



Fundació
La Marató de TV3

XVII SIMPOSIUM

Acquired spinal cord and brain injuries



PROPOSAL TO IMPROVE NEUROGENIC BOWEL DISFUNCTION AND RELATED QUALITY OF LIFE OUTCOMES IN SUBJECTS WITH BRAIN OR SPINAL CORD INJURY

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Fundació IMIM



1. Summary of the Project

1. Hypothesis & Aims

Hypothesis

Quality of life and performance status of patients with neurogenic bowel dysfunction (NBD) will improve if their bowel malfunctions, currently not addressed in a universally standardized manner, are systematically addressed by specialized medical personnel using state of the art methodology and evidence-based decision algorithms

Objectives

Specific Aim: To improve neurogenic bowel dysfunction and related quality of life (QOL) outcomes through standardization of the gastrointestinal diagnostic workup and management protocol by specialized personnel using state of the art methodology and evidence-based decision making algorithms

Methods

Population: Patients >18yo, who have survived to brain or incomplete medullar injury and have undergone a motor rehabilitation program and are not dependant on a pulmonary ventilator were screened for neurogenic bowel and those affected were invited to undergo standardized workup and treatment

Screening: Participants were systematically screened for neurogenic bowel using a validated questionnaire, the bowel disease questionnaire (BDQ. Talley NJ et al. 1990:1456) and those with positive symptoms were offered to undergo an exhaustive and standardized evaluation of their neurogenic bowel dysfunction implementing the recommendations included in the 1- Clinic Guidelines for Neurogenic Bowel of the Consortium for Spinal Cord Medicine, 2- the Bowel Function Data Sets included in the International Spinal Cord Injury Data Set published recently. These include rectal examination, evaluation of colonic transit time (CTT), the Neurogenic Bowel Score, and specific scoring of the different symptoms using validated questionnaires (Fecal incontinence and constipation Cleveland Clinic scores) as recommended (Valles M et al. 2006:2290).

Pathophysiological underlying mechanisms characterization: We used state of the art and validated methods: high resolution anorectal manometry, gastrointestinal and colonic motility testing using SmartPill® (wireless motility capsule) and neurophysiologic study of pelvic floor nerves.

Standardized Treatment: This was based on recommendations by the Consortium for Spinal Cord Medicine and included dietary and exercise recommendations, biofeedback training and use of oral drugs, on a scaled regime to achieve adequate bowel control.

2. Abstracted results

From screening phase:

From 479 cases of spinal cord (SCI) and brain injury (BI), 367 (77 %) were interviewed (70-SCI/297-BI). In SCI-patients (57 % M, 63yo), injury level was cervical-thoracic (63 %), lumbar (31%), or sacral (6 %) and most frequent etiologies were: degenerative (36 %), traumatic (20 %) and tumor (14 %). In BI-patients (58% M, 71yo,) most frequent etiologies were ischemic (79%) or hemorrhagic (18%). Among SCI-patients, 64% had bowel dysfunction (BD), 53% constipation and 17% FI. Among BI-patients, 47 % had BD ($p=0.01$ vs. SCI), 35% constipation and 16% FI. Among constipated-patients, 50 % reported this to have some/major impact on their QOL and for 5% constipation was the most disabling sequel. Among FI-patients, 30 % reported FI had a major impact on their QOL and for 7% FI was the most disabling sequel. On multivariate analyses, the likelihood of FI depended in SCI-patients on age ($p=0.01$) and Asia-status ($p=0.01$); and in BI-patients on patients dependence-status ($p<0.0001$), diarrhea ($p<0.0001$) and brain territory ($p=0.001$). Patients with ACA/MCA injuries were more likely to present constipation (OR vs PCA/PICA: 1.9 [1.1; 3.3]; $p=0.02$). **Conclusions:** NBD is very common in stabilized SCI/BI-patients, may have a major impact on QOL and depends on spinal level and brain territory affected.

Pathophysiological phase

Brain injury patients

Eighty-nine patients reporting bowel dysfunction, 42 with brain injury (BI) without cognitive impairment, dysphagia or altered mobility and 47 without neurological injury (controls), agreed to undergo the standardized clinical workup, physiological testing and treatment.

