1130-0108/2012/104/3/122-127
Revista Española de Enfermedades Digestivas

Rev Esp Enferm Dig (Madrid)
Vol. 104. N.° 3, pp. 122-127, 2012

ORIGINAL PAPERS

Prospective analysis of clinician accuracy in the diagnosis of benign anorectal pathology: the value of clinical information

Jaime Jimeno, Helena Vallverdú, Jaume Tubella, Cristina Sánchez-Pradell, Jordi Comajuncosas, Rolando Orbeal, Judit Hermoso, Pere Gris, José Luis López-Negre, Joan Urgellés and David Parés

Department of General and Digestive Surgery. Parc Sanitari Sant Joan de Déu. Sant Boi de Llobregat, Barcelona, Spain

ABSTRACT

Aim: the prevalence of anorectal disorders in general population is high. The aim of this study was to analyze the influence of clinical symptoms on diagnostic accuracy for benign anorectal pathology among different specialists and evaluate the relationship between diagnostic accuracy and years of professional experience.

Methods: seven typical cases were selected. In a first interview, participants were shown images and asked to make a diagnosis. Afterwards, images with additional information (clinical symptoms) were used. Two groups (group 1 = general surgeons and group 2 = medical specialists who attended emergency department) completed both phases of the study to analyze the influence of clinical symptoms on the final diagnosis.

Results: forty four specialists were interviewed. The percentage of participants making a correct diagnosis in groups 1 and 2, respectively, was as follows: case 1 (perianal abscess): 100 *vs.* 80.6%, (p = 0.157); case 2 (fissure): 92.3 *vs.* 51.6% (p = 0.015); case 3 (thrombosed hemorrhoid): 92.3 *vs.* 74.2% (p = 0.321); case 4 (anal condyloma): 100 *vs.* 87.1% (p = 0.302); case 5 (rectal prolapse): 100 *vs.* 83.9% (p = 0.301); case 6 (prolapsed hemorrhoid): 92.3 *vs.* 29% (p = 0.001), and case 7 (fistula): 100 *vs.* 67.7% (p = 0.021). There were significant differences in the number of correctly diagnosed cases between groups (p < 0.001). Information about clinical symptoms significantly increased overall and specific accuracy. There was no correlation between experience and accuracy.

Conclusions: clinical symptoms are important for diagnostic accuracy in anorectal pathology. Training in anorectal pathology in medical specialists is warranted.

Key words: Anorectal diseases. Diagnostic accuracy. Education. Training.

This study was presented at the Scientific Meeting of the European Society of Coloproctology in Sorrento (Italy) 22nd-24th September 2010.

Received: 07-09-11.
Accepted: 05-11-11.

Correspondence: David Parés. Department of General and Digestive Surgery. Parc Sanitari Sant Joan de Déu. C/ Camí Vell de la Colònia. 08830 Sant Boi de Llobregat. Barcelona, Spain.
e-mail: david.pares@pssjd.org

Jimeno J, Vallverdú H, Tubella J, Sanchez-Pradell C, Comajuncosas J, Orbeal R, Hermoso J, Gris P, López-Negre JL, Urgellés J, Parés D. Prospective analysis of clinician accuracy in the diagnosis of benign anorectal pathology: the value of clinical information. Rev Esp Enferm Dig 2012; 104: 122-127.

INTRODUCTION

The prevalence of anorectal disorders is high in the general population (1,2). Most of these patients are initially attended by medical specialists rather than surgeons, moreover on emergency setting (3). A high percentage of misdiagnosis in the management of this pathology has been reported and attributed to a lack of clinical training among non-surgical specialists (4,5).

Grucela et al. (6) performed an elegant study aiming to examine the diagnostic accuracy of clinicians in the diagnosis of common anal pathologic conditions. These authors demonstrated suboptimal accuracy among clinicians, which did not correlate with years of experience, providing strong evidence that more education and training in the identification of these disorders is required. However, a limitation of that study was that diagnosis was made only by viewing images with no information on clinical history.

The aim of this study was to prospectively analyze the value of clinical symptoms in diagnostic accuracy for benign anal pathology among practitioners from distinct specialties all of them attending patients in emergency department. The results were also assessed according to years of professional experience.

