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Technical Performance of Colonoscopy - Multicenter Study in University and Non-university Centers of Romania

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Rezumat

Performanțelor tehnice ale colonoscopiei - studiu multicentric în centrele universitare și non-universitare din România

Scopul lucrării a fost de a evalua disponibilitatea națională şi calitate colonoscopiei în țara noastră.
Material şi metodă: am efectuat un studiu multicentric prospectiv pe o perioadă de 6 luni (01.07-31.12.2009), în care 76 de centre au fost invitate să răspundă la un chestionar cu privire la colonoscopie, 39 de centre fiind de acord să participle. Am evaluat: numărul de colonoscopii, numărul de colonoscopii totale şi cauzele de colonoscopii incomplete.
Rezultate: În perioada de studiu, s-au efectuat 16.083 colonoscopii, 12.294 (76,4%) totale. În 1191 cazuri cauza de colonoscopie incompletă a fost stenoza. Dacă apreciem acesta ca un motiv obiectiv pentru colonoscopie incompletă, numărul de colonoscopii totale a fost 12.294 (82,4%). Comparând centrele universitare cu cele non-universitare, proporția de colonoscopii totale a fost de 10400/12475 (83,4%) vs. 1894/2417 (78,4%) ($p < 0,0001$). Cu toate acestea, comparativ cu studiile anterioare din 2003 şi 2007, proporția de colonoscopii totale au crescut de la 70,5% la 76,9% şi, respectiv, 82,4% (2003 vs. 2007 $p < 0,0001$; 2007 vs. 2009 $p < 0,0001$), în timp ce diferența de calitate dintre spitalele universitare şi non-universitare a persistat.
Concluzii: numărul de colonoscopii în România a crescut în ultimii 5 ani, în timp ce diferența de calitate dintre spitalele universitare şi non-universitare a persistat.

Cuvinte cheie: colonoscopie, performanță, screeningul cancerului colorectal

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Abstract
The aim of the paper was to evaluate the national availability of colonoscopy and the quality parameters of this procedure in our country.
Material and method: During a 6 months period (01.07-31.12.2009), we performed a prospective multicenter study in which 76 centers were invited to respond to a questionnaire regarding colonoscopy, 39 centers agreeing to participate. We assessed: the number of colonoscopies, the number of total colonoscopies and the causes of incomplete colonoscopies.
Results: During the study period, 16,083 colonoscopies were performed, 12,294 (76.4%) of them total colonoscopies. In 1,191 cases, stenosis was the cause of incomplete colonoscopy. If we consider this an objective reason for an incomplete colonoscopy, there were 12,294 total colonoscopies (82.4%). Comparing university centers with non-university ones, the proportion of total colonoscopies was 10,400/12,475 (83.4%) vs. 1,894/2,417 (78.4%) ($p < 0.0001$). However, comparing the present study with previous ones, performed in 2003 and 2007, the proportion of total colonoscopies increased from 70.5% to 76.9% and 82.4% respectively (2003 vs. 2007 $p < 0.0001$; 2007 vs. 2009 $p < 0.0001$), while the quality difference between university and non-university hospitals persisted.
Conclusions: the quality of colonoscopy in Romania increased in the last 5 years, while the quality difference between university and non-university hospitals persisted.

Key words: colonoscopy, performance, colorectal cancer screening

Introduction

Colonoscopy is the "gold standard" method for colonic evaluation (1), but a correct procedure means fulfilling some quality standards, while touching the coecum should probably be the aim of every examiner (2).

In many countries (such as Germany, Czech Republic, Luxemburg, Cyprus, etc), colonoscopy has become the "gold standard" method for colorectal cancer (CRC) screening, in general asymptomatic population older than 50 years (3). In other countries, the methods chosen to screen general population for polyps and asymptomatic cancer, usually after 50 years old, are FOBT (faecal occult blood test), FIT (faecal immunological test) or sigmoidoscopy (Scotland) (4,5).

Despite the fact that only FOBT has been proven to decrease mortality in screened population, it is believed that sigmoidoscopy, and especially colonoscopy, are able to decrease colon cancer incidence and mortality in general population (6-10).

Even if efforts have been made, in this moment, Romania does not have a real screening program for colorectal cancer in general population. To prepare the start of such a program, we must know if we are able to perform it by means of FOBT, FIT or with colonoscopy. When choosing a method for CRC screening, we must consider aspects such as financial resources, capability to attract general practitioners (GP) to participate in this program. If we want to use colonoscopy for screening (or to evaluate the cases with positive faecal tests), we also have to consider the capability of the Romanian medical system to provide centers and endoscopists able to perform high quality colonoscopy.

The aim of the paper was to evaluate the national availability of colonoscopy and the quality of this procedure in our country, by means of a prospective study performed during half a year in numerous endoscopic centers from Romania. Another aim was to compare the performances of colonoscopy in this study to the ones obtained in previous studies performed in Romania (11-14).

Material and Method

During a 6 month period (01.07-31.12.2009) we performed a prospective multicenter study, in which 76 centers were invited to respond to a questionnaire regarding the number of colonoscopies performed and the cecal intubation rate, 39 centers agreeing to participate (university and non-university centers, hospitals and private centers). We assessed: the number of colonoscopies, the number of total colonoscopies and the causes of incomplete colonoscopies.

Results

During the study period, 16,083 colonoscopies were performed, 12,294 (76.4%) of them being total colonoscopies. In 1,191 cases, stenosis was the cause of incomplete colonoscopy. If we consider this an objective reason for an incomplete colonoscopy, there were 12,294 total colonoscopies from 14,892 colonoscopies made in this period (82.4%). Comparing university centers with non-university ones, the proportion of total colonoscopies was 10,400/12,475 (83.4%) in university hospitals vs. 1,894/2,417 (78.4%) in non-university ones ($p < 0.0001$).

