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Epidemiological profile of patients with fistula in ano

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ABSTRACT

Rationale: There is a lack of consistent national data on the evaluation of the epidemiological profile of patients with anal fistula.
Objective: To evaluate the epidemiological profile of patients with anal fistula at a center specialized in coloproctology.
Method: A cross-sectional, retrospective study was carried out between 2016 and 2018 of patients who underwent surgical procedures for the treatment of fistula in ano by the Department of Coloproctology of the Regional Hospital of Mato Grosso do Sul. Age, gender, disease duration, number of procedures, association with Crohn's disease and other comorbidities were evaluated. The data were tabulated and submitted to statistical treatment considering $p < 0.05$.
Results: 93.2% of the patients were less than 60 years old, 66.7% were male, 88.9% had the disease less than one year, the most frequent procedures were fistulotomy (55.6%) and fistulectomy (36.8%), with a greater percentage of patients having undergone only one procedure (74.4%), 8.5% had Crohn's disease, 7.7% systemic hypertension and 3.4% had diabetes mellitus.
Conclusion: In the studied group, there was a predominance of anal fistulae in men under 60 years old and without comorbidities, diagnosed for up to one year, most of them submitted to fistulotomy or fistulectomy at one time. Patients operated after one year of illness and also those with Crohn's disease were submitted mainly to curettage + seton and multiple procedures.

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Perfil epidemiológico dos pacientes com fístula anal

Palavras-chave:
Fístula retal
Doença de Crohn
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Abscesso
Epidemiologia

RESUMO

Racional: Faltam dados nacionais sobre a avaliação do perfil epidemiológico dos pacientes com fístula anal.
Objetivo: Avaliar o perfil epidemiológico dos pacientes portadores de fístula anal em um centro especializado em coloproctologia.
Método: Estudo retrospectivo, transversal, realizado no período de 2016 a 2018 dos pacientes que realizaram procedimentos cirúrgicos para o tratamento da fístula anal pelo serviço de Coloproctologia do Hospital Regional de Mato Grosso do Sul. Avaliou-se idade, gênero, tempo de doença, procedimento realizado, número de procedimentos, associação com doença de Crohn e outras comorbidades. Os dados foram tabulados e submetidos a tratamento estatístico considerando-se significativo $p < 0,05$.
Resultados: 93,2% dos pacientes tinham menos de 60 anos, 66,7% eram do gênero masculino, 88,9% tinham a doença a menos de um ano, os procedimentos mais realizados foram a fistulotomia (55,6%) e a fistulectomia (36,8%, sendo que um percentual maior de pacientes havia sido submetido a apenas um procedimento (74,4%); 8,5% tinham doença, 7,7% hipertensão arterial sistêmica e 3,4% diabetes *mellitus*.
Conclusão: Na amostra estudada houve predomínio de fístulas anais em homens com menos de 60 anos e sem comorbidades, com diagnóstico de até um ano, a maioria submetida à fistulotomia ou fistulectomia em um tempo. Pacientes operados após um ano de doença e também os com Doença de Crohn foram submetidos principalmente à curetagem + sedenho e múltiplos procedimentos.

Introduction

Anal abscesses and fistulas represent about 70% of perianal diseases, which require surgical treatment and occur in 1:10,000 inhabitants per year. They are more frequent in males and account for up to 5% of proctological consultations.[1,2]

Perianal fistula is the natural evolution of perianal abscess. Thus, inflammation of the anal crypts (pyogenic cryptitis) is the early stage of the suppurative process, with retention of purulent content followed by expansion into the various spaces adjacent to the rectum, such as inter-sphincter, perianal, ischiorectal, and pelvirectal.[3,4] The disease true prevalence is not well known, but it is due to cryptoglandular abscess in 26%–38% of cases.[5,6]

In Crohn's disease (CD) patients, the perianal fistula onset may represent one of the most severe manifestations of the disease due to symptoms, local discomfort, and evident worsening of quality of life. Its pathophysiology differs from the classic form in that it begins with anorectal inflammation, loss of apicobasal polarity, cell junctions, metalloproteinase production, and progression in depth causing abscesses and fistulas.[7] In fact, such a presentation corresponds to a worse prognosis and a substantial increase in treatment cost.[8–11]

There are few recent national and even international data on the epidemiology, classification, and treatment of anal fistulas, so there is a need for research seeking to show the current status of this condition. In our field, Pinho et al.[12] reviewed the main anorectal diseases and reported that anal fistulas represent 5% of the total, affecting individuals aged between 30 and 50 years, but they did not provide details about the more specific characteristics of the disease. The most consistent epidemiological data on the subject are from the 1980s and 1990s,[13–17] thus lacking an update that can show whether there has been any change in the behavior of the disease in recent decades. This is, therefore, the justification of the present study.