METHODS

This study was approved by our institutional review board. Seven typical cases of benign anorectal disorders were used in this study. For educational purposes, the

same entities as those used in a previous publication but with our own images were selected (6), consisting of the following diagnoses: perianal abscess, anal fissure, thrombosed external hemorrhoid, anal condyloma, full-thickness rectal prolapse, prolapsed internal hemorrhoid, and anal fistula.

Two certified colorectal surgeons prepared a structured text of simulated clinical records for each case, using a specific textbook of colorectal surgery (7). The participants were divided into two groups: group 1 consisted of specialists in general surgery and group 2 of physicians belonging to medical specialties including: general practice, internal medicine, emergency medicine, cardiology, pneumology and gastroenterology. All specialists included attended whole or in part, medical emergencies.

The study comprised two continuous evaluations of each selected case in all participating clinicians. In the first part (phase 1), the clinicians were shown only slides of clinical images and were asked to make a diagnosis within 30 seconds. As in the study by Grucela et al. (6), the participants provided free recall diagnoses on a blank line corresponding to each case. In the second part of the study (phase 2), immediately following the first evaluation, the same images were used but with additional information consisting of the simulated clinical records for each case. In table I we presented the symptoms of the selected 7 cases. The answer sheets were analyzed by an independent team member who has not on the cases presentations. An example of images used with the clinical history is shown in figure 1.

Fig. 1. The symptoms and clinical image corresponded to anal fissure.

Statistical analysis

Quantitative data are expressed as absolute numbers or median values. Categorical variables are presented as absolute numbers or percentages. Comparison of qualitative data and continuous variables was performed by means of the Mann-Whitney U test and two-tailed Fisher's exact test, respectively. The correlation of quantitative variables was analyzed using Spearman's correlation test. A bilateral p-value of less than 0.05 was considered statistically significant. The statistical analysis was performed using SPSS™ version 14.0 (SPSS™ Chicago, Illinois, USA).

RESULTS

Forty-four specialists were interviewed (13 in group 1 and 31 in group 2). Group 2 was composed of practitioners in the following specialties: general practice (n = 14), internal medicine (n = 9), emergency medicine (n = 5), cardiology (n = 1), pneumology (n = 1) and gastroenterology (n = 1). All of them attended whole or in part medical emergencies. There were significant differences in the median years of clinical experience in attending patients with anal disorders among the groups –group 1; 15.9 years (range 3-30) *vs.* group 2; 8.8 years (range 1-22), p = 0.021–.

Tables I and II show the overall results for diagnostic accuracy in both groups in the two phases of the study,

Table I. Simulated clinical records of each case

Case	*Clinical symptoms*
Case 1 Perianal abscess	Patient with progressive anal pain and fever up to 38 ºC
Case 2 Anal fissure	Patient with anal pain during defecation and for 2 hours afterwards and anal bleeding consisting of fresh blood during defecation
Case 3 Thrombosed hemorrhoid	Patient with a long history of hemorrhoidal disease who presented with acute anal pain and a palpable nodule in the anal verge
Case 4 Anal condyloma	HIV patient with a long history of pruritus anii and several palpable nodules in anus
Case 5 Rectal prolapse	Patient with feeling of tissue protruding from the anus in any defecation associated to fecal incontinence
Case 6 Prolapsed internal hemorrhoids	Patient with a long history of hemorrhoidal disease presented anal dysconfort with defecation, prutitus whoanii and sensation of anal lump
Case 7 Anal fistula	Patient with a previous history of anal abscess who presented with purulent suppuration from the perianal area

Table II. Percentage of diagnostic accuracy when clinical images alone were used (phase 1) in both groups

	Group 1	*Group 2*	*p*
Case 1 Perianal abscess	100%	80.6%	0.157
Case 2 Anal fissure	92.3%	51.6%	0.015
Case 3 Thrombosed hemorrhoid	92.3%	74.2%	0.321
Case 4 Anal condyloma	100%	87.1%	0.302
Case 5 Rectal prolapse	100%	83.9%	0.301
Case 6 Prolapsed hemorrhoid	92.3%	29%	0.001
Case 7 Anal fistula	100%	67.7%	0.021

Table III. Percentage of diagnostic accuracy when clinical images and symptoms were provided (phase 2) in both groups

	Group 1	*Group 2*	*p*
Case 1 Perianal abscess	100%	96.8%	1.0
Case 2 Anal fissure	100%	90.3%	0.544
Case 3 Thrombosed hemorrhoid	100%	93.5%	1.0
Case 4 Anal condyloma	100%	83.9%	0.301
Case 5 Rectal prolapse	100%	93.5%	1.0
Case 6 Prolapsed hemorrhoid	92.3%	38.7%	0.005
Case 7 Anal fistula	100%	87.1%	0.302

respectively. Diagnosis was significantly more accurate in group 1 in three of the seven cases in phase 1 (Table II) but in only one out of the seven cases in phase 2 (Table III).

