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BRIEF COMMUNICATION

Impact of the endoscopic teaching process on colonic adenoma detection☆

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KEYWORDS
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Abstract
Background: There has been little reported experience in the Latin American hospital setting in relation to the impact of the endoscopic training process on colonoscopy quality.
Aims: To determine the effect that training in the technique of colonoscopy has on adenoma detection in an Argentinian teaching hospital.
Material and method: Within the time frame of July 2012 and July 2013, 3 physicians received training in colonoscopy from 4 experienced endoscopists. The colonoscopies performed by the supervised trainees were compared with those carried out by the experienced endoscopists.
Results: A total of 318 colonoscopies performed by any one of the 3 supervised trainees and 367 carried out by any one of the experienced endoscopists were included. The univariate analysis showed a non-significant difference in the detection rate of adenomas (30.4 vs 24.7%, $P = .09$). In the multivariate analysis, the detection rate of adenomas was significantly higher in the colonoscopies performed by one of the 3 trainees (odds ratio = 1.72 [1.19-2.48]).
Conclusions: The supervised involvement of endoscopic trainees has a positive effect on adenoma detection.

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PALABRAS CLAVE
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Cáncer colorrectal

Impacto del proceso de enseñanza endoscópica en la detección de adenomas colónicos

Resumen
Antecedentes: El impacto que el proceso de entrenamiento endoscópico ejerce sobre la calidad de la colonoscopia en un medio hispanoamericano es escasa.
Objetivo: Determinar el efecto del entrenamiento en la técnica de colonoscopia sobre la detección de adenomas.
Materiales y métodos: Entre julio del 2012 y julio del 2013, 3 médicos recibieron entrenamiento en colonoscopia por parte de 4 endoscopistas experimentados; Las colonoscopias realizadas por endoscopistas en entrenamiento supervisados fueron comparadas con aquellas realizadas por endoscopistas experimentados.
Resultados: Se incluyeron 318 colonoscopias realizadas por alguno de los 3 endoscopistas en entrenamiento bajo supervisión y 367 realizadas por alguno de los endoscopistas entrenados. El análisis univariado mostró una diferencia no significativa en la tasa de detección de adenomas (30.4 vs. 24.7%; p = 0.09). En el análisis multivariado, la tasa de detección de adenomas fue significativamente mayor en las colonoscopias realizadas por alguno de los 3 endoscopistas en entrenamiento (odds ratio = 1.72 [1.19-2.48]).
Conclusión: El involucramiento de endoscopistas en formación tiene un efecto positivo sobre la detección de adenomas.

Introduction

Emphasis has been placed on optimizing the capacity of colonoscopy (COL) in detecting adenomatous lesions.[1] In relation to this, previous studies have evaluated the impact that the endoscopic training process has on the quality of COL.[2–5] Initial experiences[2] found that the adenoma detection rate increased when an endoscopist in training (TR) was involved in performing the COL; the percentage of patients with 2 or more adenomas was higher in the COLs carried out with an ET supervised by an experienced endoscopist (EX). This finding has not been reproduced in later experiences.[4] Nevertheless, none of them has demonstrated a negative effect from the participation of endoscopists that are being trained. The scant evidence suggests that there is no negative effect on the adenoma detection rate (ADR).

However, no similar experience has been reproduced in a Latin American hospital center. Therefore, our aim was to determine the effect COL training has on the ADR at a university teaching hospital in Argentina.

1. Material and Methods

The endoscopic procedures carried out at our institution within the time frame of July 2012 and July 2013 were reviewed. During that period of time, 3 physicians were trained in COL by 4 EXs. During the endoscopic training, the COLs were performed by the 3 TRs supervised by the 4 EXs. The study was approved by the Ethics Committee of our institution.

The COLs performed by the supervised TRs were compared with those performed by the EXs involved in the teaching process of the endoscopic technique. The demographic variables and the COL indications were recorded along with the percentage of cecal intubation in both groups. Colon preparation quality determined by the Boston scale for establishing whether the colonic cleansing was adequate (score above 5) or inadequate (score less than or equal to 5) was also recorded. Cecum withdrawal times were also reviewed.

The quantity and morphology of the encountered polyps, in general, as well as the adenomatous polyps, in particular, were compared. The polyp detection rate (PDR) and the ADR were calculated. The number of adenomas from the right colon (defined as those found *proximal* to the splenic angle), the number of minute adenomas (less than 5 mm in diameter), and high-risk adenomas (villous adenomas and/or adenomas with high-grade dysplasia and/or larger than 1 cm) were compared.

Statistical analysis

The categorical variables were described as percentages and the numeric variables as means ± standard deviation or as medians with their 25-75% quartile interval, whichever was appropriate. The chi-square test was used to compare the categorical variables and the corresponding Student's t test or Mann-Whitney test for the numerical variables. Odds ratios (OR) were calculated with a 95% confidence interval (95% CI). First a univariate analysis and then a multivariate analysis were done, employing a logistic regression model. The statistical analysis was carried out with the Stata v11.0 (StataCorp. 2009. Stata Statistical Software: Release 11. College Station: StataCorp LP) statistical program.

