3rd INTERNATIONAL PORTO CONGRESS OF MULTIPLE SCLEROSIS

Ordem dos Médicos | Porto, 27>28 FEBRUARY 2015
CONTENTS

WELCOME MESSAGE
ORGANIZATION
VENUE
CONGRESS GENERAL INFORMATION
PROGRAMME
SOCIAL PROGRAMME
OUT & ABOUT
ABSTRACTS OF LECTURES
ABSTRACTS OF ORAL COMMUNICATIONS AND POSTERS
AUTHOR INDEX
I have the pleasure of announcing the Third International Porto Congress on Multiple Sclerosis, which will take place in Porto on February 27th and 28th, 2015. Following the success obtained in the First (2011) and Second (2013) editions, the quality of which have been widely recognized, this event has imposed and conquered a place in the scientific community devoted to MS and allied neurological demyelinating diseases.

The scientific program has been carefully prepared to discuss and update our knowledge in breaking topics of MS, with a particular emphasis in pediatric MS, new treatments, clinical trials and costs, and also focusing a large spectrum of frontier diseases that often mimic MS and carry critical problems of differential diagnosis, as autoimmune systemic diseases, vascular pathologies, metabolic and mitochondrial disorders.

As usual, a panel of renowned speakers from different research centres and countries will add relevant information to our knowledge and lead to an excellent exchange of expertise. The scientific program is completed with courses focusing on MS in daily clinical practice, such as symptomatic therapy and lifestyles, and with oral and poster presentations.

In addition, and aiming to reveal the variety of historical facets of our city, there will also be a conference devoted to the artistic heritage of Porto.

Porto is located in the north of Portugal and one of Europe's oldest cities. In 1996 the city was elected World Heritage by Unesco and, in 2014, it was elected the European Best Destination. With its magnificent monuments and masterpieces of contemporary architecture, historical sites, romantic views and cruises up the Douro River, rich gastronomy, scents and flavours of the Port Wine cellars and its warm hospitality, the city is like its wine: Unique, Exquisite and Authentic.

That is why I am proud to invite you to join us in Porto to participate in the Third International Porto Congress on Multiple Sclerosis.

Looking forward to welcome you to Porto.

Yours sincerely,

Maria José Sá, MD, PhD
(President of the Congress)
I have the pleasure of announcing the Third International Porto Congress on Multiple Sclerosis, which will take place in Porto on February 27th and 28th, 2015.

Following the success obtained in the First (2011) and Second (2013) editions, the quality of which have been widely recognized, this event has imposed and conquered a place in the scientific community devoted to MS and allied neurological demyelinating diseases.

The scientific program has been carefully prepared to discuss and update our knowledge in breaking topics of MS, with a particular emphasis in pediatric MS, new treatments, clinical trials and costs, and also focusing a large spectrum of frontier diseases that often mimic MS and carry critical problems of differential diagnosis, as autoimmune systemic diseases, vascular pathologies, metabolic and mitochondrial disorders.

As usual, a panel of renowned speakers from different research centres and countries will add relevant information to our knowledge and lead to an excellent exchange of expertise. The scientific program is completed with courses focusing on MS in daily clinical practice, such as symptomatic therapy and lifestyles, and with oral and poster presentations.

In addition, and aiming to reveal the variety of historical facets of our city, there will also be a conference devoted to the artistic heritage of Porto.

Porto is located in the north of Portugal and one of Europe’s oldest cities. In 1996 the city was elected World Heritage by Unesco and, in 2014, it was elected the European Best Destination.

With its magnificent monuments and masterpieces of contemporary architecture, historical sites, romantic views and cruises up the Douro River, rich gastronomy, scents and flavours of the Port Wine cellars and its warm hospitality, the city is like its wine: Unique, Exquisite and Authentic.

That is why I am proud to invite you to join us in Porto to participate in the Third International Porto Congress on Multiple Sclerosis.

Looking forward to welcome you to Porto.

Yours sincerely,

Maria José Sá, MD, PhD
(President of the Congress)
# ORGANIZATION

## Organizing Committee

Maria José Sá, MD, PhD (President)

Joana Guimarães, MD, PhD (Vice-president)

Jorge Reis, MD

Pedro Abreu, MD

Teresa Mendonça, MD

Lucinda Sequeira (Secretary)

## Institutional Departments

MS Clinic, Dept. of Neurology. Centro Hospitalar São João, Porto

CSF Lab, Dept. of Neurology. Centro Hospitalar São João, Porto

## Scientific Committee

Armando Sena, MD, PhD

José Vale, MD

João Cerqueira, MD, PhD

Pedro Abreu, MD

João de Sá, MD, PhD

Rui Pedrosa, MD

Ana Martins, MD, PhD

Vasco Salgado, MD

Joana Guimarães, MD, PhD

Lívia Sousa, MD

Maria José Sá, MD, PhD

Lucia Costa, MD

Joaquim Pinheiro, MD

Maria do Carmo Macário, MD

Jorge Reis, MD

Maria Teresa Mendonça, MD

## Organizing Secretariat

**Mundiconvenius**

Av. 5 de Outubro, 53 - 2

1050 - 048 Lisboa, Portugal

Support Line: +351 21 315 51 35

info@multiplesclerosis2015.com

www.multiplesclerosis2015.net
VENUE

Centro de Cultura e Congressos
Secção Regional do Norte da Ordem dos Médicos
Rua Delfim Maia, 405, 4200-256 Porto - Portugal
Contact: +351 22 507 01 00

CONGRESS GENERAL INFORMATION

REGISTRATION DESK
Friday, 27th February 08h00 – 18h00
Saturday, 28th February 08h30 – 17h30
Congress materials are available at the Registration Desk.
The registration and information desks will be located in the “Centro de Cultura e Congressos” reception desk.

REGISTRATION FEES
January 30th 2015 €175.00
After January 30th 2015 and until February 15th 2015 €195.00
Onsite registration €195.00
Registration includes all the program activities, lunches, coffee breaks, certificate of attendance and the delegate bag. The registration fees also include VAT taxes (23%)

SHORT-COURSES
Friday, 27th February at 18h00
€ 50.00 each
Short Course I - MS Management
Short Course II - Daily issues facing MS patients

CONGRESS LANGUAGE
The official language of the congress is English.
COFFEE-BREAKS
Coffee breaks will be served twice a day; morning and afternoon, at the exhibition area.

CONGRESS DINNER
Friday, 27th February at 20h30
€ 55.00

The dinner will take place at
Caves Ferreirinha
Avenida Ramos Pinto, 70
Vila Nova de Gaia

Tickets are required for admission.
Transportation (limited to 50 seats) will be available from the Axis Porto - Business & SPA Hotel at 20h00 and return at 23h00.

TRANSPORTATION
There will be a transfer to the congress venue (limited to 50 seats) leaving the Axis Porto - Business & SPA Hotel on both days at 08h30.

SPEAKER’S INFORMATION
All presentations must be prepared as PowerPoint files in English.
Speakers should bring their presentations stored on a CD-ROM or USB memory stick, and deliver it to the technician in the control room no later than 2 hours before the start of their session. The use of own laptop computers is not allowed.
The only language spoken during the session should be English.

ORAL PRESENTATIONS
The above instructions are applicable.
Duration for oral presentations: 7 minutes + 3 minutes

POSTER PRESENTATION
Posters should be set up by authors during the morning of Friday, 27th February until 11h00, and removed on Saturday from 16h30 to 17h00.
All the posters displayed after this time will be removed by the organization and recycled.
A maximum space of 90 cm (width) x 120 cm (height) is available for each poster.
Posters will be on display next to the exhibition area during the entire congress.
Presenter is requested to be available next to the poster during coffee-break period.

Poster presentations will be on Saturday, 28th February from 16h00 to 16h30.
Duration for presentations: 2 minutes
The presentation should follow 3 important keys: Purpose | Methods | Discussion of the Results.

INSURANCE / LIABILITY
Participation in this congress implies that persons/participants agree that the organizers will not carry any liability. Upon registration, the participant accepts this provision.

PROGRAMME CHANGES
The organisers cannot assume liability for changes in the programme due to external or unforeseen circumstances.
FRIDAY, 27 FEBRUARY 2015

ALL SESSIONS | 09h00 – 18h00 | ROOM SALÃO NOBRE

09h00

WELCOME ADDRESS
Maria José Sá, Centro Hospitalar São João, Porto, Health Sciences Faculty, University Fernando Pessoa, Porto, Portugal

09h15 – 10h00

CONFERENCE
Chairperson: Maria José Sá, Centro Hospitalar São João, Porto, Health Sciences Faculty, University Fernando Pessoa, Porto, Portugal

The costs of MS in Europe
Gisela Kobelt, European Health Economics, Stockholm, Sweden

10h00 – 11h15

SESSION 1 - Multiple Sclerosis and frontier diseases (I)
Chairpersons: Armando Sena, Universidade Nova de Lisboa, Portugal and João Cerqueira, Hospital de Braga, Life and Health Sciences Research Institute, Clinical Academic Centre Braga, School of Health Sciences, University of Minho, Braga, Portugal

New developments in autoimmunity - update
Ariel Miller, Center for Multiple Sclerosis & Brain Research, Carmel Medical Center, Rappaport Institute for Research in the Medical Sciences, Faculty of Medicine, Technion-Israel Institute of Technology, Haifa, Israel

Autoimmune mimics of MS
Sean Pittock, Neuroimmunology Laboratory, Mayo Clinic, Minnesota, Rochester, USA

11h15 – 11h45

Coffee Break | Exhibition Hall | Poster view

11h30 – 13h00

SESSION 2 - Multiple Sclerosis and frontier diseases (II)
Chairpersons: Ana Martins, Centro Hospitalar do Porto, Institute of Biomedical Sciences Abel Salazar, Porto, Portugal and Lúcia Costa, Centro Hospitalar São João, Porto, Portugal

Autoimmune rheumatic diseases
Carlos Vasconcelos, Centro Hospitalar do Porto, Institute of Biomedical Sciences Abel Salazar, Porto, Portugal

Multiple sclerosis is an index disease in multiple autoimmune syndromes?
Renato Tozolli, Department of Laboratory Medicine, Laboratory of Clinical Pathology, S. Maria degli Angeli Hospital, Pordenone, Italy

13h00 – 14h15

Lunch | Exhibition Hall

14h15 – 14h30

OPENING CEREMONY
Maria José Sá, Centro Hospitalar São João, Porto, Portugal
António Ferreira, Administration of Centro Hospitalar São João, Porto, Portugal
Carolina Garrett, Portuguese Society of Neurology, Portugal

14h30 – 15h45

SESSION 3 - Pediatric Multiple Sclerosis
Chairpersons: Sónia Figueiroa, Centro Hospitalar do Porto, Portugal and Joana Guimarães, Centro Hospitalar São João, Porto, Faculty of Medicine, University of Porto, Portugal

Childhood-acquired demyelinating syndromes
Kevin Rostasy, Division of Pediatric Neurology, Department of Pediatrics I, Innsbruck Medical University, Innsbruck, Austria
**Pediatric Multiple Sclerosis: Current Concepts**
Lauren Krupp, Department of Neurology, Stony Brook University Medical Center, New York, USA

**15h45 – 16h30**

**CONFERENCE**

**Chairperson:** Maria José Sá, Centro Hospitalar São João, Porto, Health Sciences Faculty, University Fernando Pessoa, Porto, Portugal

**World spreading artists born in Oporto**
Joel Cleto, Instituto Superior de Administração e Gestão, Porto Canal, Porto, Portugal

**16h30 – 17h00**

Coffee Break | Exhibition Hall | Poster view

**17h00 – 17h30**

**CONFERENCE**

**Chairperson:** Pedro Abreu, Centro Hospitalar São João, Porto, Faculty of Medicine, University of Porto, Portugal

**MS Forecast: a electronic tool to simulate MS prognosis**
Mário Veloso, Anestesia, Reanimação e Neurologia, Hospital Egas Moniz, Lisboa, Portugal

**17h30 – 18h00**

**Main today spots**
Pedro Abreu, Centro Hospitalar São João, Porto, Faculty of Medicine, University of Porto, Portugal

**18h00 – 19h30**

**SHORT-COURSES**

**ROOM MEDICOTECIA**

**COURSE I “MS Management”**

**TOPIC 1**

**Symptomatic Treatment** - Carlos Andrade, Centro Hospitalar São João, Porto, Faculty of Medicine, University of Porto, Portugal