Table IV. Percentage of diagnostic accuracy when clinical images and symptoms were provided (phase 2) in both groups

	Images	*Images + clinical symptoms*	*p*
Case 1 Perianal abscess	86.4%	97.7%	0.025
Case 2 Anal fissure	63.6%	93.2%	< 0.001
Case 3 Thrombosed hemorrhoid	79.5%	95.5%	0.014
Case 4 Anal condyloma	90.9%	88.6%	0.317
Case 5 Rectal prolapse	88.6%	95.5%	0.083
Case 6 Prolapsed hemorrhoid	47.7%	54.5%	0.083
Case 7 Anal fistula	77.3%	90.9%	0.014

Information about clinical symptoms (phase 2) significantly increased diagnostic accuracy in group 2 (Table IV). The median number of correct diagnoses was 7.0 and 5.0 for groups 1 and 2 respectively ($p < 0.001$) when images were used, and was 7.0 and 6.0 when images and clinical symptoms were presented ($p < 0.001$).

As shown in figure 2, there was no correlation between years of clinical practice and diagnostic accuracy in either group when analyzed separately.

DISCUSSION

In agreement with previous research, this study found a lack of knowledge of benign anorectal disorders among non-surgical specialties (6). Moreover, we provide evidence that clinical symptoms have a greater influence on diagnostic accuracy for this pathology than years of clinical experience. Training in the diagnostic approach to benign anorectal pathology among physicians is therefore warranted including clinical symptoms and clinical images because both are important for diagnostic accuracy in these disorders.

Benign anal conditions are highly prevalent in the general population (2,8). Hence, all physicians, whatever their specialty, will potentially attend patients with anorectal pathology. It is well known that most of these patients are initially attended by medical specialists rather than by surgeons (3). Curiously, some studies have reported a high