Table 1 Morphologic and histologic findings in the COLs included in the study.

	COL with TR % (n/No.)	COL without TR % (n/No.)	OR (95% CI)	p
Morphologic classification[a]				
0-Ip	16.31 (24/146)	22 (31/142)	0.69 (0.37-1.28)	0.26
0-Is	74.28 (108/146)	68.64 (98/142)	1.28 (0.74-2.20)	0.40
0-IIa	9.58 (14/146)	8.45 (12/142)	1.47 (0.56-3.80)	0.42
Polyp detection rate (PDR)	45.9 (146/318)	38.7 (142/367)	1.34 (0.99-1.82)	0.056
Adenoma detection rate (ADR)	30.4 (97/318)	24.7 (91/367)	1.31 (0.93-1.83)	0.09
Right colon adenomas[b]	41.37 (132/318)	45.31 (166/367)	0.85 (0.41-1.74)	0.70
Minute adenomas[b]	57.17 (182/318)	46.87 (172/367)	1.39 (0.89-2.84)	0.07
High risk adenomas[b]	18.6 (59/318)	20.2 (74/367)	0.91 (0.42-1.90)	0.80

TR: endoscopist in training; 95% CI= 95% confidence level; OR: odds ratio; COL: colonoscopy; 0-Ip: pedunculated polypoid lesion; 0-Is: sessile polypoid lesion; 0-IIa: elevated flat non-polypoid lesion.

[a] The total number of polyps found in each group: 146 and 142, respectively.

[b] Percentages of the total number of adenomas detected in each compared group.

Results

A total of 1,661 endoscopies were performed during the study time frame, and 950 were COLs. A total of 685 COLs were included in the analysis: 318 were performed by any one of the 3 TRs under the supervision of any one of the 4 EXs; and 367 were performed exclusively by any one of the 4 EXs. There was a significant difference in the quality of the colonic cleansing, with a higher percentage of COLs with inadequate preparation in the TR group (32% vs 12.5%, p = 0.001). There was no significant difference in the withdrawal time (6 [4-8] min vs 5 [4-7] min; p = 0.3) or in the percentage of arrival at the cecum (98.31 vs 97.75%; p = 0.8). A total of 146 polyps were identified in the COLs in the TR group and 142 in those performed by the EX group alone; 66 and 64% corresponded to adenomas, respectively. Table 1 summarizes the morphologic and histologic findings of the lesions that were found. There was a nonsignificant difference in the ADR with the univariate analysis (30.4 vs 24.7%, respectively, p = 0.09); *there was a tendency toward a higher PDR by the TRs, compared with the EXs (p = 0.056)*. A multivariate analysis was done following a logistic regression model, with the ADR as the dependent variable. The following variables were included: age, sex, COL indication, colonic preparation, and withdrawal time of the colonoscope. The ADR was significantly higher in the COLs performed by the TRs (OR 1.72 [1.19-2.48]; p = 0.004), as was the PDR (OR 1.9 [1.35-2.67]; p =0.001). Likewise, the quality of the colonic cleansing (OR 1.52 [1.02-2.37]) and age (OR 1.04 [1.02-1.05]) were independent variables that were associated with a higher ADR.

Discussion

According to our experience, the supervised involvement of endoscopists in training had a positive impact on the quality of COL as a tool for detecting adenomas.

COL has certain limitations in detecting neoplastic lesions of the colon. It is estimated that an important percentage of such lesions are not detected during the endoscopic examination, constituting the main cause of interval cancer.[6]

In the last few years, emphasis has been placed on identifying the variables linked to a greater probability of detecting colonic adenomas, regarded as quality indicators in COL.[7–9]

Many undescribed circumstances in these guidelines have a potentially relevant influence on the effectiveness of adenoma detection; one of them is the performance of COL by TRs.

Evidence for this is scarce; in a first experience published in 2008, Rogart et al. showed that COLs performed by a supervised TR had a higher *ADR* (37 vs 23%; p < 0.01).[2] Peters et al. published similar results.[3] Later in the same year, Friedman et al. found no significant difference in the ADR between compared groups (25.6 vs 27.9%).[4]

Buchner et al. demonstrated that the involvement of TRs was associated with a higher detection rate of adenomas under 5 mm.[5] And finally, a meta-analysis published by Oh et al. did not show a positive effect of TRs on ADR.[10]

There were certain limitations to our study. On the one hand, it was a retrospective study. However, because it took place at a university center for endoscopic training, there was a complete register of variables such as colonic cleansing or colonoscope withdrawal time. Even though the cecal intubation percentages were similar, our database did not contain the necessary information to know whether the COLs were completed exclusively by the TRs or by the endoscopists supervising them.

In conclusion, the involvement of TRs resulted in a higher ADR. This finding has important implications in relation to the efforts made to optimize the tasks of colorectal cancer screening.

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Conflict of interest

The authors declare that there is no conflict of interest.

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