**Urinary symptoms in Multiple Sclerosis** - Francisco Cruz, Centro Hospitalar São João, Porto, Faculty of Medicine, University of Porto, Portugal

**Rehabilitation in MS** - Hugo Lopes, Centro de Reabilitação do Norte, Vila Nova de Gaia, Portugal

**TOPIC 2**

**Challenges of MS Nurse** - Fátima Lopes, Centro Hospitalar São João, Porto, Portugal

**Therapeutic Education Program: Physical and occupational therapy**
- Odete Rodrigues, Centro Hospitalar Vale do Ave, Guimarães, Portugal

**Therapeutic Educational Program: Bladder Dysfunction** - Francisco Moreira, Centro Hospitalar Vale do Ave, Guimarães, Portugal

**ROOM BRAGA**

**COURSE II “Daily issues facing MS patients”**

**TOPIC 1**

**MS and Lifestyle** - Joana Guimarães, Centro Hospitalar São João, Porto, Faculty of Medicine, University of Porto, Portugal

**Nutrition and Multiple Sclerosis** - Flora Correia, Faculty of Nutrition and Food Science, University of Porto, Portugal

**Physical exercise and Multiple Sclerosis** - Raquel Silva, Health Sciences Faculty, University Fernando Pessoa, Porto, Portugal

**TOPIC 2**

**Legal and Social aspects** - David Costa, Centro Hospitalar São João, Porto, Portugal

**Psychosocial aspects** - Luísa Pires, Centro Hospitalar do Porto, Portugal

**Legal aspects** - Tiago Machado, Instituto Universitário da Maia, Portugal

**20h30**

Conference Dinner at **Caves Ferreirinha**
Transportation will be available from the Axis Porto - Business & SPA Hotel at 20h00 and return at 23h00.
SATURDAY, 28 FEBRUARY 2015

ALL SESSIONS | 09h00 – 17h30 | ROOM SALÃO NOBRE

9h00 – 09h40  
SESSION 4 - Multiple Sclerosis Burden: from patient to society  
Chairpersons: João de Sá, Centro Hospitalar de Lisboa Norte, Hospital Santa Maria, Faculty of Medicine, Lisbon, Portugal and Joaquim Pinheiro, Centro Hospitalar Vila Nova de Gaia/Espinho, Portugal  
Natural history of MS  
Gilles Edan, Institut des Neurosciences Cliniques, Rennes, France

09h40 – 10h15  
SESSION 7A - Multiple Sclerosis white-matter mimics  
Chairperson: Vasco Salgado, Hospital Fernando Fonseca, Amadora-Sintra, Portugal  
White-matter vascular lesions  
Orhan Aktas, Düsseldorf Multiple Sclerosis Center, Department of Neurology, Heinrich-Heine University, Düsseldorf, Germany

10h15 – 11h30  
SESSION 5 - The treatment of Multiple Sclerosis in 2015  
Chairpersons: Lívia Sousa, Centro Hospitalar Universitário de Coimbra, Portugal and Rui Pedrosa, Hospital dos Capuchos, Lisboa, Portugal  
Escalating therapy in MS  
Eva Havrdova, First Medical Faculty, Charles University, Prague, Czech Republic  
Clinical trials versus real-world studies  
Ludwig Kappos, University Hospital Basel, Switzerland

11h30 – 12h00  
Coffee Break | Exhibition Hall | Poster view

12h00 – 13h15  
SESSION 6 - Ten minutes vignettes with last 2-year news about MS treatment  
Chairpersons: José Vale, Hospital Beatriz Ângelo, Loures, Portugal and Jorge Reis, Centro Hospitalar São João, Porto, Portugal  
Betaferon: Celebrating 25 years. What is old is new again  
Carla Gonçalves, Bayer, Portugal  
Biogen Idec: Commitment to MS  
Marta Valente, Biogen Idec, Portugal  
Genzyme: Transforming Expectations for the MS Community  
Tom Snow, Genzyme a Sanofi Company, Netherlands  
Assessing response to Interferon beta  
Ali-Frederic Ben-Amor, Merck s.a., Switzerland  
Changing the Course of MS  
Danny Bar Zohar, Novartis Pharma AG, Switzerland  
Glatiramer Acetate: Back to The Future  
Carla Fernandes, Teva, Portugal

13h15 – 14h15  
Lunch | Exhibition Hall

14h15 – 15h00  
SESSION 7B - Multiple Sclerosis white-matter mimics  
Chairperson: Maria do Carmo Macário, Centro Hospitalar Universitário de Coimbra, Portugal  
Metabolic and mitochondrial diseases  
Filippo Santorelli, Unit of Neurodegenerative and Neuromuscular Disorders, Department of Molecular Medicine and Neurogenetics, Rome, Italy
15h00 - 16h00 POSTER SESSION | EXHIBITION HALL

SECTION I
Chairpersons: Cláudia Sousa, Centro Hospitalar São João, Porto, Portugal and Sónia Batista, Centro Hospitalar Universitário de Coimbra, Portugal

PO0006 - Executive functions and anti-saccades in Multiple Sclerosis
Marta Parreira, Marisa B. Ferreira, Olga Miguel, António F. Macedo, Inês Sousa, José Figueiredo, João J. Cerqueira, Paulo S. Pereira

PO0008 - Phototest for neurocognitive screening in Multiple Sclerosis
Joana Pinto, Emanuela Lopes, Gerly Gonçalves, Ângela Silva, Cristóbal Carnero-Pardo, Bruno Peixoto

PO0009 - The role of phonemic verbal fluency test on the assessment of cognitive performance in Multiple Sclerosis
Cláudia Sousa, Mariana Rigueiro Neves, Ana Margarida Passos, Aristides Ferreira, Maria José Sá

PO0011 - Measuring information processing speed in MS – PASAT and SDMT what are the differences?
Mariana Rigueiro Neves, Cláudia Sousa, Ana Margarida Passos, Aristides Ferreira, Maria José Sá

PO0014 - Impact of dimehtylfumarate on cognitive dysfunction and its correlates in the EAE Mouse Model
Sofia Pereira das Neves, Diana Rodrigues Pereira, Cristina Mota, Susana Monteiro, Fernanda Marques, João José Cerqueira

PO0019 - Cognitive screening in an MS outpatient clinic
Ivânia Alves, Cátia Mateus, Joana Pais, Vítor Tedim Cruz

SECTION II
Chairpersons: David Costa, Centro Hospitalar São João, Porto, Portugal and Sandra Perdigão, Unidade Local de Saúde do Alto Minho, Viana do Castelo, Portugal

PO0016 - Shared decision making in multiple sclerosis consultation: Patient and third observer perspectives
Cristina Silva

PO0028 - Quality of life of caregivers of patients with sclerosis: Literature review
Ana Certo, Ana Galvão, Maria Gomes, Ana Louçano

PO0037 - Quality of life of the person with multiple sclerosis
Rosa Martins, Carlos Albuquerque

PO0038 - Social support network and quality of life of multiple sclerosis patients
David Costa, Maria José Sá, José Calheiros

PO0039 - Hospital amenities and elderly patients with MS
David Costa, Ana Monteiro, Celeste Bastos, Maria José Sá

SECTION III
Chairpersons: Rosário Curral, Centro Hospitalar São João, Porto, Portugal and Fernando Parada, Centro Hospitalar São João, Porto, Portugal

PO0001 - Depression and Anxiety in Multiple Sclerosis: Clinical and Demographic Associations in a cohort of patients
Andreia Matas, Ana Almeida, João Paulo Gabriel
PO0012 - The effects of therapeutic riding in the multiple sclerosis: a systematic review
Carla Batista, Tobba Sudmann, Zélia Anastácio

PO0017 - The neuropsychiatric events in Multiple Sclerosis
Bela Machado

PO0021 - Preliminary analysis of benefits of regular exercise in patients with Multiple Sclerosis: a systematic review with meta-analysis
Jéssica Fernanda Garcia, Guilherme Eustáquio Furtado, Matheus Ulba Chupel, Miguel Pereira, Lívia Sousa, José Pedro Ferreira, Antonio Freire, Luís Rama

SECTION IV
Chairpersons: Teresa Mendonça, Centro Hospitalar São João, Porto, Portugal and Ernestina Santos, Centro Hospitalar do Porto, Portugal

PO0004 - Optic neuritis as presenting manifestation of Behçet’s Disease with multisystem involvement
Pedro Madureira, Joana Guimarães, Sofia Pimenta, Fernando Magro, Lúcia Costa

PO0015 - The challenge of an AQP-4 antibody-negative patient with overlapping features of both NMO and MS
Cláudia Marques-Matos, Andreia Costa, Joana Guimarães, Maria José Sá, Madalena Pinto

PO0043 - Neuromyelitis Optica Spectrum Disorders in Siblings
Luis Braz, Mafalda Sampaio, Maria José Sá, Joana Guimarães

PO0044 - Neuromyelitis Optica Spectrum Disorders: A definite case with Autoimmune Thyroiditis
Luis Braz, Joana Guimarães

PO0046 - Acute Myelitis: 7 year- retrospective study
Luis Braz, Leonor Almeida, Carlos Andrade, Joana Guimarães

PO0047 - Anti-neuronal Antibodies Determination by line-blot in a University Hospital: 7 years experience
Yuliana Eremina, Ana Marinho, João Pedro Ramos, Maria José Teles, Luís Delgado

SECTION V
Chairpersons: Irene Mendes, Hospital Garcia de Orta, Almada, Portugal and Armando Morganho, Centro Hospitalar do Funchal, Portugal

PO0010 - Polymorphism of mmp-9 gene in patients with Multiple Sclerosis
Ana Valado, Maria João Leitão, António Martinho, Ana Sofia Gonçalves, João Cerqueira, Inês Correia, Sónia Batista, Lívia Sousa, Inês Baldeiras

PO0018 - Brain atrophy and disability in primary progressive multiple sclerosis
Orlando Galego, Ana Gouveia, Cristina Moura, Egidio Machado, Sónia Batista

PO0025 - Oligoclonal bands and other multiple sclerosis predictors of disease evolution
José Tomás, Inês Baldeiras, Maria Helena Ribeiro, Maria João Leitão, Sónia Batista, Carla Nunes, Lívia Sousa, Carmo Macário

PO0040 - Demography, clinical characteristics and socioeconomic status of the Portuguese patients with Multiple Sclerosis in 2014 - results of the national cross-sectional PORT-MS study
Miguel Grilo, João Sequeira, José Tomás, Sara Varanda, João Ferreira, Raquel Samões, Carlos Capela, Ernestina Santos, Sónia Batista, Pedro Abreu, João Cerqueira, Lívia Sousa, Rui Pedrosa, Ana Martins da Silva, João de Sá, José Vale, Maria José Sá, Paulo Alegria

PO0045 - Survival and mortality in Multiple Sclerosis: A hospital based study
David Costa, Luis Braz, Maria José Sá
SECTION VI
Chairpersons: Carla Cecília Nunes, Centro Hospitalar Universitário de Coimbra, Portugal and João Paulo Gabriel, Centro Hospitalar Trás-os-Montes e Alto Douro, Vila Real, Portugal

PO0024 - Clinical worsening after the first infusion of natalizumab in a patient with active relapsing-remitting multiple sclerosis
Joana Martins, Luísa Sousa, Paula Salgado, Ana Martins Silva, Ernestina Santos

PO0031 - Temporal evolution of peripheral lymphocyte subsets during fingolimod treatment in relapsing multiple sclerosis
Joana Meireles, Andreia Costa, Maria José Sá, Pedro Abreu

PO0033 - Multiple sclerosis-associated tremor treated with deep brain stimulation: report of 2 cases
Andreia Veiga, Ana Filipa Santos, Paulo Linhares, Clara Chamadoira, Margarida Ayres Basto, Carina Reis, Luis Augusto, João Pedro Costa, Carolina Garrett, Rui Vaz, Maria José Rosas

PO0034 - A Multiple Sclerosis mimic
Carlos Andrade, Helena Rocha, Andreia Albuquerque, Maria José Sá

