

Letter to the Editor

Tremor in Patients with Inflammatory Bowel Disease

Gisele R. de Oliveira¹, Patricia S. Aquino¹, Allyne M. Carvalho Costa¹, Elan D. Louis^{2,3,4,5}, Lúcia L. B. C. Braga¹, Marcellus H. L. P. Souza¹,
Francisco H. Rola¹ & Francisco A. A. Gondim^{1*}

¹Hospital Universitário Walter Cantídio, Universidade Federal do Ceará, Fortaleza, Ceará, Brazil, ²GH Sergievsky Center, College of Physicians & Surgeons, Columbia University, New York, New York, United States of America, ³Department of Neurology, College of Physicians & Surgeons, Columbia University, New York, New York, United States of America, ⁴Taub Institute for Research on Alzheimer's Disease and the Aging Brain, College of Physicians and Surgeons, Columbia University, New York, New York, United States of America, ⁵Department of Epidemiology, Mailman School of Public Health, Columbia University, New York, New York, United States of America

Keywords: Crohn's disease, inflammatory bowel disease, physiological tremor, ulcerative colitis

Citation: de Oliveira GR, Aquino PS, Carvalho Costa AM, et al. Tremor in patients with inflammatory bowel disease. *Tremor Other Hyperkinet Mov* 2013; 3: <http://tremorjournal.org/article/view/149>

*To whom correspondence should be addressed. E-mail: gondimfranc@yahoo.com

Editor: Julian Benito-Leon, Columbia University, United States of America

Received: December 4, 2012 **Accepted:** December 13, 2012 **Published:** March 14, 2013

Copyright: © 2013 de Oliveira et al. This is an open-access article distributed under the terms of the Creative Commons Attribution–Noncommercial–No Derivatives License, which permits the user to copy, distribute, and transmit the work provided that the original author(s) and source are credited; that no commercial use is made of the work; and that the work is not altered or transformed.

Funding: This study was supported by research grants from Coordination for Enhancement of Higher Education Personnel (CAPES), National Council for Scientific and Technological Development (CNPq), Foundation for Support in Scientific and Technological Development of Ceará (FUNCAP), and Universidade Federal do Ceará.

Financial Disclosures: None.

Conflict of Interest: The authors report no conflict of interest.

Introduction

The spectrum of neurological manifestations of Crohn's disease (CD) and ulcerative colitis (UC) is diverse and not fully understood. In addition to peripheral neuropathy,^{1,2} mild autonomic impairment has been reported.^{3,4} These problems themselves could also result in secondary neurological consequences, such as the exacerbation of enhanced physiological tremor. Indeed, some patients in our cohort² complained of tremor. Hence, we hypothesized that enhanced physiological tremor would be more severe in patients with inflammatory bowel disease (IBD) than controls.

Methods

We evaluated the presence of enhanced physiological tremor and other neurological disorders in a cohort of consecutive patients with either CD (n=31) or UC (n=63), comparing them with healthy controls (n=35). All CD and UC patients were enrolled at the Inflammatory Bowel Disease Clinic (Hospital Universitário Walter Cantídio, Brazil) and healthy controls were randomly selected from friends/relatives of these patients. Diagnosis of CD and UC were made by clinical, upper and lower endoscopy, radiological, and pathological assessments, according to accepted diagnostic criteria.^{5,6} This study was approved by the Institutional Review Board of the Universidade Federal do Ceará. All participants signed an informed consent form upon enrollment.

After neurological evaluation, participants drew Archimedes spirals with each hand on a blank, standard, 8.5×11 inch sheet of paper, as

described.⁷ Both spirals were rated by a clinically blinded senior movement disorders neurologist (E.D.L.) using a reliable and valid ordinal clinical rating scale (0–3). Data on demographics, medications, use of caffeine, and smoking and ethanol consumption within 24 hours of evaluation were collected. The one-way analysis of variance (ANOVA) followed by the Student–Newman Keuls test and Kruskal–Wallis one-way ANOVA plus Dunn's test were used to compare the groups. Differences were considered significant if p<0.05. Logistic regression models were also used (outcome variable=diagnosis [UC + CD vs. controls]).

