Annals of Digestive and Liver Disease

Research Article
Published: 08 Mar, 2022

Is Prolonged Sitting a Risk Factor in Developing Symptomatic Hemorrhoids and Anal Fissures?

Gamal Eldin Hussein A El Shallaly[1], El Fatih M Malik[2], Mohamed Abdelmonem A Ali[3], Babiker AB Ibrahim[4], Maysa HM Hamza[5], Hassan EH Mohamed Ahmed[6], Mohamed MI Elhajahmed[7] and Modather ME Salih[8]*

[1]Department of Surgery, Alzaiem Alazhari (AAU) and Karary University, Sudan

[2]Department of Medicine, University of Khartoum, Sudan

[3]Department of Medicine, Karary University, Sudan

[4]Department of Medicine, Omdurman Islamic University, Sudan

Abstract

Purpose: Anal fissures and hemorrhoids are common anal conditions. They cause significant morbidity, social embarrassment and work absenteeism. In addition, they form a significant workload on the health system. Nevertheless, the etiology of these conditions is still contentious. It has been assumed that hemorrhoids and anal fissures are associated with prolonged sitting. This study aims to investigate this assumption.

Methods: This is a case-control study where we compared 81 patients with symptomatic and endoscopically proven hemorrhoids and or anal fissures with 162 controls with no symptoms or history of perianal disease. The cases and controls were matched for age. Demographic data and sitting hours per day of patients and controls were recorded in a proforma. Data were analyzed and compared using SPSS version 23.

Results: The mean sitting hours for cases was 5.99 (3.4) whereas that for controls was 4.0 (3.0) with highly significant difference ($p<0.001$). Sitting of 5 h or more per day (exposure) was associated with increased risk of developing hemorrhoids and/or anal fissure [odds ratio 3.68, 95% CI: 2.1-6.47].

Conclusion: The study showed that sitting down for 5 h or more per day may increase the risk of developing hemorrhoids and or anal fissures. This finding could help in primary prevention of healthy people and counseling patients to help in treatment and reduce recurrence.

Keywords: Hemorrhoids; Anal fissure; Endoscopy; Prolonged sitting hours

OPEN ACCESS

Correspondence:
Gamal Eldin Hussein A El Shallaly, Department of Surgery, Alzaiem Alazhari (AAU) and Karary University, P.O Box: 2910-Khartoum, Sudan, Tel: +249907984078; Fax: + 249 185 344510/12; E-mail: gamalshallaly@hotmail.com

Received Date: *15 Feb 2022*
Accepted Date: *25 Feb 2022*
Published Date: *08 Mar 2022*

Citation:
El Shallaly GEHA, Malik EFM, Ali MAA, Ibrahim BAB, Hamza MHM, Mohamed Ahmed HEH, et al. Is Prolonged Sitting a Risk Factor in Developing Symptomatic Hemorrhoids and Anal Fissures?. Ann Digest Liver Dis. 2022; 4(1): 1018.

Introduction

Hemorrhoids and anal fissures are common anal conditions. They (and their treatment) cause a lot of pain and morbidity to the patient. They form a large workload on health services and entail financial expenses on patients and health providers. Nevertheless, their true incidence and prevalence are difficult to know for certain [1,2]. This is due to many reasons such as embarrassment, fear, availability of over-the-counter medications and non- medical healers [1-3]. In addition, social and economic difficulties are just other reasons to mention. Hemorrhoids are defined as distal displacement and venous distension of anal cushions [1,2]. Some epidemiological studies estimate that hemorrhoids affect 39% to 52% of adults in the Western world [1].

Though common condition, the etiology of hemorrhoids is still contentious. For example, many authorities reported constipation as a risk factor [3]. Others did not find an association [4]. Perhaps pregnancy is the only factor supported by good evidence [1].

Anal Fissure (AF) is defined as "a linear or oval shaped tear (wound) in the mucosa of the anal canal starting below the dentate line extending to the anal verge." [5]. AF is also a common perianal condition [2]. The etiology is still uncertain, but most authorities believe it starts as trauma to the anoderm. Risk factors include constipation, obesity, and hypothyroidism [6].

The importance of knowing risk factors lie in the primary prevention of a disease and prevention of recurrence. Prolonged sitting on the lavatory and straining has been identified as a risk factor, but not sitting down at work or leisure [1,2]. Historically and interestingly, the only perianal condition

proved to be associated with sitting down at work was pilonidal sinus affecting jeep drivers in World-War II [7,8].

Prolonged sitting down- at work or for other reasons- has long been assumed -but no evidence provided- to be a risk factor in causing anal fissures and/or hemorrhoids. Review of English literature does not however show any study to verify or nullify this observation. Recent literature on the subject is also lacking. This study was done to investigate this assumption.

Patients and Methods

Study design

This is a case control study that took place at a teaching hospital in Khartoum, Sudan.