PO0035 - Polyglandular autoimmune syndrome: Coincidental or Multiple Sclerosis mimic?
Carlos Andrade, Joana Oliveira, Paula Freitas, Davide Carvalho, Joana Guimarães

PO0042 - Is it really a vasculopathy or a mimicker?
Ana Aires, Margarida Ayres-Basto, Elsa Azevedo

SECTION VII
Chairpersons: Maria Manuel Campos, Centro Hospitalar São João, Porto, Portugal and João Vasconcelos, Hospital do Divino Espírito Santo, Ponta Delgada, Portugal

PO0013 - Longitudinally extensive transverse myelitis due to a rare infectious cause
Diana Amaral, Tiago Gomes, Rita Santos Silva, Helena Rocha, Margarida Tavares, Mafalda Sampaio, Miguel Leão

PO0020 - Tumefactive form of multiple sclerosis: two case reports
Helena Felgueiras, Telma Santos, António Martins Campos, Joaquim Pinheiro

PO0023 - Acute Disseminated Encephalomyelitis as the first manifestation of Child-Onset Multiple Sclerosis
Tiago Gomes, Helena Rocha, Diana Amaral3, Mafalda Sampaio, Joana Guimarães, Maria José Sá, Miguel Leão

PO0026 - Multiple Sclerosis in a 9 year-old girl: a challenge from diagnosis to treatment
Helena Rocha, Tiago Gomes, Diana Amaral, Mafalda Sampaio, Joana Guimarães, Maria José Sá, Miguel Leão

PO0030 - Late-onset Multiple Sclerosis: Epidemiological and clinical features
Joana Parra, Sónia Batista, Inês Correia, Carla Nunes, Lívia Sousa, Maria Carmo Macário

PO0036 - Pregnancy in Multiple Sclerosis: Outcomes from a Portuguese centre
Ana Monteiro, Diogo Fitas, Joana Guimarães, Maria José Sá
16h00 – 16h30  Coffee Break | Exhibition Hall | Poster view

16h30 – 17h00  Oral Presentations | EXHIBITION HALL

Chairpersons: Mª Edite Rio, CUF Porto Hospital, Porto, Portugal and Paulo Alegria, Hospital Beatriz Ângelo, Loures, Portugal

Prevalence of autonomic dysfunction in patients with Multiple Sclerosis
Bídia Vieira, Andréia Costa, Gonçalo Videira, Maria José Sá, Pedro Abreu

Using saccadic eye movements to measure fatigue in Multiple Sclerosis
Marisa B. Ferreira, Marta G. Parreira, Olga J. Miguel, António F. Macedo, Inês Sousa, José Figueiredo, João J. Cerqueira, Paulo A. Pereira

Olfactory dysfunction and cognitive impairment in primary progressive Multiple Sclerosis
Ana Gouveia, Nélia Abreu, Miguel Silva, Carla Nunes, Carmo Macário, José Ribeiro, Sónia Batista, Lívia Sousa

Familial multiple sclerosis: A center’s experience
Miguel Tábuas-Pereira, Inês Correia, Joana Parra, Inês Marques, Sónia Batista, Carla Cecília, Lívia Sousa, Mª Carmo Macário

Trends in the treatment of Multiple Sclerosis in Portugal in 2014: Results of the national cross-sectional PORT-MS study
Sara Varanda, Raquel Samões, João Ferreira, José Tomás, Miguel Grilo, João Sequeira, Joana Morgado, Carlos Andrade, Jorge Reis, Joana Guimarães, Lívia Sousa, João Cerqueira, José Vale, Maria José Sá, João de Sá, Ana Martins da Silva, Rui Pedrosa, Paulo Alegria

To be at work or not to be? Comparing presenteeism and quality of life between MS patients and healthy workers
Aristides Ferreira, Ana Margarida Passos, Mariana Neves, Cláudia Sousa, Maria José Sá

17h30  Closing remarks
Joana Guimarães, Centro Hospitalar São João, Porto, Faculty of Medicine, University of Porto, Portugal
Out & About

Portugal is situated in the most western part of Europe. It covers an area of 92,000 square kilometres and has a population of 10 million people.

It was founded as an independent kingdom in the Iberian Peninsula more than eight centuries ago. Porto, the “unconquered”, is the hard working capital of the north. Flowing down slopes to the River Douro, its irresistible attraction lies in its monuments and picturesque streets that wrote many pages of Portuguese history. Spectacular are the city trio of ex-libris, the Rabelo boat (typical boat), Clerigos Tower and the old steel bridges over the river. The first of the three was the traditional means of transporting Porto Wine from the upper Douro to the cool wine cellars of Vila Nova de Gaia, where it matures. The second is the symbol of the 18th century town with its quaint cobbled streets. The third is the symbol of hard work and progress of the region.
Access to the city Center from the Airport
(Francisco Sá Carneiro Airport - Phone +351 229 432 400)
11Km north of the city centre.

Transport from/to airport - Metro or taxi. The surface Subway (Metro) line is a quick connection between the airport, the city centre and the main hotels in Porto, with services every 20 minutes. Cost: Title Zone 4 - 1.45 € one way. Last connection at 0h35.
A taxi to the centre costs approximately 25 €. However, taxis charge an additional 20% from 22h00 to 06h00. An additional surcharge of 1.60 € may also be applied for extra luggage. Always ask for your receipt.

Public Transportation - Buses and trams are available and operate on weekdays from 6 or 7am until midnight or 1am. Tourist passes for 1, 4 or 7 days are valid for trams and buses.

Banking - Bank services are available at the airport and throughout the city. Banks are open from 08h30-15h00.

Climate and Clothing - Porto has a moderate Atlantic climate. There are no great variations in temperature. The weather in February can be cold and rainy (average 5 to 15°C). Light clothing is suitable but somewhat warmer clothing may be required.

Credit Cards - International credit cards are accepted at ATMs, hotels, restaurants and most shops, as well as car rental agencies. The most common credit cards are VISA, Euro card, MasterCard and American Express. Diners Club is not accepted.

Currency - The € (Euro) is the currency used in Portugal. Conversion rates: 1 Eur = 1.32 USD

Electricity - In Portugal, electricity is supplied at 220V/50Hz AC and power sockets are of the 2 pin round type.

Insurance/Liability - Participation in this congress implies that participants agree that the organizers assume no liability whatsoever. Upon registration, the participant accepts this provision.

Language - Portuguese is the official language. However, most Portuguese understand English.

Meals - The food in Portugal is very good and deserves its worldwide reputation. Prices could vary between 15 € (modest, traditional restaurant) to 50 € (luxury restaurant). Porto is renowned for its gastronomy; from the simplest and most typical fare to fine cuisine. There are restaurants for all tastes and pockets.

Passport and Visa - Nationals of the European Community require only a valid identity card. For most countries outside Europe, for example USA and Canada, a valid passport is enough. Some countries, however, still require a visa. Please check with your travel agency.

Post Office - Services are available at the hotel or at post offices. The working hours are 09h00 – 18h00.

Shop Opening Hours – 10h00 to 19h00. Most of the shops are open on Saturday mornings. Several shopping centers are open from 10h00 to midnight, seven days a week. The most traditional shopping area is Rua Santa Catarina, along with the narrow streets going up and down from the city center till Ribeira, by the Douro river side.

Time Differences - Portugal has Greenwich Mean Time (GMT).

Tipping - This is customary in restaurants and taxis. Tipping up to 10% of the bill is acceptable.

EMERGENCY NUMBER: 112
**ABSTRACTS OF LECTURES**

**The costs of MS in Europe**
Gisela Kobelt, France

The socioeconomic impact can be defined as the burden of the disease and its manifestations on patients and society, and its impact on resource consumption and production. The burden of a disease is caused by its incidence and prevalence, morbidity and mortality it causes, and the impact it has on patients’ quality of life. The cost is defined as resources consumed (management and treatment of the disease) and resources lost (lost production).

Compared to other diseases of the brain, MS has high costs average per patient but a low prevalence. Within MS, total costs per patient vary up to 3-fold between early and advanced disease. However, while in early disease the majority of the costs are borne by the health care systems, the cost increase with advancing disease falls almost entirely outside health care, namely on social support services and production losses.

Quality of life develops as expected in the opposite direction as the disease advances. The decrement in early disease is limited both in size and time, but quality of life scores decrease to very low levels in late disease.

The goal of treatment is to avoid or slow progression (by inhibiting relapses and by other mechanisms) to decrease the number of patients progressing to severe disease states. Cost-effectiveness analyses project the impact of slower progression on quality of life and costs.

**New developments in autoimmunity - update**
Ariel Miller, Israel

Improved understanding of the aberrant immune reactivity underlying autoimmune diseases has been translated in recent years to the development of a number of new immune-therapeutic agents. The major targets of these therapeutic strategies are the auto-aggressive immune cells, related regulatory cells, their co-stimulatory molecules as well as adhesion molecules involved in cell migration in the circulation and across the blood brain Barrier (BBB), as well as effector soluble mediators of inflammation (cytokines, chemokines, free radicals, etc).

Concepts of immunotherapy are in a process of shifting paradigms: from Re-active to Pro-active; from therapy based on: “Trial & Error” to Theranostics : Therapy based on diagnostics (biomarkers, etc.); from Disease-specific to Patient-specific : therapy tailored to the individual patient, according to disease subtype, disease activity and the patient’s characteristics. In this presentation some of these aspects in Translational Neuroimmunology will be reviewed.
Autoimmune Mimics of MS
Sean Pittock, USA

Multiple sclerosis remains poorly understood in terms of its etiology and pathogenesis. Assumption that MS is an autoimmune disease is based on inflammatory pathology and evidence of intrathecal immunoglobulin production. However, evidence for organ-specific autoimmunity is in most cases unconvincing. The variable clinical course and inter-patient heterogeneity of active demyelinating lesions suggest that MS may not be a single disease entity. Water channels (aquaporin [AQP]-4) are a newly recognized target for CNS inflammatory demyelinating diseases [IDDs]. The detection of AQP4-IgG, in serum or CSF, unifies a spectrum of IDDs (NMO spectrum disorders [NMOSD]) previously classified amongst variants of MS. This discovery represents a seismic shift in CNS demyelinating diseases research from historic emphasis on the oligodendrocyte and myelin to the astrocyte. The NMO of today represents a relapsing spectrum of disease, extending beyond the optic nerves and spinal cord to include brain (especially in children) and rarely muscle (Autoimmune AQP4 Channelopathies). Most patients have MRI brain abnormalities and these are consistent with MS in up to 10% of patients. Individual patient-specific NMO therapies are likely to result from increased understanding of the pathogenic impact of binding of AQP4-IgG to its target on the astrocytic end foot (complement activation, AQP4 downregulation and coupled glutamate transporter downregulation). Other less common MS-mimic autoimmune disorders include: a spectrum of IDDs similar to NMOSD associated with antibodies targeting myelin oligodendrocyte glycoprotein (MOG) newly termed “Autoimmune MOG-opathies”; optic neuropathy and myelopathy (T cell-mediated and usually paraneoplastic) associated with collapsin response-mediator protein [CRMP5]-IgG; Amphiphysin and GAD65 autoimmunity recognized in the context of progressive myelopathy that are sometimes misdiagnosed as primary progressive MS. Investigation at Mayo Clinic failed to detect IgGs specific for the inwardly rectifying potassium channel KIR4.1 in serum or CSF from MS patients suggesting that serological testing for KIR4.1-specific IgG is unlikely to aid diagnosis of multiple sclerosis.

Multiple sclerosis is an index disease in multiple autoimmune syndromes?
Renato Tozzoli, Federica D’Aurizio, Italy

Autoimmune diseases (AIDs) are a cluster of chronic diseases characterized by a failure of the immune tolerance to self-antigens and a hyperactivation of the immune system, that results in chronic inflammation state and damage of several organs.

Literature data indicates the coexistence of multiple sclerosis (MS) with other AIDs both in the same individuals and their families, supporting the concept that MS shares many clinical and pathological characteristics of AIDs. Several factors (MHC aplotypes, female preponderance, a reduced number of relapses during pregnancy, the presence of T and B cells reactive to myelin basic protein antigens, and indirect evidence from animal models) suggest the hypothesis that MS has an autoimmune aetiology.