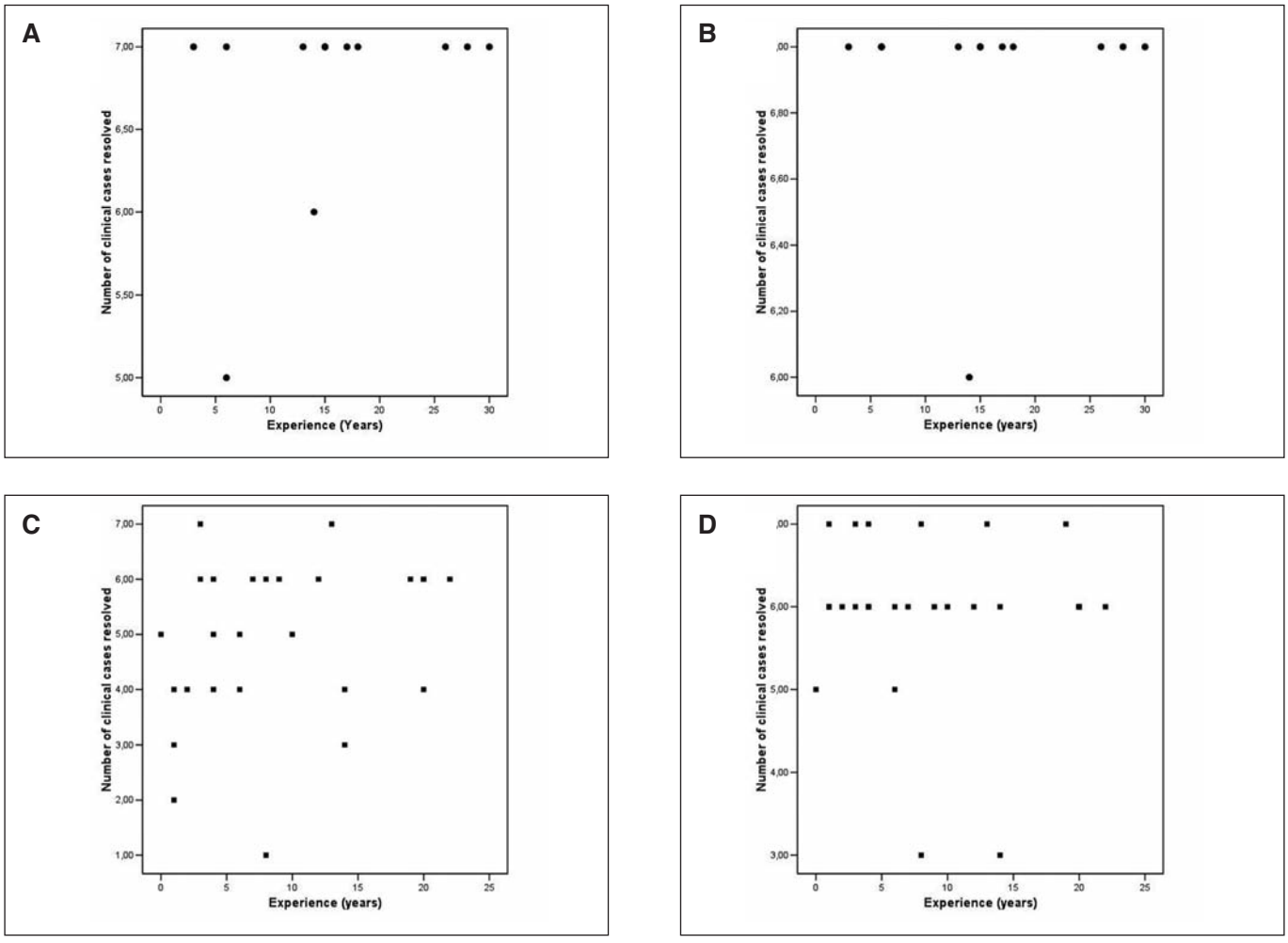

Fig. 2. Correlation between years of experience and the number of cases correctly identified in participating clinicians in group 1 in phase 1 (A) R: 0.370 p = 0.237, and phase 2 (B) R: 0.131 p = 0.684 and in group 2 in phase 1 (C) R: 0.297 p = 0.14 and phase 2 (D) R: 0.270 p = 0.895.

percentage of misdiagnosis in this pathology, due to lack of awareness or clinical training among non-surgical specialists (4).

In a previous study has been demonstrated the low percentage of diagnostic accuracy achieved among medical specialists, providing strong evidence that more education on the identification of this pathology is required (6). In this study, medical students were used as a control group, also demonstrating the low level of training in the diagnosis of benign anal diseases in this group.

A structured training plan for benign anal diseases is clearly required (9). The question arises of when medical specialists should be trained in proctological diseases. Despite the efforts of medical schools in this area, the level of training in anorectal disorders among students seems insufficient. In a study performed in Finland, final year medical students were tested in 10 minor surgical procedures, including rubber-band ligation of hemorrhoids. Although this is a specific procedure that requires more than theoretical knowledge, it can be used as a reference for comparison with other procedures such as abdominal paracentesis or urinary tract catheterization. The results of questionnaires indicate that rubber-band ligation of hemorrhoids is one of the least known procedures among students and was performed by only 4% (10). The level of knowledge of this pathology in the control group (consisting of students) in Grucela's study was poor also (6). Therefore, there is no doubt that the first step is to increase training in the diagnosis and treatment of benign anal diseases in medical schools.

Knowledge of benign anal disorders in primary care is less known, despite the importance of awareness of these disorders among primary care physicians to patient comfort and referral to specialists (5). Fourteen of the participants in our study were general practitioners. In a study performed in Spain the diagnostic accuracy of general practitioners in a sample of patients referred to specialists was recently assessed. Interestingly, diagnosis of hemorrhoids was much better than that of anal fistula or anal fissure. The Kappa index in this latter diagnosis was par-

ticularly poor (11). Participants in our study also found anal fissure especially difficult to recognize. Since general practitioners will probably be the first to attend these highly prevalent disorders, these clinicians should probably spend some time in a general surgery department, as occurs for example in Spain (11).

An important finding of our study is the value of the clinical history in the diagnosis of benign anorectal conditions. Indeed, when appropriate questions are asked in structured format, the physical examination it is only an adjuvant part of accurate diagnosis. In our study, we found no correlation between years of experience and the number of cases resolved. In contrast, when clinical information was provided, the diagnostic accuracy of all participants in this study improved.