The following tables present data from university (*Table 1*) and non-university endoscopy units (*Table 2*).

Discussions

In the national multicentre study performed in 2003 (12) we sent a study-type questionnaire addressed to all the centers in Romania known to perform digestive endoscopy and we inquired about the total number of colonoscopies and flexible sigmoidoscopies performed in 2003 (the questionnaire was sent to 43 centers). Thirty-eight centers responded to the questionnaire. The total number of colonoscopies performed in Romania in 2003 was 22,324. In the present study, in which only approximately half of the centers of endoscopy from Romania participated, 16,083 colonoscopies were performed in 6 months. If we extrapolate the data to a year, we can conclude that approximately 32,000 colonoscopies are performed in 39 of the 76 invited centers of endoscopy, so that we can approximate that the annual number of colonoscopies

Table 1. *University centers*

	No. of colonoscopies =13329	Total colonoscopies =10400	Malignant stenosis =668	Other stenosis =186	Performance %
1	2503	1737	101	14	72.7
2	1856	1677	77	0	94.2
3	1796	1459	91	69	89.1
4	1087	927	69	13	92.2
5	876	582	43	11	70.8
6	875	702	35	19	85.5
7	590	523	16	9	92.5
8	437	406	7	1	94.6
9	387	260	10	2	69.3
10	357	298	35	0	92.5
11	342	252	15	14	80.5
12	276	232	35	2	97
13	274	31	14	0	11.9
14	240	136	17	8	51.6
15	237	177	33	15	93.6
16	230	211	14	3	99
17	206	182	5	0	90.5
18	198	150	25	3	88.2
19	142	115	13	3	91.2
20	136	130	0	0	95.5
21	132	75	5	0	59
22	115	103	7	0	95.3
23	37	35	1	0	97.2

Table 2. *Non-university centers*

	No. of colonoscopies = 2754	Total colonoscopies = 1894	Malignant stenosis = 214	Other stenosis =123	Performance %
1	373	268	18	0	75.4
2	361	164	39	4	51.5
3	249	194	36	0	91
4	234	138	0	0	58.9
5	224	158	27	8	83.5
6	214	179	17	0	90.8
7	193	172	11	0	94.5
8	174	154	8	2	92.9
9	150	74	13	63	100
10	148	100	7	14	83.3
11	135	74	13	4	62.7
12	135	103	5	27	100
13	53	38	10	0	88.3
14	50	29	5	1	65.9
15	36	32	4	0	100
16	25	17	1	0	70.8

performed in Romania is around 60,000. In 2003 the total number of recorded colonoscopies in our study was 22,324/year (in 38 of the 43 invited centers). Probably this means that the number of colonoscopies performed yearly in Romania increased (from 22,000 to maybe 60,000) and, on the other hand, that colonoscopy replaced a lot of sigmoidoscopic evaluations, that were quite frequent in 2003 (colonoscopy/sigmoidoscopy ratio of 1.8).

Concerning the performance at colonoscopy (proportion of cases in which the coecum is reached), it was 70.5% in 2003 (13), 76.9% in the study performed in 2007 (15), and 82.4% in present study (2003 vs. 2007 $p < 0.0001$; 2007 vs. current study $p < 0.0001$).

Regarding the number of colonic evaluations needed, the Romanian population over 50 years old is higher than 6 million individuals (16). By excluding individuals over 75

years old (in which screening colonoscopy is not recommended by current guidelines), approximately 5 million citizens must be screened by colonoscopy every 5 or maybe 10 years, meaning that 1 million or maybe 500,000 colonoscopic evaluations should be performed each year. We just found out that Romania's capacity for colonoscopy is approximately 60,000 evaluation/year, this including symptomatic patients (with rectal bleeding, iron deficiency anaemia, etc). A previous study from our group (17) showed that the compliance of Romanian population to screening for colorectal cancer is only 17% (and this for FOBT), so that the number of colonoscopies needed for screening can reach approximately 100,000/year (if we have the same compliance of 20%, for the screening colonoscopy).

Another scenario for CRC screening is to use FIT in population older than 50. With a mean rate of positivity of 5%, if we consider the same compliance rate of approximately 20%, than in approximately 1 million adherent people, we shall obtain 50,000 positive tests. All these patients will have to undergo colonoscopic evaluation, this goal being barely reachable with our national resources. Probably we must increase the number of centers of colonoscopy and the manpower involved, but in the last few years the number of fellows in gastroenterology really improved.

Regarding the other quality parameter of screening colonoscopy, the rate of cecal intubation, our serial studies started in 2003, continued in 2007 and 2009 showed an increase of cecal intubation rate during time, now being 82.4%. To be unanimously accepted as a good screening method, colonoscopy should have a cecal intubation rate of more than 90%, a very low complications rate (especially perforations) and zero mortality. In this study, the number of university centers with this performance (intubation rate of more than 90%) was 13 from 23 centers (56.5%), while for non-university centers it was 7/16 (43.8%) and this is not enough in the perspective of a colorectal screening program.

Concerning the quality of colonoscopy, there are performance-reaching centres and other not so good. Also, similar to previous studies, there still are, significant differences between university and non-university centres concerning the cecal intubation rate (83.4% vs. 78.4%, $p < 0.0001$). One option can be to authorize only performance-reaching centres to perform screening colonoscopy (like in Germany), but this will probably decrease a lot the colonoscopic CRC screening capacity in Romania.

Conclusions

The quality of colonoscopy in Romania increased in the last 6 years, while the quality difference between university and non-university hospitals persisted. The number of colonoscopies for CRC screening in Romania seems to be not enough and efforts must be made continuously to increase it.

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