Starting from a single case report, the authors describe the multiple autoimmune syndromes (MAS), subdivided in 4 types and defined by the presence on two or more clinical AIDs (complete MAS) or by the presence of multiple autoantibodies in patients with an index AID (incomplete MAS).
MS is part of the MAS type 3C, in the case of thyroid AIDs (AITD) as index disease, or the MAS type 4, in case of MS as index disease. Several investigators of autoimmune comorbidity in MS have examined whether clinical AIDs occur more frequently in patients with MS than would expected in the general population. The results are conflicting, possibly because of differences in study design, that in some cases had inappropriate controls, ascertainment bias, and heterogeneity. The most important studies involved inflammatory bowel disease, rheumatoid arthritis, systemic lupus erythematosus, AITD, and type I diabetes mellitus.

The authors present the results of an Italian multicenter study (Pordenone, Palermo, Bari, Pescara, Chieti) on the presence of autoantibodies in a group of MS patients: the results shows an increased prevalence of specific thyroid autoantibodies (anti-thyroid peroxidase, anti-thyroglobulin) in these patients.

**Childhood-acquired demyelinating syndromes**

Kevin Rostasy, Austria

Autoantibodies have recently gained attention in inflammatory-demyelinating diseases, because of the role of AQP-4 antibodies in the diagnosis and pathogenesis of NMO. Recently serum MOG antibodies previously thought to play a role in multiple sclerosis have been found in different monophasic and relapsing inflammatory- white matter diseases. A number of studies detected MOG antibodies in particular in a subset of children with monophasic ADEM, isolated and recurrent ON, but also in children with AQP4 negative NMO. It appears that children with ADEM and MOG antibodies that decline overtime have most often only a single episode combined with a good prognosis. The MR-imaging in these children shows a characteristic pattern with hazy bilateral and widespread lesions often also affecting the myelon. Children with high and persisting MOG antibodies are more likely to develop further episodes. Nevertheless little is known about the longterm outcome and the appropriate therapy in particular in children with persisting MOG antibodies and a relapsing disease course. Serum MOG-antibodies from subjects with demyelinating episodes have been shown to induce complement mediated cytotoxicity in-vitro. They recognize different MOG epitopes and can cause reversible damage to oligodendrocytes, but the precise role in the pathogenesis of these diseases is still unknown.

**Pediatric Multiple Sclerosis:Current Concepts**

Lauren Krupp, USA

Pediatric multiple sclerosis is an immune mediated disorder which represents a special subset of the MS population. The frequency of pediatric MS is estimated to be 0.2 to 0.6 per 100,000. Advances in research and increased clinical experience have led to improved recognition and treatment. Children and adolescents with MS respond well to disease modifying therapy but often have special unmet needs and can benefit from a multidisciplinary approach.

Features that distinguish pediatric from adult MS include a higher relapse rate, a lower proportion with a primary progressive MS onset and a more gradual transition to irreversible disability. The interaction between age and capacity for recovery and the interaction between age and the immune
response may account in part for differences between those with pediatric versus adult MS. Most with pediatric MS develop the disease during adolescence, but approximately 20% of cases present at age 11 and younger. The demographic, clinical, radiologic, and CSF profile of these youngest patients differ from those with adolescent onset by having a closer frequency of males and females, a lower frequency of positive oligoclonal bands or elevated IgG index, and a longer interval between first and second relapse. Children and adolescents with MS experience cognitive problems in approximately one third of cases. The factors responsible for cognitive dysfunction and determining the rate of cognitive decline are areas of active investigation.

The differential diagnosis at the time of the first presentation of MS in the pediatric age group can be broad and includes ADEM, NMO, other autoimmune disorders, as well as juvenile onset of certain leukodystrophies and mitochondrial disorders. However, advances in recognition of the MRI and clinical features of pediatric MS have facilitated diagnosis. There has also been tremendous growth in experience with disease modifying therapies. While to date none are approved for children with MS, there is good data to support efficacy and safety for natalizumab, interferons, and glatiramer acetate. Newer agents are being investigated in pediatric MS in global multicenter clinical trials. The future is likely to bring new options for earlier diagnosis, more effective treatment, and improved psychosocial support.

**MS Forecast: a electronic tool to simulate MS prognosis**
Mário Veloso, Portugal

From natural history studies of multiple sclerosis (MS), several early clinical factors have been identified as predictive for the course of MS, but the long term prediction of disability progression and evolution of the individual patient remains a major challenge for the practicing neurologist. The current work aims to implement a comprehensive and easy to use tool able to predict and monitor progression of disability in MS patients. By extracting data from a set of reference studies, relevant prognostic scientific evidence is presented focusing on the likelihood of conversion of clinically isolated syndromes (CIS) to clinically definite MS (CDMS), and the long term prognosis of disability level and conversion to secondary progressive MS (SPMS). This web tool is accessible using any pc or tablet with an internet browser.

Despite the tool presents data published in reference articles, a dataset of 50 patients with relapsing remitting MS and at least 10 years of disease evolution, was utilized for validation purposes.

**Natural history of MS**
Gilles Edan, France

Long term epidemiological data gave some insights on the natural history of relapsing and progressive MS. But it remains uncertain whether these 2 phenotypes reflect different neuropathological mechanisms.

Lessons from the Lyon cohort. The main messages were the following: a) The median times at which irreversible DSS 4, 6, 7 scores occurred were similar whether the disease was initially relapsing–
remitting or progressive. b) Early assessable clinical variables (the degree of recovery from the first relapse, time to a second neurological episode, and the number of relapses in the first 5 years of the disease, age at onset) significantly influenced the time from the onset of multiple sclerosis to the assignment of a disability score of 4, but not the subsequent progression of irreversible disability. c) Among patients with the primary progressive or secondary progressive MS, the median time from the assignment of a score of 4 to a score of 6 or 7 was not influenced by the presence or the absence of superimposed relapses.

Lessons from the London Ontario cohort. The main messages were: a) Relapsing onset and progressive onset patients attained DSS3, 6, 8, and 10 at remarkably similar ages. b) Frequent relapses in the first two years and shorter first inter-attack intervals predicted shorter times to reach hard disability endpoints by increased probability and shorter latency to of entering the secondary progressive phase. c) neither total number of relapsing–remitting phase attacks nor of relapses experienced during the relapsing–remitting phase after the second year up to onset of progression showed a deleterious effect on times from disease onset to progression onset or to DSS 6.

Lesson from the Rennes Cohort. The main lessons were: a) the time from clinical onset to irreversible DSS 3 is totally independent of the time from irreversible DSS3 to irreversible DSS 6. b) in relapsing onset MS, the presence of a residual deficit after the first relapse and the occurrence of relapses during the first two years of MS significantly shortened the duration of the phase from clinical onset to irreversible DSS 3 but did not influence disability progression during the phase from DSS3 to DSS6. c) During the phase DSS3-6, disability progression was more influenced by a previous conversion to secondary progressive than by occurrence of relapses.

These epidemiological lessons led to the concept of a two-stage disability progression in multiple sclerosis, with a first stage during which focal inflammatory lesions (having relapse as a clinical marker) influence disability progression, and a second stage during which disability progression is independent of focal inflammatory markers. This concept of MS as a two-stage disease has obvious implications for the future therapeutic strategy.

**Escalating therapy in MS**

Eva Harvdrova, Czech Republic

Treatment of multiple sclerosis (MS) should start as early as possible as even at the time of diagnosis the immune system has already started the damage of nervous system some time before. The treatment goal nowadays is freedom from disease activity (no relapses, no disability progression, no lesion activity on MRI, and newly progression of atrophy in the rate of normal controls). Only one third of patients are doing well on first line disease modifying drugs (DMTs) in the first years. Not to lose time and brain, escalation should be discussed with the patient if they are not stable on 1st line DMTs. All the possible benefits and risks must be weighted, and based on shared decisions patients should be closely monitored, both for efficacy and safety. Compliance is of utmost importance. Fingolimod is the only oral escalation treatment, follow up of infections, heart function, and lymphocyte count is inevitable. More effective is natalizumab, monoclonal antibody against adhesion molecules on lymphocytes but in JC virus positive patients the antibody index and MRI must be followed and therapy stopped in patients in high risk group. There are no guidelines how to continue treatment if natalizumab must be stopped as the return of disease activity may be
aggressive (even in pregnancy). New option for escalation is alemtuzumab, monoclonal antibody against CD52 molecule on immune cells with very convenient mode of administration but very important follow up of lab tests every months for 4 years after last infusion. Adverse events include infections and autoimmunities, all manageable if recognized early. All escalation drugs have the ability to fulfill our treatment goal – lead to freedom from disease activity in a substantial number of patients, with fingolimod and alemtuzumab having also the data on their ability to influence the development of brain atrophy.

**Metabolic and mitochondrial diseases: Myths and Facts**
Filippo M. Santorelli, Anna Rubegni, Italy

Mitochondria are commonly referred to as the “power-station” of the cell for their provision of ATP through oxidative phosphorylation (OXPHOS), but they are also responsible for the biosynthesis of numerous macromolecules (lipids, proteins and nucleic acids) and contribute to the regulation of apoptosis, cell proliferation and motility. It is of major functional significance that mitochondria carry their own genome, mitochondrial DNA (mtDNA), a small, double-stranded, circular molecule that obey to non-Mendelian rules of genetics. The coordinated expression of the mitochondrial with the nuclear genome is essential for the functioning of eukaryotic cells and their interaction is likely ruled by epigenetic regulation. As a consequence, mitochondrial dysfunctions have pleiotropic effects in multicellular organisms and give rise to a large spectrum of defects. This is particularly true for the central and the peripheral nervous systems because neurons are strictly dependent on mitochondria for their high-energy metabolism. Hence, it is not surprise that neurological manifestations represent large part of the features seen in OXPHOS-related pathologies.

Multiple sclerosis (MS) is a chronic inflammatory disease of the central nervous system (CNS) affecting upwards of 2 million people worldwide. Patients present with a spectrum of clinical signs and symptoms, including weakness, vision loss, fatigue, and cognitive impairment that are often reminiscent of the neurological features seen in patients with abnormal OXPHOS activities. In addition, the occurrence of primary mtDNA mutations associated with Leber hereditary optic neuropathy in patients with a MS-like phenotype and the preferential maternal transmission have suggested the possibility of an involvement of the mitochondrial genome in conferring increased susceptibility to MS. Also, biochemical defects in respiratory chain complex I activity have been proposed as contributory to the pathogenesis of MS. We will review the rules of the mtDNA genetics, present major clinical features, and discuss “myths” and “facts” about OXPHOS dysfunction in MS.
PO0001

Depression and anxiety in Multiple Sclerosis: Clinical and demographic associations in a cohort of patients
Andrea Matas, Ana Almeida, João Paulo Gabriel
Centro Hospitalar Trás-os-Montes e Alto Douro, Vila Real, Portugal

Background: Anxiety and depression are common symptoms among multiple sclerosis (MS) patients. Whether the causes of anxiety and depression are reactive, organic or a combination, it is essential that mental wellbeing is given due attention in caring for people with MS so that all their health needs can be met.

Purpose: The aim of this study was to investigate the prevalence of symptoms of depression and anxiety in a MS cohort during a clinically stable phase of their illness, and the associations with demographic and clinical characteristics.

Subjects and Methods: A total of 58 MS outpatients from our hospital were recruited. Depression and anxiety were assessed by the Hospital Anxiety and Depression Scale (HADS), and demographic and clinical data were recorded. Data were submitted to statistical analysis using the 19 version of the IBM SPSS® (Statistical Package for Social Sciences) for Microsoft Windows®.

Results: A total of 36.2% patients reported symptoms of depression, whilst 51.7% reported symptoms of anxiety. Both symptoms were reported by 30.0% of the patients. Depression was significantly associated with male gender (p = 0.04) and level of education < 12 years (p = 0.04), but not with MS type, EDSS score, age, disease duration or current professional activity. Significant associations between anxiety and demographic and clinical characteristics were not found in this cohort.

Discussion: In this study symptoms anxiety and depression were commonly reported by patients and tended to cluster together. The results obtained highlights the need of a greater focus on depression and anxiety amongst MS patients.