Sample size calculation

The sample size for the patients and controls was calculated using Kelsey and Fleiss methods (https://www.openepi.com/SampleSize/SSCC.htm). The confidence level was chosen to be 95%, the power 80%, hypothetical proportion of patients with exposure (0.66) and hypothetical proportion of controls with exposure (0.35). The minimum sample size was calculated to be 31 for cases and 61 for controls (Kelsey) and 30 *vs.* 59, respectively (Fleiss).

Patients and controls

We included 81 patients and 162 controls. The cases were patients who presented to the endoscopy unit with clear symptoms of hemorrhoids and/or fissure-in-ano and were diagnosed to have these conditions endoscopically. Patients with primary anal fissures and hemorrhoids who had no other (or secondary) cause, such as tumors and/or inflammatory bowel disease, were included. The controls were selected from patients or co-patients (relatives/friends) attending hospital departments such as the emergency or outpatient departments and who has no symptoms or history of perianal condition. A questionnaire was filled by the researchers. No endoscopy was done in this category due to ethical issues.

Data collection and analysis

A proforma was designed to collect information on the patients and to record the findings at endoscopy. The information collected included demographic data on patients including the age, sex, occupation and the average sitting hours per day. The same data was collected from controls.

Data were analyzed using the SPSS statistical package version 23. The mean (SD) of age and hours of sitting down were calculated together with the frequency of each sex among cases and control. A bivariate analysis was conducted and OR with its 95% CI was estimated.

Ethical clearance: The study was approved by the ethical committees at Khartoum North Teaching hospital (KNTH) and the Alzaiem Alazhari University (AAU). Informed consent was obtained from all individual participants included in the study (Cases and controls).

Results

Both cases and controls were matched by age (t value = 0.686, p=0.493) (https://mathcracker.com/t-test-for-two-means#results). The ages of both patients and controls displayed normal curves. The mean age of patients was 43.5 years (16.5), whereas the mean age of controls was 42.1 years (14.2). Over 90% of both the cases and controls are aged between 20 to 69 years of age with almost 50% between 30 and 49 years (Table 1). Males were slightly more than females in the controls as well as patients. The male to female ratios for controls and patients were (1.7:1) and (1.8:1), respectively.

Table 1: The age distribution of cases and controls.

Age group	Patients no.	%	Control no.	%
10-19	3	1.9	4	4.9
20-29	27	16.7	12	14.8
30-39	50	30.9	18	22.2
40-49	37	22.8	19	23.5
50-59	20	12.3	12	14.8
60-69	17	10.5	9	11.1
70+	8	4.9	7	8.6
Total	162	100%	81	100%

Table 2: Distribution of cases and controls according to sitting hour categories.

Sitting Hours	No. of patients	%	No. of controls	%
0-2	13	16	47	29
03-4	14	17.3	58	35.8
05-6	25	30.9	23	14.2
07-8	15	18.5	18	11.1
9+	14	17.3	16	9.9
Total	81	100%	162	100%

Table 3: Calculation of the odds ratio.

Exposure to 5 hours of sitting or more	Cases (%)	Controls (%)
Exposed	54 (66.67%)	57 (35.18%)
Unexposed	27 (33.33%)	105 (64.82%)
Total	81 (100%)	162 (100%)
Odds ratio	3.7	
95% confidence interval	2.1-6.47	

The 2 main presenting symptoms were rectal bleeding and anal pain in 53 patients (65.4%). Thirty-three patients (40.7%) complained of constipation and seven patients (8.6%) had perianal discharge. Some patients had more than one symptom.

The endoscopic diagnosis was as follows: 46 patients (56.8%) had hemorrhoids, 23 patients (28.4%) had anal fissures, and 12 patients (14.8%) had a combination. Those who had other conditions such as rectal carcinoma or polyps were excluded.

The distribution of sitting hours for both cases and controls formed normal distribution curves. The mean sitting hours for the controls was 4.0 h (SD 3.0), median 4.0 whereas that of the cases 5.99 (SD 3.4) median (5.5). Comparing the 2 means using t-test for independent samples, the t value was 3.987. The p value was 0.000105. The difference was thus highly significant (p<0.00).

When cases and controls were grouped according to sitting hours categories (0-2 h/3-4 h/5-6 h/7-8 h and 9+), it was observed that the number of cases with sitting hours equal to or more than 5 h were twice the number whose sitting time was less than 5 h a day (Table 2). It was also observed that 5 h is the mean of the 2 means of cases and controls (6 and 4 h respectively. We therefore proposed the use of 5 h as the exposure time to calculate the odds ratio.

The odds ratio was 3.68. It was calculated by 2 × 2 table (Table 3). The 95% confidence interval for this odds ratio lies between 2.1 and 6.47, and the 99% confidence interval between 1.76 and 7.72 (t-statistics.co.uk).

Discussion

This study showed that sitting down for more than 5 h a day may be a risk factor for developing hemorrhoids and or anal fissure. The risk of prolonged sitting is attached to the mere sitting down whether at work, (for example drivers), studying, or at leisure.