Study population: Epidemiological and BI data

Constipation	BI (N=20)	Controls (N=26)	FI	BI (N=22)	Controls (N=21)
Gender	60% M	88% F		59% F	86% F
Age (yo)	67 (62; 72)	62 (58; 67)		71 (67; 75)	65 (60; 71)
Ictus	95%	--		100%	--
Years since BI	3,2 (2,4; 4,0)	--		2,6 (2,1; 3,2)	--
Barthel	81.5 (73; 90)	95 (83; 100)		78 (71; 85)	90 (85; 100)
NBDS	3 (2; 4)	--		8,5 (6; 11)	--

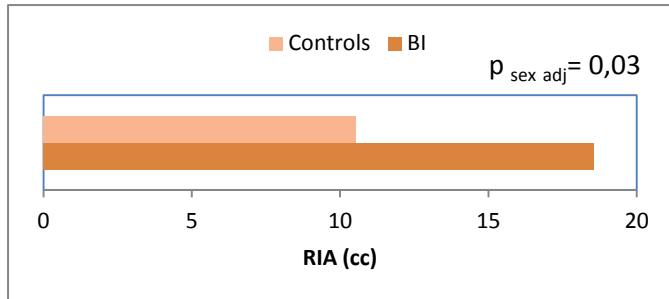
Bowel dysfunction clinical phenotypes: comparison between bi and controls

Constipation	BI (N=20)	Controls (N=26)	p (sex adj)	Every day or every week Fecal Incontinence	BI (N=22)	Controls (N=21)	p (sex adj)
Years with constipation <5	80%	39%	p=0,002	Gas	36.4%	9.5%	p=0,14
≤ 1 bowel movement/week	35%	11.5%	p=0.0002	Liquid faeces	22.7%	9,5%	p=0.03
Straining > 25% of time	60%	73%	p=0.76	Solid faeces	18,2%	4.7%	p=0,03
> 30 mins /evacuation	0%	8%	p=0.8	Diaper use	36.4%	14,3%	p=0.05
Failed evacuations (never/ > 4 times x day)	50% / 15%	58% / 0%	p=0.8	Quality of life affected	36.4%	28,6%	p=0.6
Need digitation / enema	80%	65%	p=0.2	Urgency	86%	95%	p=0.99
Feeling of incomplete evacuation	20%	81%	p=0.0002	Anti-diarrheal drug use	4,5%	4.8%	p=0.98
Abdominal Pain	15%	83%	p=0.0008	Wexner Score(0-20)	9,78 (1)	7,39 (1)	p=0.08
Wexner score(0-30)	9(1)	14 (1)	p=0.003				

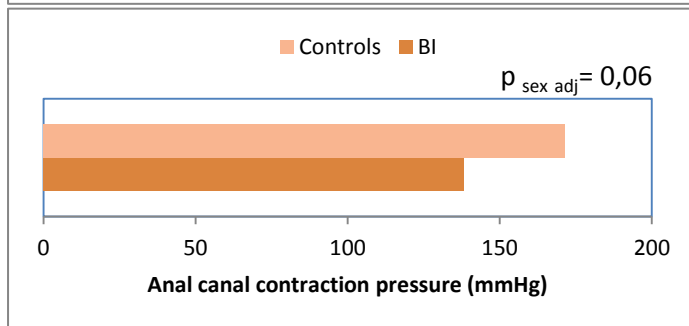
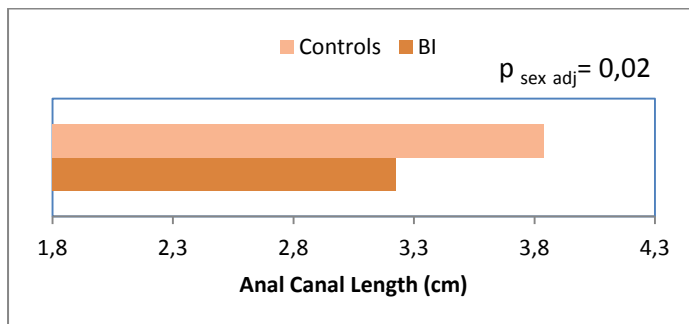
Bowel dysfunction nphysiological phenotypes: comparison between bi and controls