Keywords: Depression; Anxiety; Multiple sclerosis

PO0004

Optic neuritis as presenting manifestation of Behçet’s Disease with multisystem involvement
Pedro Madureira1, Joana Guimarães2, Sofia Pimenta1, Fernando Magro3, Lúcia Costa1
1Rheumatology Department - Centro Hospitalar de São João, Porto, Portugal, 2Neurology Department - Centro Hospitalar de São João, Porto, Portugal, 3Gastroenterology Department - Centros Hospitalar de São João, Porto, Portugal

Background: Behçet’s disease (BD) is a systemic vasculitis characterized by oral and genital ulcers, associated to systemic manifestations. Gastrointestinal and central nervous system involvement in BD are associated with worst prognosis, and the evidence for its treatment is scarce.

Clinical Case: The authors present the case of a 25 year-old woman, with oral ulcers since 10 years. At 20 years-old was admitted in the Neurology department with acute visual loss. Neurological examination
demonstrated central scotoma of the right eye, and optic nerve edema. Visual evoked potential demonstrated increased latency in the right eye and brain MRI showed diffuse subcortical white matter lesions. Biopsy of an oral ulcer revealed a vasculitic lesion; pathergy test was positive. She was diagnosed optic neuritis related to BD, and was treated with methylprednisolone pulses and 1 IgIV cycle, with full recovery. One year later was admitted with dizziness and imbalance. Cerebral MRI showed new frontal white matter lesions. Was treated again with methylprednisolone pulses with complete recovery, and began treatment with azathioprine. Twelve months later complained of abdominal pain, haematochezia and skin ulcers. Colonoscopy showed a change in the vascular pattern in rectum with erythema and friability; histology was suggestive of ulcerative colitis. Was started on mesalazine and required 2 cycles of prednisolone (0.5 mg/kg/day) to achieve disease control. Azathioprine was increased to 150 mg/day. A year later was hospitalized with acute pancreatitis. On the suspicion of drug toxicity, azathioprine and mesalazine were stopped. Two days later reported the onset of oral and skin ulcers, abdominal pain, haematochezia and fever with increased inflammatory markers. A new colonoscopy showed linear and star ulcers with exudate, more prominent at the hepatic angle, suggesting the diagnosis of multisystemic BD. Due to the severity of the disease, the ineffectiveness of azathioprine and the need to reduce the dose of glucocorticoids, was started on infliximab 5 mg/kg (each 8 weeks), with an increase of the dose to 10 mg/kg (each 6 weeks). The patient had a significant clinical and analytical improvement since then, with reduction of the prednisolone's dose. Colonoscopy performed 12 months later revealed healing of intestinal ulcers. Cerebral MRI showed no progression of the lesions. Azathioprine was resumed about 9 months uneventfully.

**Discussion:** Given the heterogeneity of clinical manifestations of BD, the differential diagnosis with other pathologies is difficult and require a high degree of suspicion. Treatment with infliximab in this clinical case was effective, particularly in the GI involvement.

**CO0005**

**Olfactory dysfunction and cognitive impairment in primary progressive Multiple Sclerosis**

Ana Gouveia1, Nélia Abreu2, Miguel Silva1, Carla Nunes1, Carmo Macário1, José Ribeiro1, Sónia Batista1, Lívia Sousa1

1Coimbra University and Hospital Centre, Coimbra, Portugal, 2Faculty of Medicine of Coimbra University, Coimbra, Portugal

**Background:** Olfactory dysfunction has been described in several neurodegenerative diseases, and recently has been reported in multiple sclerosis (MS), mainly in relapsing-remitting and secondary progressive forms. Primary progressive MS (PPMS) presents distinct characteristics and its physiopathology remains unclear. The olfactory function has been scarcely studied in PPMS and its relation with cognitive impairment is unknown.

**Purpose:** To characterize olfactory dysfunction in PPMS and to correlate olfactory deficits with cognitive impairment.

**Methods:** Cross-sectional study including consecutive patients with PPMS and healthy controls (HC) recruited from the community, matched for age, gender and smoking status. All participants underwent olfactory evaluation and neuropsychological assessment. The olfactometry included Butanol Test, for odor threshold determination, and Odor Identification Test (OIT). The neuropsychological assessment covered several cognitive domains, namely information processing speed, visuospatial learning and memory, verbal learning and memory and executive functions. Values of p<0.05 were considered statistically significant.

**Results:** We included 18 patients with PPMS and 22 HC. In the group of patients with PPMS, median disease duration was 14 years and median EDSS was 6. The olfactory threshold in patients with PPMS was significantly superior than HC (3.75 vs 4.77, p=0.017). The scores of OIT were similar across the two groups. There was no association between clinical features of PPMS patients and olfactory threshold or performance in OIT.
Nonetheless, there was a trend towards worse scores in OIT and a longer disease duration and higher EDSS. Impairment in OIT was associated with worse performance in verbal learning (34 vs 53, p=0.015) and memory (8 vs 14, p=0.033) tests.

**Discussion:** Despite the small sample size, our results show that patients with PPMS have an increased olfactory threshold, comparing to HC. The relationship between odor identification performance and verbal learning and memory suggests that lesion load and regional cortical pathology located in frontal and temporal lobes may account for olfactory dysfunction in MS.

## PO0006

**executive functions and anti-saccades in Multiple Sclerosis**

Marta Parreira†, Marisa B. Ferreira‡, Olga Miguel§, António F. Macedo∥, Inês Sousa∥, José Figueiredo∥, João J. Cerqueira‡, Paulo S. Pereira†, §

1Neurosciences Domain; Life and Health Sciences Research Institute, School of Health Sciences and ICVS/3B’s Associate Laboratory, University of Minho, Braga, Portugal, 2Clinical Academic Centre (CCA), Hospital de Braga, Braga, Portugal, 3TEM - All with the Multiple Sclerosis, Braga, Portugal, 4Department of Neurology, Private Hospital of Braga, Braga, Portugal, 5Vision Rehabilitation Lab.; Centre/Department of Physics and Optometry, University of Minho, Braga, Portugal, 6Maths and Applications Department, University of Minho, Braga, Portugal

**Purpose:** Executive functions (EF) are poorly studied in Multiple Sclerosis (MS) and the knowledge is even less in early stages of the disease. The aim of this study was to investigate if executive (dys)function is correlated with control of anti-saccades (AS).

**Methods:** We evaluated 48 participants diagnosed with MS and recruited by JJC at Braga Hospital, 32 were females (n=32), mean age of 37 years and with a mean of 12 years (SD=4) of education. The mean number of definite diagnosis was 90months (SD=59). Inclusion criteria were MS definitive diagnosis, age between 18-45 years, relapsing-remitting subtype of the disease, EDSS≤3, no relapses in the last month, and normal/corrected visual acuity. Exclusion criteria were: history of other neurological disease, stroke, traumatic brain injury or difficulties to calibrate the eyetracker. Executive domains were assessed with Stroop Test and Twenty Questions Test (Delis-Kaplan Executive Functions System–D-KEFS). A control group was used in the anti-saccades study. Anti-saccades were measured using a binocular infrared eyetracker running at 250Hz with spatial precision of <0.4o. The paradigm consisted of fixing a period with a variable gap between steady fixation and the stimulus of 1250msec or 1600msec. Participants were instructed to fixate the centre of the monitor and look as quickly as possible to the opposite direction where the target was presented (anti-saccade movement).

**Results:** Executive deficit for decision-making and capacity to deliberate before emitting a response was present in 13% of the participants (D-KEFS). In the Stroop test 32% of the MS participants presented impairments in suppressing automatic responses. In the anti-saccades assessment the mean number of directional errors were 28% (SD=19) in MS group and 16% (SD=11) in the control group, mean difference 12% (t(74)=3.83,p<0.001). Anti-saccades latency was 330msec (SD=61) in the MS group and 294ms (SD=59) in the control group, mean difference 36ms (F(1,98)=10.99,p<0.05). Weighted achievement in the D-KEFS was not correlated with number of directional errors and reaction time in AS. AS latency and directional errors and scores in the Stroop test were not correlated.

**Discussion:** Anti-saccades latency and errors and lack of inhibitory control and difficulties in decision-making are increased at early stages of MS. These results point to changes in inhibitory control that might involve the prefrontal cortex. The lack of correlation between results from anti-saccades and neuropsychological tests suggest that they evaluate separate brain networks or that AS might be more sensitive at detecting executive deficits at early stages of MS.
Using saccadic eye movements to measure fatigue in Multiple Sclerosis

Marisa B. Ferreira1,2, Marta Parreira3, Olga J. Miguel3, António F. Macedo1, Inês Sousa3, José Figueiredo5, João J. Cerqueira4,5, Paulo A. Pereira2,3

1 Vision Rehabilitation Lab., Centre/Department of Physics and Optometry, University of Minho, Braga, Portugal, 2 Association All with the Multiple Sclerosis, Braga, Portugal, 3 Departamento de Matemática e Aplicações, University of Minho, Braga, Portugal, 4 Neurosciences Domain; Life and Health Sciences Research Institute, School of Health Sciences and ICVS/3B’s Associate Laboratory, University of Minho, Braga, Portugal, 5 Clinical Academic Centre (CCA), Hospital de Braga, Braga, Portugal, 6 Department of Neurology, Private Hospital of Braga, Braga, Portugal

Purpose: Development of objective quantification of fatigue is desirable to complement existing methods. The aim of this study was to investigate if saccadic eye movements parameters in patients with multiple sclerosis are correlated with self-reported fatigue.

Methods: In an observational cross-sectional study we recruited 46 patients diagnosed with MS (by neurologist JJC) at Hospital de Braga. The mean age of these participants was 37 years (range: 21-45). Inclusion criteria were: relapsing-remitting course, EDSS ≤ 3, no crisis in the last month, and normal or corrected to normal visual acuity. Exclusion criteria were: cognitive impairment, traumatic brain injury, stroke or difficulties to calibrate the eyetracker. Eye movements were monitored using a binocular infrared eyetracker running at 250Hz (RED250, SMI Gmb Germany), spatial resolution < 0.4°, stimuli were presented in a 22 inch LCD monitor (Dell P2210). Code for running the experiment and data analysis was written in Matlab (Mathwork inc). Data were collected in a dim-light room; participants were seated 70cm from the monitor with the head supported to minimize movements. The paradigm consisted in a 1) central fixation period (850msec) followed by 2) an arrow (500msec) with variable direction to indicate the unpredictable appearance of a peripheral stimulus at 10deg to the left or to the right of fixation target. Participants were instructed to fixate the center of the monitor and look as quickly as possible to the target (30x30mm cross) after the disappearance of the arrow. Each subject performed 40 trails. Depression symptoms were evaluated by Beck Depression Inventory (BDI), fatigue by the Fatigue Severity Scale (FSS) and the impact of the fatigue in the daily living through the Modified Fatigue Impact Scale (MFIS).

Results: In total 45% of the patients were fatigued and 52% presented fatigue impact in daily living. The mean saccade latency was 241msec (SD=45), mean saccades peak velocity was 324 deg/sec, mean saccade amplitude was 8.9° (SD=0.7), accuracy of final eye position (FEP) was 0.89 (SD=0.07) and absolute error (AB-Serror) of final eye position was 14.1 (SD=4.8). BDI scores were negatively correlated with peak velocity, r=-0.3 (p ≤ 0.05) and positively correlated with ABSerror, r=0.4 (p ≤ 0.05). Fatigue magnitude was correlated negatively with the peak velocity, r=-0.4 (p ≤ 0.05), saccade amplitude, r=-0.4 (p ≤ 0.05) and FEP, r=-0.4 (p ≤ 0.01) and positively correlated with the ABSerror, r=0.4 (p ≤ 0.05).

Conclusions: These findings show that saccades parameters are correlated with fatigue and/or depression scores. These results provide further evidence that saccades can be used to study fatigue in multiple sclerosis.
Background: Multiple Sclerosis (MS) is one of the most common neurological disorders. Cognitive dysfunction is considered a clinical marker of MS, approximately half of patients with MS have cognitive impairment.

Purpose: The Phototest (FT) is a brief cognitive test, with great diagnostic sensitive, accuracy and cost-effectiveness in detection of cognitive deterioration. Our aim is to test the utility of FT in neurocognitive assessment of MS patients, directly comparing with Montreal Cognitive Assessment (MoCa).

Methods: The study involved 30 patients with different types of MS of external neurology consultation of Centro Hospitalar de Alto Ave and healthy participants. In conjunction with the FT and MoCa, were applied Barthel Index (BI), Expanded Disability Status Scale (EDSS), Fatigue Severity Scale (FSS).