While misdiagnosis of benign anal pathology usually is not dangerous, a delayed diagnosis or erroneous treatment could trigger chronicity and lead to increased health services utilization and impaired quality of life (12). Accurate diagnosis, however, is essential in patients with rectal cancer (13). Consequently, physical examination is of paramount importance in every patient, especially when gastrointestinal bleeding is present (14).

The strength of our study lies in the addition of clinical information to physical examination represented by images. This method is highly representative of real cases and could constitute a model for clinical training. A limitation of this study is that the non-surgical sample (group 2) consisted of practitioners from distinct specialties and with distinct years of clinical experience. We did, however, achieve our aim of determining the value of training over years of experience. Also we will study, in an ongoing study, the same study performed only in general practitioners in order to analyze their diagnostic accuracy in health primary care.

In conclusion, information on clinical symptoms is important for diagnostic accuracy in anorectal pathology in medical specialists and surgeons, irrespective years of clinical experience. Therefore, training in anorectal pathology among medical specialists is warranted. Such training should begin in the first years of medical studies and continue in the first years of each residency program. Training methods with simulated cases including clinical images and information on clinical symptoms should be used.

AKNOWLEDGEMENTS

The authors thank the clinicians who participated in this study. The authors would also like to thank Gail Craigie for editorial support.

REFERENCES

1. Zanotti C, Martinez-Puente C, Pascual I, Pascual M, Herreros D, Garcia-Olmo D. An assessment of the incidence of fistula-in-ano in four countries of the European Union. Int J Colorectal Dis 2007;22:1459-62.
2. Nelson RL, Abcarian H, Davis FG, Persky V. Prevalence of benign anorectal disease in a randomly selected population. Dis Colon Rectum 1995;38:341-4.
3. Helton WS. 2001 consensus statement on benign anorectal disease. J Gastrointest Surg 2002;6:302-3.
4. Goldstein ET. Outcomes of anorectal disease in a health maintenance organization setting. The need for colorectal surgeons. Dis Colon Rectum 1996;39:1193-8.
5. Lamah M, Ahmad SM, Charalampopoulos A, Ho J, Leicester RJ. Three-year evaluation of a rapid-access coloproctology clinic. Dig Surg 2000;17:150-3.
6. Grucela A, Salinas H, Khaitov S, Steinhagen RM, Gorfine SR, Chessin DB. Prospective analysis of clinician accuracy in the diagnosis of benign anal pathology: comparison across specialties and years of experience. Dis Colon Rectum 2010;53:47-52.
7. Nicholls RJ, Dozois RR, editors. Surgery of the Colon and the Rectum. New York: Churchill Livingstone; 1997.
8. Pfenninger JL, Zainea GG. Common anorectal conditions: Part I. Symptoms and complaints. Am Fam Physician 2001;63:2391-8.
9. Charles J, Miller G, Fahridin S. Perianal problems. Aust Fam Physician 2010;39:365.
10. Helenius I, Sinisaari I, Hirvensalo E, Remes V. Surgical procedure skills of graduating medical students: effects of sex, working, and research experience. J Surg Res 2002;102:178-84.
11. Martinez-Ramos D, Nomdedeu-Guinot J, Artero-Sempere R, Escrig-Sos J, Gibert-Gerez J, Alcalde-Sánchez M, et al. Prospective study to evaluate diagnostic accuracy in benign anal diseases in primary care. Aten Primaria 2009;41:207-12.
12. Jones R, Charlton J, Latinovic R, Gulliford MC. Alarm symptoms and identification of non-cancer diagnoses in primary care: cohort study. BMJ 2009;339:b3094.
13. Jellema P, van der Windt DA, Bruinvels DJ, Mallen CD, van Weyenberg SJ, Mulder CJ, et al. Value of symptoms and additional diagnostic tests for colorectal cancer in primary care: systematic review and meta-analysis. BMJ 2010;340:c1269.
14. Olde Bekkink M, McCowan C, Falk GA, Teljeur C, Van de Laar FA, Fahey T. Diagnostic accuracy systematic review of rectal bleeding in combination with other symptoms, signs and tests in relation to colorectal cancer. Br J Cancer 2010;102:48-58.