Objective

To draw the epidemiological profile of patients with anal fistulas in a referral center, address the main treatment techniques, as well as the relationship with comorbidities, particularly Crohn's disease.

Method

Retrospective and cross-sectional study, covering the period from 2016 to 2018, approved by the Research Ethics Committee of the Mato Grosso do Sul Regional Hospital where the research was conducted.

The hospital's computer system was used to search for ICD-10 K 60.3 – Anal fistula. Subsequently, an individual evaluation of the medical records was performed to collect the following information: gender, age, previous comorbidities, type of surgical procedure performed, number of procedures performed, and presence or absence of inflammatory bowel disease.

Table 1 – Distribution of patients according to the epidemiological characteristics assessed.

Variable	% (n)	p-Value
Age group		
Up to 60 years	93.2 (109)	
Over 60 years	6.8 (8)	<0.001
Gender		
Female	33.3 (39)	
Male	66.7 (78)	<0.001
Disease time		
Less than 1 year	88.9 (104)	
1 year or more	11.1 (13)	<0.001
Procedure		
Fistulotomia	55.6 (65)	
Fistulectomy	36.8 (43)	–
Curettage + seton	6.0 (7)	
LIFT	1.7 (2)	
Number of procedures		
1	74.4 (87)	
2 or more	25.6 (30)	<0.001
Crohn's disease		
No	91.5 (107)	
Yes	8.5 (10)	<0.001
Comorbidities		
SAH	7.7 (9)	
DM	3.4 (4)	–

p-Value in binomial test.

Patients over 18 years of age, whose medical records were duly completed with the information established for the study, were included. Medical records of patients under 18 years of age and those lacking information were excluded.

Comparison between the different age groups, gender, disease duration, number of procedures, and presence of Crohn's disease in relation to the percentage of patients was performed using the binomial test. The evaluation of the association of the variables age group, gender, disease duration, presence of Crohn's disease, presence of systemic arterial hypertension, and presence of diabetes mellitus, with the variables procedure performed and number of procedures, was performed using the Chi-square test with Bonferroni correction, when necessary. The other results of this study are presented as descriptive statistics or tables. Statistical analysis was performed using the statistical package SPSS, version 24.0, considering a significance level of 5%.

Results

In total, 117 patients who met the inclusion criteria were included in the survey. The distribution of patients evaluated in this study according to age, gender, disease duration, procedure and number of procedures the patients underwent, presence of Crohn's disease and comorbidities, such as systemic arterial hypertension (SAH) and diabetes mellitus (DM), is presented in Table 1.

Regarding age group, there were more patients under 60 years (93.2%; n = 109) than patients over 60 years of age (6.8%; $n = 8$; binomial test; $p < 0.001$). More male patients (66.7%; $n = 78$) were treated than female patients (33.3%; $n = 39$; $p < 0.001$). More patients had the disease for less than one year (88.9%; $n = 104$), compared to patients with longer disease duration (11.1%; $n = 13$; $p < 0.001$).

The two most commonly performed procedures were fistulotomy (55.6%; $n = 65$) and fistulectomy (36.8%; $n = 43$), with a higher percentage of patients undergoing only one procedure (74.4%; $n = 87$), compared with the percentage of patients who had already undergone more than one procedure (25.6%; $n = 30$; $p < 0.001$). Among the 117 patients, 8.5% ($n = 10$) had Crohn's disease, 7.7% (n = 9) had systemic arterial hypertension as comorbidity, and 3.4% ($n = 4$) had diabetes mellitus.