Results: The experimental group obtained results significantly lower to control group in all domains of FT, except in Naming subtest. The FT reveals a good concurrent validity with MoCa. We obtained an area under the curve higher than MoCa, with higher significance level for the cutoff points established 31 for FT and 24 for MoCa. To this cutoff points correspond values of sensitivity 100% and of specificity 76,7% in FT, higher than presented in Moca (89,5% and 36,7% respectively).

Discussion: FT reveals itself as a valid and sensitive test in neurocognitive assessment of MS patients, FT presents as a useful test in neurocognitive assessment of MS patients, once assesses two of the most common affected cognitive domains, verbal fluency and episodic memory.

Keywords: Multiple Sclerosis, Fototest, Montreal Cognitive Assessment, Expanded Disability Status Scale, Fatigue Severity Scale

The role of phonemic verbal fluency test on the assessment of cognitive performance in Multiple Sclerosis

Claudia Sousa1, Mariana Rigueiro Neves2, Ana Margarida Passos2, Aristides Ferreira2, Maria José Sa1
1Hospital S. João, Porto, Portugal, 2ISCTE-IUL, Lisboa, Portugal

Background: Executive dysfunction occurs in 15 to 20% of MS patients and it is characterized by generalized cognitive inefficiency featured by a reduced verbal fluency (Fisher, 2001). The verbal fluency tests provide brief and sensitive measures of these deficits and the Word List Generation (WLG) is one of the most commonly used measures in MS. A systematic review on verbal fluency performance in MS shows that these patients were substantially impaired on this measure, presenting comparable impairment on semantic and phonemic verbal fluency (Henry & Beatty, 2006).

Purpose: The main goal of this study is to compare the performance on the phonemic verbal fluency task of MS patients and healthy controls. Besides, the influence of clinical factors and demographic factors on the performance of MS patients will be analyzed.

Method: 109 MS patients and an age- and gender- matched group of 140 healthy controls were evaluated with WLG Portuguese version (letters P, F and S), as well as with other tests from Brief Repeatable Battery of Neuropsychological Tests (BRBN-T) and measures of depression and cognitive fatigue. The MS group (70.6% females) was mainly diagnosed with RRMS (89.2%) and had an EDSS score between 0 and 7.

Results: The MS patients group performed significant lower than healthy controls on the phonemic verbal fluency task. In MS group, the performance on this task was significantly correlated with the level of education. Significant differences were found between the two groups regarding cognitive fatigue with MS patients reporting higher levels of cognitive fatigue than healthy controls. However this variable was not related with the performance on the phonemic verbal fluency task for MS patients. Regarding other neuropsychological measures, no significant differences were found between the two groups.
chological measures from BRBN-T, it was found that the phonemic verbal fluency test is especially correlated with PASAT and SDMT.

**Discussion:** The present study suggests that MS is associated with large levels of cognitive decline on phonemic verbal fluency test. These results are consistent with other studies and they highlight the importance of the use of measures of verbal fluency and cognitive speed in neuropsychological assessment in MS. Deficits on this task seems to be highly related with the level of education of the patient rather than other demographic and clinical factors. However, it is important to notice that in futures studies a MS sample with higher variability of MS subtypes and disease duration is fundamental to clarify this point.

**Background:** Multiple sclerosis (MS) is a chronic autoimmune disease of the central nervous system (CNS). Matrix metalloproteinases (MMPs), particularly MMP-9, have showed an association with the influx of inflammatory cells into the CNS, leading to disruption of the blood brain barrier (BBB) and demyelination in MS patients. The transcriptional activity of the MMP-9 gene is influenced by the -1562 C/T polymorphism identified in the promoter region of the gene, and the -1562 T allele has been suggested as a genetic risk factor for MS.

**Purpose:** To investigate the presence of the -1562 C/T polymorphism in the MMP-9 gene in healthy controls and MS patients and its association with clinical course of the disease.

**Methods:** Blood samples were obtained from a total of 370 samples, 169 MS patients (143 RRMS, 19 SPMS, 6 PPMS) and 201 healthy controls. After DNA extraction, the presence of the polymorphism was detected by PCR-RFLP using the enzyme SphI. Quantification of serum MMP-9 was performed in 46 patients and 38 healthy controls by ELISA. Data from MS patients was analysed for possible associations between the polymorphism distribution and clinical factors (gender, age at onset, disease duration, EDSS score and disease subtypes). Statistical analysis was performed using the SPSS software.

**Results:** The -1562 T allele was present in 39 MS patients and 41 healthy controls, with no overall significant difference between the two groups (p=0.533). However, in MS patients, but not in controls, more women presented with the -1562 T allele than men (p=0.014). In MS patients, the distribution of the polymorphism was not significantly associated with age at onset (p=0.759), disease duration (p=0.412), disease subtypes (p=0.291), progression of the disease (p=0.121) or current disability status (p=0.180). The levels of MMP-9 in serum were significantly higher in MS patients compared to healthy controls (p=0.001). There was also an increase in serum MMP-9 values in healthy controls that carried the T allele (p=0.003), but not in MS patients.

**Discussion:** Although the increased expression of MMP-9 in serum seems to be a surrogate marker for monitoring disease activity in MS, the -1562 C/T polymorphism, at least in our population, does not seem to be a susceptibility risk factor for the disease.
PO0011

Measuring information processing speed in MS – PASAT and SDMT what are the differences?
Mariana Rigueiro Neves1, Cláudia Sousa2, Ana Margarida Passos2, Aristides Ferreira2, Maria José Sá1
1SCTE-IUL, Lisboa, Portugal, 2Hospital S. João, Porto, Portugal

Background: The reduction in information processing speed (IPS) seems to be a key deficit in MS (Chiaramonti & Deluca, 2008). The most used tests in MS to assess this domain are the Paced Auditory Serial Addition Test (PASAT) and Symbol Digit Modalities Test (SDMT), being both sensitive measures to early cognitive deficits. PASAT execution is associated with high levels of anxiety which can result in misleading conclusions about cognitive performance. SDMT is user-friendly, easy and a quicker test, whose execution is not affected by mathematical capabilities (Forn, et al., 2011).

Purpose: The goals of the present study were to compare the performance on SDMT and PASAT of a group of MS patients and healthy controls (HC) and to analyze the impact of cognitive fatigue in IPS in both groups.

Method: 110 MS patients and an age- and gender-matched group of 138 HC were evaluated with SDMT and PASAT, as well as with measures of depression (BDI and BSI) and cognitive fatigue. In the MS group (70.0% females) 63.6% was diagnosed with RRMS and 20.0% were new diagnosed patients.

Results: The MS group performed significant lower than HC on PASAT as well as in SDMT. Regarding the errors committed in both tests, a significant difference was found for PASAT, with MS patients committing more errors. Cognitive fatigue has a negative impact on the PASAT performance for both groups but it is only correlated with the performance of MS patients in SDMT.

Discussion: PASAT and SDMT are both sensitive tools in the detection of the slowness in IPS in MS, as they clear differentiate patients from HC. The impairment on PASAT seems to be higher for MS patients, as this test examines also working memory, sustained and divided attention and memory (other impaired domain in MS), and its performance is affected by mathematical capabilities. The complexity of this task can also contribute to explain why PASAT is most permeable to cognitive fatigue for both groups. In addition, as the amount of time spent on task is a predictor of cognitive fatigue and MS patients need more time to complete the tasks, the impact of fatigue is higher when the time is constricted (comparing to HC) and the performance of these patients in both tests is affected.

PO0012

The effects of therapeutic riding in the multiple sclerosis: a systematic review
Carla Batista1,2, Tobba Sudmann2, Zélia Anastácio1
1University of Minho, Braga, Braga, Portugal, 2Bergen University College, Bergen, Bergen, Norway, 3Association Equestrian Center Gondomar, Gondomar, Porto, Portugal

Background: The effects of therapeutic riding in the multiple sclerosis: a systematic review Therapeutic riding (TR) is a complementary method of health who uses the movement of the horse to provide sensory feedback reeducate and reestablish motor skills, at the same time are found evidence about the psychological effects. Studies suggest that TR has been used as a therapeutic intervention for different neurological conditions, as Multiple Sclerosis (MS).

Purpose: The purpose of this review of research evidence is to determine whether clinicians are justified in recommending TR as therapy for the rehabilitation of people with MS.

Methods: The method used is a systematically review in major electronic databases which were searched for articles relating to TR and MS. Quantitative (not qualitative) studies were sought investigating whether TR
used as therapy in the rehabilitation in persons with MS. Only full length articles published in peer reviewed journals and thesis that were written in English or Portuguese.

**Results:** Methodological quality was moderate to good for all studies; all studies examined in this review were either case-control or case-series. Some studies were limited by small sample size or lack of non-riding controls. Collectively all four studies reported improvements in balance and emotional control. Balance and emotional improvements were the variables that showed greater improvements. Pre-test and post-test Berg Balance Scale scores in two studies revealed that, primary progressive MS demonstrated the greatest amount of change after TR compared to other subtypes of MS. The TR apparently brings benefits to individuals in a different way. Two studies point to improvements on balance, postural control, pain, muscle tension, daily life activities, and emotional control.

**Discussion:** The TR are efficacious, and are medically indicated as therapy for balance and emotional control in people with MS. The data is limited and further research will lead to a greater knowledge base and has the potential to increase accessibility for TR to be used as a rehabilitation modality. Recommendations for future research are discussed.

PO0013
**Longitudinally extensive transverse myelitis due to a rare infectious cause**
Diana Amaral1,5, Tiago Gomes2,5, Rita Santos Silva1,5, Helena Rocha2,5, Margarida Tavares3,5, Mafalda Sam-piao4,5, Miguel Leão4,5
1Serviço de Pediatria, Hospital Pediátrico Integrado, Centro Hospitalar São João, Porto, Portugal, 2Serviço de Neurologia, Centro Hospitalar São João, Porto, Portugal, 3Unidade de Infeccologia Pediátrica, Hospital Pediátrico Integrado, Centro Hospitalar São João, Porto, Portugal, 4Unidade de Neuropediatria, Hospital Pediátrico Integrado, Centro Hospitalar São João, Porto, Portugal, 5Faculdade de Medicina da Universidade do Porto, Porto, Portugal

**Background:** Longitudinally extensive transverse myelitis due to a rare infectious cause

**Clinical Case:** A previously healthy 9-year-old girl was admitted to the emergency department of a district hospital due to 3 days of persistent headache. Somnolence, fever and meningismus were noticed. No previous symptoms or recent infections were reported. She was submitted to a lumbar puncture (CSF showing pleocytosis, negative bacteriological screen and enterovirus and herpes simplex virus type 1 and 2) and had serum leucocytosis with elevated C-reactive protein. She was started on ceftriaxone and admitted to the inpatient ward. Due to persistent fever and headache a brain CT scan was performed showing no abnormalities. Focal and generalized seizures started by the 9th day of disease, followed by right sided Todd hemiparesis. A new lumbar puncture was performed and it showed increased pleocytosis. Acyclovir and vancomycin were added and she was transferred to our hospital with the hypothesis of encephalitis. The physical examination on admission showed flaccid paraparesis, pain and vibratory hypoesthesia below T2 and bilateral cervical adenopathy. Ciprofloxacin was added. Spinal cord MRI scan revealed leptomeningeal enhancement and longitudinally extensive transverse myelitis (D2-D10) with a probably infectious cause. Brain MRI and electromyography were normal. An extensive etiologic study was performed and neoplastic and autoimmune causes were ruled out. The microbiological screening revealed positivity for Epstein-Barr virus (EBV) DNA in both blood and CSF, with positive early IgG antibody and dubious/borderline IgM levels. The patient was submitted to a 5days course of immunoglobulin and 28days of endovenous ganciclovir followed by oral valaciclovir. She gradually improved, regaining ability to walk, though maintaining left foot drop and neurogenic bladder.