With regards to developing anal fissure, the pathophysiology of the effect of prolonged sitting may be linked with increasing the pressure and the ischemic effect it causes on the anal canal. Several studies [9-11] have shown that the posterior commissure of the anal canal receives less blood supply than the other part of the anal canal, which may explain why 75% of fissures occur in the posterior midline [1].

The study suggests that this relative ischemia may be exaggerated by prolonged sitting and pressure on the posterior commissure. With regards to hemorrhoids pathophysiology, the pathogenesis is still controversial. Our findings, however, agree with the possibilities proposed by Corman and Thompson [12,13]. Prolonged sitting may hamper venous drainage causing distension and dilatation of the veins of the internal venous plexus of the hemorrhoids and consequently abnormal distension of the arteriovenous anastomosis within the hemorrhoidal Cushing's. This will eventually lead to the downward displacement and prolapse of the hemorrhoidal tissue.

The absence of hemorrhoids in animals and its high prevalence in man may be attributed to the upright posture in man and his sitting down habits. There is now some evidence that prolonged sitting, a unique habit of man, may be a risk factor in developing both hemorrhoids and fissures.

The importance of identifying prolonged sitting hours as a risk factor for anal fissure and symptomatic hemorrhoids comes from the ease and the socioeconomic impact of its prevention. Most of our patients (65%) are young, aged between 10 to 50 years. Anal fissure pain and hemorrhoids symptoms and complications, such as rectal bleeding, can cause a lot of disruption to their studies, work and productivity. The treatment, which may require surgery, also adds to the prolonged morbidity and financial burden on both the patients and the health services. This risk factor (of prolonged sitting) has to be discussed with the patients and advice or counseling given to them regarding their occupation or way of living.

There are limitations to our study. Controls did not have endoscopy due to ethical, social, and financial issues. Some confounding factors such as constipation, pregnancy, and hypothyroidism were eliminated by excluding controls who gave positive history. The difference between cases and controls were thus focused on the sitting hours.

This study opens the door to investigate the association of prolonged sitting down and perianal conditions such as anal fissures and hemorrhoids.

Conclusion

This study sheds the light on prolonged sitting down, at work or otherwise, as a possible risk factor in the etiology of anal fissures and hemorrhoids. Sitting continuously for 5 or more hours a day seems to increase the risk of developing hemorrhoids and/or anal fissure. It is hoped that this information helps in primary prevention of these common anal conditions and prevents recurrence after treatment.

Acknowledgement

The authors acknowledge the cooperation and dedication of the Staff of the endoscopy unit at Khartoum North Teaching Hospital (KNTH), Sudan.

References

1. Ganz RA. The Evaluation and Treatment of Haemorrhoids: A guide for the gastroenterologist. Clin Gastroenterol Hepatol. 2013;11:593-603.
2. Peery AF, Sandler RS, Galanko JA, Bresalier RS, Figueiredo JC, Ahnen DJ, et al. Risk factors for haemorrhoids on screening colonoscopy. PLoS One. 2015;10(9):e0139100.
3. Kaidar-Person O, Person B, Wexner SD. Haemorrhoidal disease: A comprehensive review. J Am Coll Surg. 2007;204(1):102-17.
4. Johanson JF, Sonnenberg A. Constipation is not a risk factor for haemorrhoids: A case-control study of potential etiological agents. Am J Gastroenterol. 1994;89(11):1981-6.
5. Beaty JS, Shashidharan M. Anal Fissure. Clin Colon Rectal Surg. 2016;29(1):30-7.
6. Mapel DW, Schum M, Worley AV. The epidemiology and treatment of anal fissures in a population-based cohort. BMC Gastroenterol. 2014;14:129.
7. Casberg MA. Infected pilonidal cysts and sinuses. Bull U S Army Med Dep. 1949;9(6):493-6.
8. Clothier PR, Haywood IR. The natural history of the post anal (pilonidal) sinus. Ann R Coll Surg Engl. 1984;66(3):201-3.
9. Gordon PH, Nivatvongs S. Principles and practice of surgery for the colon, rectum and anus, 2nd Ed. St. Louis, MO: Quality Medical Publishing, Inc.; 1999:218.
10. Klosterhalfen B, Vogel P, Rixen H, Mittermayer C. Topography of the inferior rectal artery: A possible cause of chronic, primary anal fissure. Dis Colon Rectum. 1989;32(1):43-52.
11. Schouten WR, Briel JW, Auwerda JJ. Relationship between anal pressure and anodermal blood flow. The vascular pathogenesis of anal fissures. Dis Colon Rectum 1994;37(7):664-9.
12. Corman ML. Haemorrhoids. In: Corman ML, editor. Colon and rectal surgery. 4th Ed. Philadelphia, PA: Lippincott-Raven, 1998:147-205.
13. Thomson WH. The nature of haemorrhoids. Br J Surg 1975;62(7):542-52.