Table 2 shows the results of the assessment of the association between the age group of patients and the variables procedure and number of procedures. A higher percentage of LIFT was performed in patients older than 60 years (12.5%; n = 1) compared to patients aged up to 60 years (0.9%; $n = 1$; Chi-square test; $p = 0.015$). On the other hand, there was no difference between the two age groups of patients and the performance of curettage + seton ($p = 0.460$), fistulotomy ($p = 0.743$), fistulectomy ($p = 0.964$), and number of procedures the patients underwent ($p = 0.727$).

The results of the assessment of the association between the patients' gender and the variables procedure and number of procedures performed are shown in Table 3, with no significant association observed between these variables (Chi-square test, *p*-value ranging from 0.193 to 0.895).

Table 4 shows the results of the assessment of the association between the disease duration and the variables procedure and number of procedures performed on patients. Curettage + seton was performed in a higher percentage of patients with 1 year or more of disease (30.8%; $n = 4$) than in those with less than 1 year of disease (2.9%; n = 3; Chi-square; $p < 0.001$). In addition, there was an association between disease duration and the number of procedures performed on patients (Chi-square test; $p < 0.001$), and a higher percentage of patients with less than 1 year of disease underwent only one procedure. (78.8%; n = 82) compared to the percentage of patients with 1 year or more of disease who also underwent only one procedure (38.5%; n = 5; Chi-square test with Bonferroni correction, $p < 0.05$). On the other hand, a higher percentage of patients with 1 year or more of disease underwent a number of 4–6 procedures (30.8%; n = 4), compared to the percentage of patients with less than 1 year of disease who also underwent a number of 4–6 procedures (2.9%; $n = 3$; Chi-square test with Bonferroni correction; $p < 0.05$).

Table 5 shows the results of the assessment of the association between the presence or absence of Crohn's disease and the variables procedure and number of procedures performed on patients. Curettage + seton was performed in a larger percentage of patients with Crohn's disease (30, 0%; n = 3) than without the disease (3.7%; n = 4; Chi-square test, $p = 0.001$). In addition, there was an association between the presence or absence of Crohn's disease and the number of procedures performed on patients (Chi-square test, $p = 0.002$), with a higher percentage of patients without Crohn's disease undergoing only one procedure (77.6%; n = 83) compared to the percentage of patients with this disease who also underwent only one procedure (40.0%; n = 4; Chi-square test with Bonferroni correction, $p < 0.05$). On the other hand, a higher percentage of

Table 2 – Evaluation of the association between patients' age group and the variables procedure and number of procedures performed on patients.

Variable	Age group		p-Value
	Up to 60 years (n = 109)	Over 60 years (n = 8)	
Procedure			
Curettage + seton	6.4 (7)	0.0 (0)	0.460
Fistulotomy	56.0 (61)	50.0 (4)	0.743
Fistulectomy	36.7 (40)	37.5 (3)	0.964
LIFT	0.9 (1)[b]	12.5 (1)[a]	0.015
Number of procedures			
1	74.3 (81)	75.0 (6)	
2 a 3	19.3 (21)	25.0 (2)	0.727
4 a 6	6.4 (7)	0.0 (0)	

Results are presented as relative frequency (absolute frequency). p-Value in chi-square test. Different letters on the line indicate difference between patients in different age groups (Chi-square test, with Bonferroni correction, $p < 0.05$).

Table 3 – Assessment of the association between patients' gender and the variables procedure and number of procedures performed.

Variable	Gender		p-Value
	Female (n = 39)	Male (n = 78)	
Procedure			
Curettage + seton	7.7 (3)	5.1 (4)	0.581
Fistulectomy	56.4 (22)	55.1 (43)	0.895
Fistulotomy	35.9 (14)	37.2 (29)	0.892
LIFT	0.0 (0)	2.6 (2)	0.313
Number of procedures			
1	64.1 (25)	79.5 (62)	
2 a 3	28.2 (11)	15.4 (12)	0.193
4 a 6	7.7 (3)	5.1 (4)	

Results are presented as relative frequency (absolute frequency). p-Value in Chi-square test.

Table 4 – Evaluation of the association between time of disease and the variables procedure and number of procedures performed on patients.