UC patients were older than controls (p<0.05): 44.7±1.9 (UC), 41.1±2.4 (CD), and 34.9±2.4 years (controls) but there was a similar gender distribution: control group (63.4%) compared with CD (51.6%) and UC patients (58.7%). A larger proportion of controls used caffeine 27(77.1%) compared with CD (12 [38.7%], p=0.003) and UC (19 [30.2%], p<0.001). Smoking also differed by group (12 [38.7%] in CD, p=0.0001 compared with 0 controls) and 14 [22.2%] in UC, p=0.002 compared with controls). No IBD patients evaluated in our cohort were diagnosed with Parkinson's disease, Parkinsonism, or essential tremor. No control patients had a diagnosis of Parkinson's disease, Parkinsonism, or essential tremor, but a thorough neurological evaluation was not performed on this group. Some of the IBD patients did experience tremor while taking medications such as thalidomide. However, their Archimedes spirals were not included in this study.

Results

Tremor scores on the right hand were similar in controls (0.49 ± 0.06) vs. CD and UC (0.39 ± 0.08 and 0.41 ± 0.05 , respectively, $p > 0.05$). Tremor scores on the left hand also did not differ: 0.7 ± 0.07 (controls), 0.57 ± 0.08 (CD), and 0.64 ± 0.06 (UC), $p > 0.05$. The sum of tremor scores (right+left) was also similar among the different groups: 1.13 ± 0.12 (controls), 0.95 ± 0.15 (CD), and 1.05 ± 0.09 (UC), $p > 0.05$. In a bivariate logistic regression model, the sum tremor score (independent variable) was not associated with diagnosis (UC + CD vs. controls, odds ratio 0.81, 95% confidence interval 0.50–1.32, $p = 0.40$). Adjusting for age, gender, caffeine use, and smoking in a multivariate logistic regression model did not change the results (odds ratio 1.02, $p = 0.95$).

Discussion

This study showed that patients with either CD or UC had no significant difference in the amount of enhanced physiological tremor compared with healthy volunteers. It is also possible that visual assessment of the Archimedes spirals may not be sensitive enough to detect minor tremor differences among these populations. Additional studies may be warranted.

Acknowledgment

This paper was part of the requirements for a PhD thesis presented at the Universidade Federal do Ceará by Dr. Gisele Ramos de Oliveira.

References

1. Gondim FA, Brannagan TH 3rd, Sander HW, Chin RL, Latov N. Peripheral neuropathy in patients with inflammatory bowel disease. *Brain* 2005; 128:867–879, <http://dx.doi.org/10.1093/brain/awh429>.
2. Oliveira GR, Teles BC, Brasil EF, et al. Peripheral neuropathy and neurological disorders in an unselected Brazilian population-based cohort of IBD patients. *Inflamm Bowel Dis* 2008;14:389–395, <http://dx.doi.org/10.1002/ibd.20304>.
3. Lindgren S, Lilja B, Rosen I, Sundkvist G. Disturbed autonomic nerve function in patients with Crohn's disease. *Scand J Gastroenterol* 1991; 26:361–236
4. Lindgren S, Stewenius J, Sjolund K, Lilja B, Sundkvist G. Autonomic vagal nerve dysfunction in patients with ulcerative colitis. *Scand J Gastroenterol* 1993;28:638–642.
5. Jewel DP. Ulcerative colitis. In: Feldman M, Scharschmidt BF, Sleisenger MH (eds.) *Sleisenger & Fordtran's Gastrointestinal and Liver Disease. Pathophysiology, Diagnosis and Management*, 6th ed. Philadelphia: WB Saunders, 1998; 1735–1761.
6. Kronbluth A, Sachar DK, Salomon P. Crohn's disease. In: Feldman M, Scharschmidt BF, Sleisenger MH (eds.) *Sleisenger & Fordtran's Gastrointestinal and Liver Disease. Pathophysiology, Diagnosis and Management*, 6th ed. Philadelphia: WB Saunders, 1998:1708–1734.
7. Hafeman D, Ahsan H, Islam T, Louis E. Betel quid: Its tremor-producing effects in residents of Araihaazar, Bangladesh. *Mov Disord* 2006;21:567–571, <http://dx.doi.org/10.1002/mds.20754>.