Anorectal manometry

Constipated patients



Patients with fecal incontinence

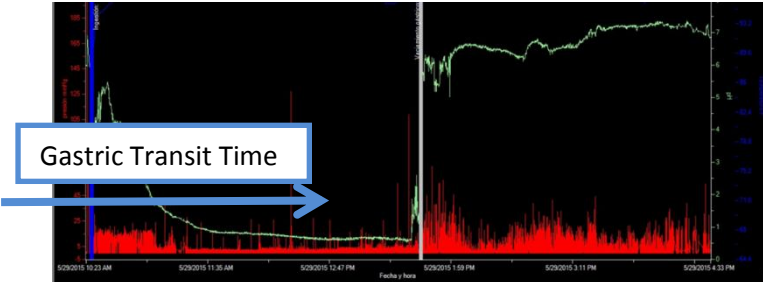


Transit times and motility index

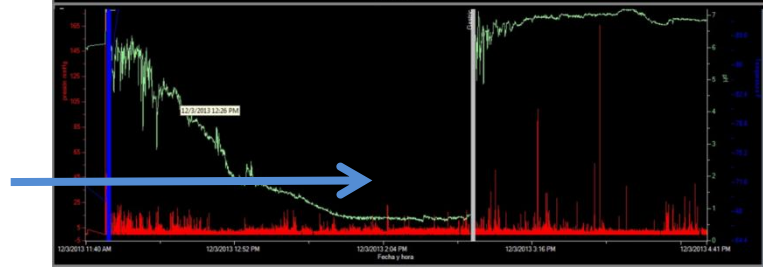
Stomach & small bowel

Gastric transit time was increased in 36% of BI patients compared to 17% of controls ($p < 0.05$), whereas no differences were observed in small bowel transit times between patients and controls. However motor activity (frequency and amplitude of contractions- red pressure lines) both in the stomach and small bowel were decreased in patients with brain injury compared to controls ($p = 0.1$ and 0.02 , respectively).

Control



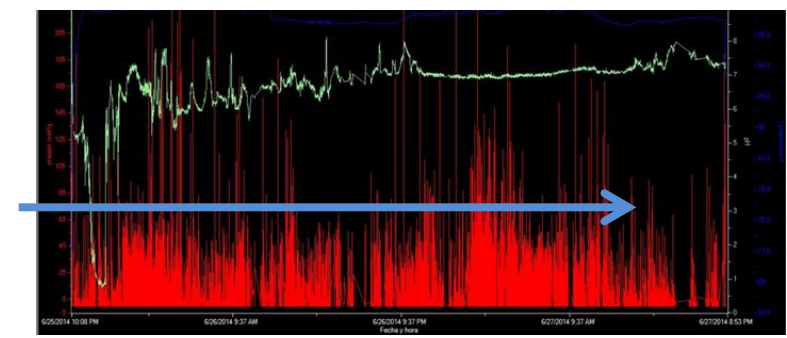
BI



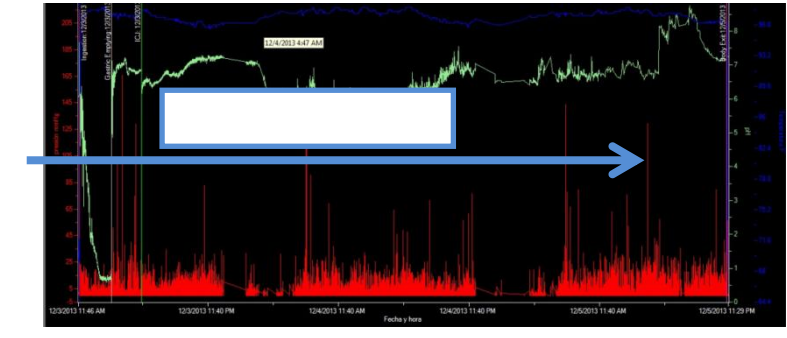
Colon

Colonic transit time was similar in BI patients and controls. However motor activity (frequency and amplitude of contractions- red pressure lines) were significantly decreased in patients with brain injury compared to controls ($p= 0.02$).

Control



BI



Spinal cord injury patients

Awaiting analyses.

Standardized treatment phase:

Preliminary analyses.

Vaizey Fecal Incontinence Score (0-24) response to standardized treatment.

Vaizey FI score_pre-treatment: 12.92

Vaizey FI score_6 months post-treatment: 5.90

An average improvement of 7.04 points; $p < 0.0001$

Wexner Fecal Incontinence Score (0-20) response to standardized treatment.

Wexner IF score_pre-treatment: 10.25

Wexner FI score_6 months post-treatment: 4.29

An average improvement of 5.96 points; $p < 0.0001$

Wexner constipation Score (0-30) response to standardized treatment.

Wexner constipation score_pre-treatment: 10.90

Wexner constipation score_6 months post-treatment: 7.35

An average improvement of 3.56 points; $p < 0.0001$

3. Scientific meeting presentations & publications

Scientific Meeting Presentations

1. Autors/es (per ordre de signatura): J. Haya , I. De Lemos , I. Martín , M. Tejero , I. Royo , E. Munteis , I. M. Castillo, E. del Amo, I. Ibáñez , MC Alonso , F. Bory, S. Delgado-Aros .