Variable	Disease time		p-Value
	Less than 1 year (n = 104)	1 year or more (n = 13)	
Procedure			
Curettage + seton	2.9 (3)[b]	30.8 (4)[a]	<0.001
Fistulotomy	57.7 (60)	38.5 (5)	0.188
Fistulectomy	37.5 (39)	30.8 (4)	0.635
LIFT	1.9 (2)	0.0 (0)	0.614
Number of procedures			
1	78.8 (82)[a]	38.5 (5)[b]	
2 a 3	18.3 (19)[a]	30.8 (4)[a]	<0.001
4 a 6	2.9 (3)[b]	30.8 (4)[a]	

Results are presented as relative frequency (absolute frequency). p-value in Chi-square test. Different letters on the line indicate difference between patients with different disease times (Chi-square test, with Bonferroni correction, $p < 0.05$).

patients with Crohn's disease underwent a number of 4–6 procedures (30.0%; n = 3), compared to the percentage of patients without the disease who also underwent a number of 4–6 procedures (3.7%; n = 4; Chi-square test with Bonferroni correction; $p < 0.05$).

Table 6 shows the association between the presence or absence of SAH comorbidity and the variables procedure and number of procedures performed. No significant association was observed between these variables (Chi-square test, p-value ranging from 0.431 to 0.825). The same was observed in assessing the association between the presence or absence of DM comorbidity and the variables procedure and number of procedures performed (Chi-square test, *p*-value ranging between 0.576 and 0.857).

Table 5 – Evaluation of the association between the presence or absence of Crohn's disease and the variables procedure and number of procedures performed on patients.

Variable	Crohn's disease		p-Value
	No (n = 107)	Yes (n = 10)	
Procedure			
Curettage + seton	3.7 (4)	30.0 (3)	0.001
Fistulectomy	56.1 (60)	50.0 (5)	0.712
Fistulotomy	38.3 (41)	20.0 (2)	0.251
LIFT	1.9 (2)	0.0 (0)	0.663
Number of procedures			
1	77.6 (83)[a]	40.0 (4)[b]	
2 a 3	18.7 (20)[a]	30.0 (3)[a]	0.002
4 a 6	3.7 (4)[b]	30.0 (3)[a]	

Results are presented as relative frequency (absolute frequency). p-value in Chi-square test. Different letters on the line indicate difference between patients with and without Crohn's disease (Chi-square test, with Bonferroni correction, $p < 0.05$).

Table 6 – Evaluation of the association between the presence or absence of comorbidities (SAH/DM) and the variables procedure and number of procedures performed on patients.

Variable	DM		p	SAH		p
	No (n = 113)	Yes (n = 4)		No (n = 113)	Yes (n = 4)	
Procedure						
Curettage + seton	6.2 (7)	0.0 (0)	0.608	6.2 (7)	0.0 (0)	0.608
Fistulotomy	55.8 (63)	50.0 (2)	0.820	55.8 (63)	50.0 (2)	0.820
Fistulectomy	36.3 (41)	50.0 (2)	0.576	36.3 (41)	50.0 (2)	0.576
LIFT	1.8 (2)	0.0 (0)	0.788	1.8 (2)	0.0 (0)	0.788
Number of procedures						
1	74.3 (84)	75.0 (3)	0.857	74.3 (84)	75.0 (3)	0.857
2 a 3	19.5 (22)	25.0 (1)		19.5(22)	25.0 (1)	
4 a 6	6.2 (7)	0.0 (0)		6.2 (7)	0.0 (0)	

Discussion

This study provides very important information for a better understanding of anal fistulas. Regarding epidemiology, it sheds more light on the little information acquired from diverse sources and countries, thus filling this knowledge gap. It has been found here that men aged less than 60 years are the most affected by the disease, usually without associated comorbidities. Sainio16 found that the disease prevalence is 8.6 cases per 100,000 population, but in men it is 12.3:100,000; while in women it is 5.6:100,000; in a ratio of 1.8:1 with an average age of 38 years. Data from anal fistula operated patients in Helsinki showed an incidence of 8.6:100,000; also in a ratio of 2:1 between men and women[18,19]; similar to what was observed here, as in the present study there was a predominance of the disease in subjects under 60 years and a ratio 2:1 between men and women, which is quite similar to literature data,16,18 but now updating the information and showing local reality.

It is very rare for anal fistulas to affect children. Hill[20] reported 636 patients with anal fistula and of these only 9 were less than 9 years old, all boys. Mazier[21] also reported 1000 cases of anal fistulas of which only 25 were in patients less than 10 years old and 9 of them were boys. It is then clear that the data found here are in accordance with the literature showing that the disease occurs mainly in adults and in males.