**Discussion:** Transverse myelitis is a rare complication of EBV infection, usually with poor prognosis. In this case ganciclovir and immunoglobulin seemed to be effective, but the treatment of EBV-induced transverse myelitis remains controversial, since evidence based results are not available.
PO0014
Impact of dimehtylfumarate on cognitive dysfunction and its correlates in the EAE Mouse Model
Sofia Pereira das Neves1,2, Diana Rodrigues Pereira1,2, Cristina Mota1,2, Susana Monteiro1,2, Fernanda Marques1,2, João José Cerqueira1,3
1Life and Health Sciences Research Institute, School of Health Sciences, University of Minho, Braga, Portugal, 2ICVS/3B’s associate laboratory, Braga/Guimarães, Portugal, 3Centro Clínico Académico, Braga, Portugal

Background: Multiple sclerosis (MS) is a demyelinating and neurodegenerative disease of the central nervous system leading to different types of motor, neuropsychiatric and cognitive problems. In MS patients, cognitive deficits correlate poorly with inflammatory activity, being better explained by pathological processes in the grey matter, like demyelination and consequent neuronal damage. MRI data from a phase II trial with dimehtylfumarate (DMF) showed a strong impact of this drug in neurodegeneration, suggesting it could improve cognitive deficits in MS patients.

Purpose: Assess the impact of dymethylfumarate in cognition in an animal model of MS

Methods: We immunized C57/B16J female mice with MOG35-55 to induce experimental autoimmune encephalomyelitis (EAE), the best-known model of MS, and treated them post-symptomatically with either active drug (EAE treated) or vehicle (EAE non treated) for 18 days, after which their cognitive performance was evaluated in a hippocampal dependent task, the morris water maze (MWM). A group of animals immunized with vehicle was used as controls (non EAE).

Results: Treatment with DMF resulted not only in less EAE associated physical disability but also, in contrast with EAE non-treated, in a cognitive performance at the level controls (non-EAE) [F(2,11)=5.117 p=0.027 (EAE-non treated vs EAE-treated p=0.022 vs controls p=0.017)]

Discussion: These results suggest that, in the animal model model of MS, DMF has a positive impact in cognitive performance, which might be related with its neuroprotective effects.

PO0015
The challenge of an AQP-4 antibody-negative patient with overlapping features of both NMO and MS
Cláudia Marques-Matos1,2, Andrea Costa1,2, Joana Guimarães1,2, Maria José Sá1,3, Madalena Pinto1
1Serviço de Neurologia do Hospital de São João, Porto, Portugal, 2Faculdade de Medicina da Universidade do Porto, Porto, Portugal, 3Faculdade de Ciências da Saúde, Universidade Fernando Pessoa, Porto, Portugal

Background: Neuromyelitis optica (NMO) and multiple sclerosis (MS) are autoimmune and demyelinating diseases of the CNS with some distinguishing features. Differentiating AQP-4 antibody-negative relapsing NMO from MS is, however, not always easy.

Case Report: A 60-year-old man presented with a 1-month-long course of ataxia and left neurosensory hypoacusis. On neurological examination there was skew deviation on primary gaze and double vision on dextroversion but the patient believed it to be related to major trauma in the past. Besides that, we found slight dysarthria and dysmetria of the four limbs as well. When he came to us he was vomiting persistently. Head CT: hypodense lesion in the middle cerebellar peduncle (MCP). We subsequently ruled out infectious, toxic and metabolic causes. The immunological study, including AQP-4 antibodies, was negative, as well as the search for occult cancer. The CSF analysis showed moderately elevated protein (0,87g/dl) and intrathecal production of oligoclonal IgG bands (OCB). Visual evoked potentials were compatible with bilateral demyelination of the optic nerves in the absence of previous visual impairment. The pattern on cerebral MRI consisted in multiple T2 supra and infratentorial white matter lesions besides the gadolinium-enhancing lesion
on the MCP. They could not, at first sight, be definitely attributed to any particular inflammatory etiology but the images were later revised and considered to be compatible with MS, given the presence of “black-holes” on T1. The spinal cord was free of lesions. The clinical picture improved rapidly with corticotherapy and the patient began dimethyl fumarate.

**Discussion:** This case highlights the clinical challenge it is to diagnose a patient with overlapping features of both NMO and MS. Persisting vomiting and a peri-ependymary lesion favored the diagnosis of an AQP-4 antibody-negative limited form of NMO. However, the pattern of supratentorial lesions, T1 “black-holes,” the absence of spinal involvement and the presence of OCB eventually led us to diagnose our patient with a late-onset form of MS.

**PO0016**

**Shared decision making in multiple sclerosis consultation: Patient and third observer perspectives**

Cristina Silva  
Escola de Ciências da Saúde - Universidade do Minho, Braga, Portugal

**Introduction:** Shared Decision Making (SDM) demonstrated to increase knowledge, sense of autonomy, treatment adherence and patient satisfaction, as well as improve doctor-patient communication and decrease decisional conflict. In Multiple Sclerosis (MS), treatment decisions are complex and associated with substantial uncertainty, which makes MS a paradigmatic case of the importance of SDM.

**Purpose:** To assess decision making in Multiple Sclerosis Consultation in Hospital de Braga from patient and third observer perspectives.

**Methods:** MS/Clinically Isolated Syndrome patients followed in Multiple Sclerosis Consultation self-completed the Patients' Perceived Involvement in Care Scale (PICS), the NEO Five Factor Inventory and the Hospital Anxiety and Depression Scale. Sociodemographic and clinical data were collected. Consultation recordings were recorded and rated using the Observing Patient Involvement scale (OPTION).

**Results:** 127 patients participated in the study, 36.2% were male and 63.8% female. Mean age was 42.9 years (SD = 11.0). Mean PICS score was 70.3 (N = 127, SD = 10.6). Linear regression analysis showed that personality dimension “openness to experience” was the only significant predictor of PICS scores. Mean OPTION score was 29.2 (N = 22, SD = 13.8). A positive moderately strong correlation was found between OPTION scores and duration of consultation (R = 0.704, p < 0.001). In linear regression, OPTION scale had as significant predictors duration of consultation, that alone explained 72.6% of the variability found, and “openness to experience”.

**Discussion:** This study revealed an insufficient application of SDM, particularly from a third observer perspective. Implementation of SDM was relatively independent of patients’ personality (except for openness to experience”) and strongly predicted by the duration of the consultation. In face of increasing pressure to increase the doctor’s “productivity”, these results alert to the importance of providing enough consultation time and stress the need of medical training in this area, so that SDM can be effectively applied. Nevertheless, larger scale studies are needed to know the reality of SDM in MS in Portugal.
PO0017
The neuropsychiatric events in Multiple Sclerosis
Bela Machado
Escola de Ciências da Saúde - Universidade do Minho, Braga, Portugal

Background and purpose: Multiple Sclerosis (MS) is a disease with a wide clinical presentation, and neuropsychiatric events are also very common. Anxiety and depression are the psychiatric symptoms more frequently seen, and when present are associated with a lower quality of life. However, the diagnosis becomes difficult due to MS having a lot of symptoms in common, hence making this a condition that is not diagnosed or treated in most patients. The personality changes are also known in patients with MS. Our goal is to determine the prevalence of anxiety and depressive symptoms, discover the traits of personality of those patients and correlate them with sociodemographic and clinical data.

Methods: To that end, a convenience sample of 134 patients was assessed with the Hospital Anxiety and Depression Scale (HADS) for measuring the anxiety and depressive symptomatology, and the NEO Five Factor Inventory in order to assess the five domains of personality. Also, a control group of 68 individuals were formed to compare only the traits of personality between the two groups.

Results: The anxiety symptomatology was detected in 48.3% of the patients, and was particularly higher in females, however significant differences in relation to other features were not found. The depressive symptomatology was detected in 40.6% of the patients and showed a positive moderate correlation with age and disability measures. These results were consistent with other studies. In relation to personality traits, low levels of extraversion in the patient group were determined in comparison with the control group. The patient group presented high values in neuroticism domain in females and the extraversion in males. The subscale HADS-A and HADS-D correlated positively with neuroticism and negatively with the remaining domains of personality.

Discussion: Consistent with other studies, our results suggest a high prevalence of anxiety and depressive symptoms in multiple sclerosis patients. More importantly, our data also suggest that MS patients might have a specific personality, with decreased extraversion and, particularly in females, increased neuroticism. In light of the relationship between personality traits and anxiety and depression, also highlighted here, these results prompt for a more integrated management of such symptoms, apart from the pharmacological approach.

PO0018
Brain atrophy and disability in primary progressive Multiple Sclerosis
Orlando Galego1, Ana Gouveia2, Cristina Moura1, Egidio Machado1, Sónia Batista2
1Serviço de Neurorradiologia - Centro Hospitalar e Universitário de Coimbra, Coimbra, Portugal, 2Serviço de Neuropatologia - Centro Hospitalar e Universitário de Coimbra, Coimbra, Portugal

Background: Primary progressive multiple sclerosis (PPMS) is a distinct subset of MS characterized by chronic progression since onset, predominant involvement of spinal cord and neurodegeneration. Despite greater disability, PPMS patients display minimum brain MRI lesions. Cortical atrophy has been shown in MS patients, but its association with clinical disability isn’t clear.

Materials and Methods: Patients with an established diagnosis of PPMS followed at an outpatient MS consultation were subjected to brain MRI at 1.5T with the following protocol: volumetric MPRAGE 1.5 mm; axial T2WI and PDWI 3 mm thick; axial FLAIR 3 mm thick. Volumetric analysis was performed with FreeSurfer software (v5.3.0) and lesion load was determined using the 3D Slicer software (v4.3.1); the volumes were normalized to the estimated total intracranial volume. Clinical data, including neurologic physical disability as measured by the Expanded Disability Status Scale (EDSS), was retrieved from the medical records.
Results: A total of 19 patients were included, 14 female (73.7%), mean age of 55.7 (SD 7.6) and mean disease duration of 13.0 years (SD 8.8). Median EDSS score was 6.0 (minimum 3.5, maximum 8.0). The average T1 lesion load was 4.9 cm³ (SD 3.4), T2 load was 10.5 cm³ (SD 9.9), and both were not associated with disease duration or EDSS score. There was also no significant correlation between EDSS score or disease duration and the cortical, white matter, thalamus, caudate, putamen, corpus callosum or hippocampal volumes. Brainstem volumes were statistically different when comparing patients with less than 10 years of disease duration against those with 10 or more (p=0.018). Lesion load was negatively correlated with cortical and subcortical gray-matter volumes (p<0.05), but not with total white matter volume.

Discussion: The absence of correlation between disease duration and lesion load is expected in PPMS patients, who usually present less MRI activity on conventional techniques. The association of lesion load and cortical and subcortical gray-matter atrophy suggests that focal inflammatory white-matter lesions may contribute to progressive neuronal degeneration. Physical neurologic impairment (EDSS) did not relate to any MRI parameter, which may be attributable to spinal cord lesions or normal appearing white-matter involvement. Nevertheless, other aspects of neurologic disability, as cognitive impairment, were not evaluated.

Conclusion: Gray-matter atrophy is related to lesion load in PPMS patients, but does not translate directly to physical disability.

PO0019
Cognitive screening in an MS outpatient clinic
Ivânia Alves¹, Cátia Mateus², Joana Pais², Vítor Tedim Cruz¹
¹Neurology Department, Centro Hospitalar Entre Douro e Vouga (Hospital São Sebastião), Santa Maria Feira, Portugal, ²Neuropsychology Department, Centro Hospitalar Entre Douro e Vouga (Hospital São Sebastião), Santa Maria Feira, Portugal

Background: Cognitive complaints are a common complaint among MS patients. Studies point to a prevalence of cognitive deficit (CD) between 43-65%, even in early phases of the disease, when the deficits may be subtle. It is therefore important to have reliable and fast screening methods to identify eligible patients to perform a more exhaustive evaluation.

Methods and Results: We selected consecutive MS or CIS patients from the outpatient clinic of Hospital São Sebastião who were ≥18 years old and had an EDSS ≤6.0; all gave their informed consent to participate. We excluded those with relapses or corticotherapy in the previous month. We collected demographic and clinical data and we used the following instruments: Montreal cognitive assessment (MoCA), Trail making test, Coding test and symbol search (WAIS), Auditory verbal learning test, Clock test, Stroop test, Token test, Verbal fluency and reading, Hospital anxiety and depression scale (HADS), 9-hole peg test (9-HPT) and 25-foot walk test. We considered MoCA as the screening battery and the remaining tests, taken together, as the “gold standard evaluation”. The cutoff point for MoCA was set at 1.5 standard deviation below normative data; we considered patients who had ≥3 tests below the cutoff points in the Gold standard evaluation as having CD.