Títol: PREVALENCIA DE LA DISFUNCIÓN INTESTINAL NEURÓGENA Y SU IMPACTO EN LA CALIDAD DE VIDA EN PACIENTES CON LESIÓN MEDULAR O CEREBRAL AGUDA ADQUIRIDA

Tipus de contribució: PRESENTACIÓ ORAL

Congrés: XXI Reunión del Grupo Español de Motilidad Digestiva

Publicació:

Lloc celebració: València Data: 2013

2. Autors/es (per ordre de signatura): J. Haya , I. De Lemos , I. Martín , M. Tejero , I. Royo , E. Munteis , I. M. Castillo, E. del Amo, I. Ibáñez , MC Alonso , F. Bory, S. Delgado-Aros .

Títol: Prevalença de la disfunció intestinal neurògena i el seu impacte en la qualitat de vida en pacients amb lesió medul·lar o cerebral aguda adquirida

Tipus de contribució: PRESENTACIÓ PÓSTER

Congrés: XXIII Congrés de la Societat Catalana de Digestologia

Publicació:

Lloc celebració: Lleida Data: 30 Gener- 1Feb2014

3. Autors/es (per ordre de signatura): J. Haya , I. De Lemos , I. Martín , M. Tejero , I. Royo , E. Munteis , I. M. Castillo, E. del Amo, I. Ibáñez , MC Alonso , F. Bory, S. Delgado-Aros .

Títol: Prevalencia de la Disfunción Intestinal Neurógena y su Impacto en la Calidad de Vida en Pacientes con Lesión Medular o Cerebral Aguda Adquirida

Tipus de contribució: ESCOGIDO PÓSTER DE INTERÉS CLÍNICO

Congrés: XVII REUNIÓN ANUAL de la Asociación Española de Gastroenterología (AEG)

Publicació:

Lloc celebració: Madrid Data: 26-28 Març 2014

4. Autors/es (per ordre de signatura): J. Haya , I. De Lemos , I. Martín , M. Tejero , I. Royo , E. Munteis , I. M. Castillo, E. del Amo, I. Ibáñez , MC Alonso , F. Bory, S. Delgado-Aros .

Títol: Neurogenic Bowel Dysfunction: Prevalence, Clinical Characteristics and Impact on Perceived Quality of Life in Spinal Cord and Brain Injury Patients

Tipus de contribució: POSTER OF DISTINCTION

Congrés: DDW2014

Publicació:

Lloc celebració: Xicago Data: 3-6 Maig2014

5. Autors/es (per ordre de signatura): J. Haya , F. Enríquez , I. Martín , M. Tejero , I. Royo , E. Munteis , I. Ibáñez , MC Alonso , F. Bory, M. Andreu Garcia i S. Delgado-Aros .

Títol: FISIOPATOLOGIA DE LA DISFUNCIO INTESITINAL EN PACIENTS AMB LESIO NEUROLÒGICA CENTRAL

Tipus de contribució: POSTER

Congrés: XXV Congrés de la Societat Catalana de Digestologia

Publicació:

Lloc celebració: Reus Data: 28-31 Gener2016

6. Autors/es (per ordre de signatura): J. Haya , F. Enríquez , I. Martín , M. Tejero , I. Royo , E. Munteis , I. Ibáñez , MC Alonso , F. Bory, M. Andreu Garcia i S. Delgado-Aros .

Títol: FISIOPATOLOGIA DE LA DISFUNCIÓ INTESTINAL EN PACIENTES CON LESIÓN NEUROLÓGICA CENTRAL.

Tipus de contribució: PRESENTACIÓ ORAL

Congrés: XVII REUNIÓN ANUAL de la Asociación Española de Gastroenterología (AEG)

Publicació:

Lloc celebració: Madrid Data: 1-4 Març2014

Papers

J. Haya , I. De Lemos , I. Martín , M. Tejero , I. Royo , E. Munteis , I. M. Castillo, E. del Amo, I. Ibáñez , MC Alonso , F. Bory, M. Andreu Garcia and S. Delgado-Aros .
LONG TERM BOWEL DYSFUNCTION AFTER SCI OR BI: PREVALENCE, CLINICAL FEATURES AND RISK FACTORS *In Review Process*

J. Haya , F. Enríquez , I. Martín , M. Tejero , I. Royo , E. Munteis , I. Ibáñez , MC Alonso , F. Bory, M. Andreu Garcia i S. Delgado-Aros . Long-Term Gastro-Intestinal Dysfunction after Acute Stroke : a Neurogenic Basis ? *In preparation*

J. Haya , I. Martín , M. Tejero , I. Royo , E. Munteis , I. Ibáñez , MC Alonso , S. Delgado-Aros . Long-Term Fecal Incontinence and colònic inertia after Acute Stroke : Response to standardized treatment in comparison with the General Population *In preparation*