan et al., 2014) but at the end of the day, early detection is of the utmost importance and should be top priority.

There are several limitations of our study. First, this is

a cross-sectional study and was not designed to identify risk factors for neoplastic polyps or colorectal cancer. Second, this study was performed in unselected patients. About one-third of the patients had both polyps or mass and hemorrhoids, which could share similar symptoms.

In conclusion, in this study, neoplastic polyps (adenomas) are quite common at a rate of 30% in unselected patients undergoing colonoscopy for various abdominal symptoms, while colorectal cancer was detected in 4.2% in this study. Older age and male sex are associated with an increased risk for colonic polyp or mass, with tubular adenoma as the most common type. The percentages can still relate to that reported in the literature. Still, the staggering number of new colorectal cancer cases every year in a large population such as Indonesia would task any decision-making parties, both for the health system (government) and the individual clinicians caring for them.

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