The vast majority of patients in this sample had their treatment performed within one year of diagnosis. It should be clarified that these are patients treated at a public hospital, which may somewhat influence this matter. Because the service routine is the urgent referral of all those who are treated to the outpatient clinic due to anal abscess, the diagnosis of fistula was made early and the surgery performed within the service scope, but the entire process was carried out within a year, in most cases.

More than 92% of patients underwent fistulotomy or fistulectomy, which are also the most commonly performed procedures in the world for less complex fistulas. Drager et al.[22] performed fistulectomy as the first therapeutic option in 80% of cases. Fistulotomy has a complete healing rate of over 90% in low intersphincteric and transsphincteric fistulas, which make up the majority of cases[23] and is, therefore, one of the main options of coloproctologists. Garg et al.13 also used fistulotomy as the first therapeutic option in 54% of patients in a series of 675 patients, a number very close to that obtained here. Wang et al.[24] evaluated in a meta-analysis the various techniques employed in the treatment of anal fistulas and concluded that fistulotomy is still the technique with the highest rate of healing and is, therefore, the most used in the world.

Twenty-five percent of the sample required more than one procedure, while the others were operated only once. This finding is in agreement with the results already mentioned from the techniques used.[13,22–24] Those with Crohn's disease

(CD) are in the group of those who required more procedures, naturally due to the greater complexity of the disease.

In the present study, it was observed that 8.5% of the sample had CD, which is also in agreement with literature data. Sahnan et al.[25] reported in a review of 1,970 patients with perianal abscess that 70% were men and of these 7.3% had CD. Sixteen percent of patients developed fistula within seven months, but those with CD had twice as many cases, and most of those who progressed to fistula were women.

In the analysis performed here between age group, procedures performed, and number of procedures, there was only a statistically significant difference in the LIFT technique, which was proportionally more used in patients over 60 years old, but as the number of patients is small, this fact need not be given greater relevance. The LIFT technique has its best indication in patients with transsphincteric fistulas and, because it has a low risk of incontinence, it would certainly be a good choice for people over 60 years of age who are at higher risk for fecal incontinence.[26] There was also no difference between genders regarding the indication of procedures or number of surgeries performed, naturally because the indication of the technique depends on the characteristics of each fistula and not the gender, as well as its complexity, which would result in a greater number of procedures. Anyway, this record is important because this information has not been reported in the literature.

Two significant findings were obtained when comparing patients operated within less than one year of diagnosis and those with longer time: there were a larger number of patients treated with seton and curettage and a greater number of procedures in those who had been diagnosed for more than one year. Again, this finding should be a stimulus for further research aimed at clarifying this fact because the literature is vague in this regard. Most publications evaluating fistula treatment outcomes focus on the techniques employed, but without valuing the interval between disease onset and surgery. A longer time of disease progression could lead to the formation of secondary tract, which makes the fistula more complex, and many may not be identified during surgery leading to greater relapse.[6,13]

In the comparison between patients with and without CD, it was not surprising to observe that the curettage + seton technique was more used, with a greater number of procedures performed in those with CD. CD has historically presented with more complex anal fistulas,[27] so that it was possible to perform more fistulotomy and fistulectomy in subjects without CD, achieving resolution with a single procedure in most cases. It is recommended that patients with anal fistula associated with CD should be treated with anti-tumor necrosis factor-α agents, being the surgery of great importance, but mainly aiming at curettage, allowing the action of the drug and seton application in order to prevent abscess formation.[28,29]

As for the other comorbidities assessed, no statistical differences were found regarding procedures performed and number of surgeries, since in fact there are no reports of a direct relationship between arterial hypertension or diabetes mellitus with anal fistulas, although diabetic patients may have a worse outcome regarding anal abscess, which does not extend to the chronic phase of the disease.[30]

Conclusion

In the sample studied there was a predominance of anal fistulas in men under 60 years of age and without comorbidities, diagnosed up to one year, most undergoing fistulotomy or fistulectomy at a single time. Patients who were operated on after one year of illness and also those with Crohns's disease underwent mainly curettage + seton and multiple procedures.

Conflicts of interest

The authors declare no conflicts of interest.

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