We evaluated 64 patients (42 women, 22 men), with a mean age of 41.8±10.0 years and a mean of 9.9±4.4 years of education. The patients had a mean EDSS of 2.3±1.6 and a mean 9.3±5.7 years of disease evolution. 51 patients had a relapsing remitting form, 3 patients had a CIS; the remaining had progressive forms. 54 patients (84.4%) had MoCA scores below the cutoff point and 55 patients (85.9%) were classified as having CD according to the Gold standard evaluation. In this sample, MoCA had a positive predictive value (PPV) of 85% and a sensitivity of 83.6% to classify patients with CD. The EDSS and 9-HPT were correlated with MoCA scores (r²=0.13, p<0.01; r²=0.35, p<0.01 respectively) and total number of “failed” tests in the Gold standard evaluation (r²=0.23, p<0.01; r²=0.30, p<0.01 respectively); years of disease evolution, anxiety and depression scores were not correlated with MoCA scores nor with total number of failed tests in the Gold standard evaluation (p>0.01).

Discussion: 85.9% of this sample was classified as having CD in an extensive cognitive evaluation. MoCA test revealed a high PPV and sensitivity to detect CD in MS patients.
**PO0020**

**Tumefactive form of multiple sclerosis: Two case reports**

Helena Felgueiras, Telma Santos, António Martins Campos, Joaquim Pinheiro

Neurology Department, Centro Hospitalar de Vila Nova de Gaia/Espinho, Vila Nova de Gaia, Portugal

**Background:** Tumefactive forms of multiple sclerosis (MS) are rare. Lesions have more than 2 cm of diameter and can mimic a tumour, creating important differential diagnostic questions.

**Case reports:** The first patient is a 40 year-old woman. In 2011 had numbness in her left leg over 3 months. In May 2014 had the same sensation in the right hand starting few weeks ago. All these complaints disappeared spontaneous and completely. In June she had weakness in the left arm during 6 days and a month later numbness in the chest with sensory level by C6. Brain MRI scan revealed three T2 brain corticocortical lesions, larger than 2cm, with oedema, gadolinium enhancement, localized in frontopolar, peri-rolandic and temporal regions, with T1 hyposignal observed in some of them and also revealed one similar cervical lesion. CSF was normal, without oligoclonal bands (OCBs). Immunologic, serologic studies and a search for systemic malignancies were negative. The diagnosis of pseudo-tumoral MS was assumed and a high dose corticotherapy performed with clinical improvement. The control MRI made 3 months later showed decreased dimension of tumefactive lesions and two more cervical lesions. Disease modifying therapy was proposed. The second patient is a 26 year-old woman. 3 years ago she had a 10 days numbness on right leg and in the last year the same complaint on the right arm during 3 months. Admitted at ER in November 2014 after a focal motor seizure involving the right arm. The neurological examination was normal. The brain and spinal MRI revealed lesions sub and justacortical, with involvement of corpus callosum some tumor-like with gadolinium enhancement and others smaller lesions, some active and some inactive, with T1 hyposignal and also multiple small cervical lesions with the same characteristics. The CSF had normal cell count, without hiperproteinorachia, elevated IgG index end ongoing OCBs. Immunologic and serologic studies were normal. Tumefactive MS was assumed and high dose corticotherapy performed with clinical improvement.

**Discussion:** When tumefactive lesions are identified they represent MS initial presentation in 60% of cases. These patients tend to have higher incidence of cognitive symptoms, seizures and visual fields impairment. The incidence of OCBs is lower when compared to the classic form (33%). When suspected, an aggressive therapy with steroids is essential. The long-term outcome is generally good with evolution to a relapsing-remitting MS.

**PO0021**

**Preliminary analysis of benefits of regular exercise in patients with Multiple Sclerosis: a systematic review with meta-analysis**

Jéssica Fernanda Garcia, Guilherme Eustáquio Furtado, Matheus Ulba Chupel, Miguel Pereira, Livia Sousa, José Pedro Ferreira, Antonio Freire, Luís Rama

1Faculty of Sport Science and Physical Education - University of Coimbra, Coimbra, Portugal, 2Department of Neurology - University Hospital of Coimbra, Coimbra, Portugal

**Background:** Multiple sclerosis (MS) is a chronic progressive neurological disease with motor, sensitive, autonomic and psychological symptoms that can lead to inactivity. Fatigue and other motor symptoms are very common in MS patients and have negative impacts over general activities including impaired strength and endurance capacities. Physical exercise can improve physical conditions and quality of life of these patients and may be prescribed in MS. However published systematic reviews do not proved accurately the benefits of exercise with strength and resistance training in this population.
Purpose: We reviewed the literature focused on the benefits of regular strength exercise programmes in patients with MS in order to understand the role of physical activity in the functional capacity of these patients.

Methods: The selection of manuscripts were done throw: a) research in PubMed, Web of Science and Sport Discus data bases; b) search terms included multiple sclerosis and resistance training; c) PeDro scale were used to verify the methodological quality of this manuscripts; d) the intervention studies of resistance training programmes were selected.

Results: After full text review in the last 10 years 152 papers were selected; 43 manuscripts were selected after using the filter “clinical trial” and 22 duplicate articles were excluded; 4 manuscript had the criteria for inclusion: control group, quantitative studies, English language, resistance training (volume x intensity) and patients with EDSS ≤ 6 , only 3 manuscripts after scale PeDro were selected for meta-analysis. The magnitude of the global effect described in studies that used resistance training with patients with MS revealed a standard difference in means of .416 and a z-value of 2.778 (p= < .05).

Discussion: This review shows that strength training could bring benefits for patients with MS. Considering the several types of resistance training the isometric method seems to be beneficial only in patients with a higher a level of spasticity.

Conclusion: Although the trend of the analysed studies point to the benefits of strength training to MS patients the preliminary points to needs of the inclusion of other ‘key-terms’ to improve search engine in order to include more manuscripts that fit the established criteria.

Prevalence of autonomic dysfunction in patients with Multiple Sclerosis

Bítia Vieira1, Andreia Costa4,3, Gonçalo Videira1, Maria José Sá4,2, Pedro Abreu4,3

1Faculdade de Medicina da Universidade do Porto, Porto, Portugal, 2Faculdade das Ciências da Saúde, Universidade Fernando Pessoa, Porto, Portugal, 3Departamento de Neurociências e Saúde Mental, Faculdade de Medicina da Universidade do Porto, Porto, Portugal, 4Serviço de Neurologia, Centro Hospitalar de S. João, Porto, Portugal

Background: Autonomic nervous system dysfunction is commonly seen in multiple sclerosis patients and should be explored in the routine evaluation. Composite Autonomic Symptom Score questionnaire was validated as a self-assessment instrument of autonomic symptoms.

Purpose: Determine the frequency of autonomic symptoms in multiple sclerosis patients through a Portuguese version of Composite Autonomic Symptom Score; compare questionnaire results between patients and a control group; assess the feasibility of this questionnaire application in multiple sclerosis Portuguese patients.

Methods: This case-control study used a Portuguese translated version of Composite Autonomic Symptom Score to determine the frequency of autonomic symptoms in multiple sclerosis patients.

Results: One-hundred and three relapsing-remitting multiple sclerosis patients were included - median age 41 years, median disease duration 6 years, median EDSS score 1 - and 80 healthy subjects. Alterations in autonomic function were reported in 97,1% of the cases, with statistical significance in orthostatic intolerance and gastrointestinal domain scores. Nevertheless, the difference between multiple sclerosis patients (41,7%) without confounding factors that could interfere with autonomic dysfunction (i.e. comorbidities or medications) and controls showed no statistical significance.

Discussion: Our results may be related mainly to the short disease duration, young age and low disability status of our patients unaffected by confounding factors. The questionnaire was not designed specifically for multiple sclerosis and it may not be as sensible to early autonomic symptoms as to more severe manifestations. Further studies are needed to achieve more robust results, validate this questionnaire and assess its application in multiple sclerosis patients in Portugal.
**PO0023**

**Acute Disseminated Encephalomyelitis as the first manifestation of Child-Onset Multiple Sclerosis**

Tiago Gomes1,2, Helena Rocha1,2, Diana Amaral3, Mafalda Sampaio4, Joana Guimarães1,2, Maria José Sá1,5, Miguel Leão4,6

1Neurology Department, Centro Hospitalar São João, Porto, Portugal, 2Faculty of Medicine, University of Porto, Porto, Portugal, 3Integrated Paediatric Hospital, Centro Hospitalar de São João, Porto, Portugal, 4Neuropaediatric Unit, Integrated Paediatric Hospital, Centro Hospitalar de São João, Porto, Portugal, 5Faculty of Health Sciences, University Fernando Pessoa, Porto, Portugal, 6Genetics Department, Centro Hospitalar de São João, Porto, Portugal

**Background:** Diagnosing Multiple Sclerosis (MS) before puberty is exceedingly rare and obscured by atypical presentations and concurrent mimics, such as Acute Disseminated Encephalomyelitis (ADEM). Nonetheless, a correct diagnosis is critical for prognosis and treatment, comprising long-term disease modifying therapies. We present a 12-year-old girl with optic neuritis and a remote ADEM-like episode.

**Case report:** Our patient complained of decreased vision progressing over two weeks, with no identifiable triggers. Examination revealed bilaterally pale papilla with severe visual impairment, brisk reflexes on lower limbs, with mild ankle clonus, and no further abnormalities. Blood routines were normal, except low Vitamin D. A comprehensive viral and immunological panel, including aquaporin-4 autoantibodies, was negative. Likewise, a CSF investigation was unremarkable, including no oligoclonal bands. A diagnose of optic neuritis was assumed and she was treated with corticosteroids (high-dose methylprednisolone), with prompt, but slow and only partial improvement. Our patient had a past diagnosis of severe ADEM at age 4 with spastic paraparesis, urinary retention, and decreased consciousness. Apart from an inflammatory CSF, all other lab results were normal or negative. An MRI revealed multifocal diffusely dispersed cortical-subcortical, periventricular, cerebellar and spinal cord T2 lesions with contrast enhancement. At the time, she was successfully treated with immunoglobulins and corticosteroids with full clinical recovery. Nevertheless, a recent MRI disclosed new cortical-subcortical lesions and expansion of previous ones. Because of the ADEM-like episode and later optic neuritis, with MRI evidence of dissemination in time and space, our patient was diagnosed with childhood-onset MS (IPMSSG, 2012) and started on interferon -1a.

**Discussion:** Our case shows an atypical presentation of MS, which is not rare in paediatric patients, emphasizing the diagnostic challenges of MS in this age group.

**PO0024**

**Clinical worsening after the first infusion of natalizumab in a patient with active relapsing-remitting multiple sclerosis**

Joana Martins, Luisa Sousa, Paula Salgado, Ana Martins Silva, Ernestina Santos

Centro Hospitalar Porto, Department of Neurology, Porto, Portugal

**Background:** Natalizumab is a monoclonal IgG antibody approved for second-line treatment in relapsing-remitting multiple sclerosis (RRMS). As a specific 4-integrin antagonist, it acts through the blockade of inflammatory cell migration across the blood-brain barrier. Controlled trials have proved that natalizumab significantly reduces relapse rate, disability progression and lesion development. Few cases of MS clinical worsening after the first infusion of natalizumab have been described recently.

**Case Report:** We present a 32 year-old man with RRMS who had been diagnosed one year prior to the administration of natalizumab. The presenting symptom consisted in right lower limb paresis and optic neuritis. MRI revealed multiple supra and infratentorial T2-hyperintense lesions and CSF analysis showed lymphocytic pleocytosis (17 lymphocytes) and oligoclonal bands only in the CSF. He was treated with IV steroids with par-
tial recovery. Afterwards he had a particularly severe disease course. One week later he had a relapse consisting in optic neuritis. MRI showed the development of new lesions, confirming the diagnosis of RRMS. He was treated with IV steroids with partial recovery, and started interferon beta 1b. Six months later he had a relapse causing facial paresis and limb ataxia, with de novo pontine and olivobulbar T2-hyperintense lesions and was treated with IV steroids. Three months later he developed internuclear ophthalmoplegy, disaria, left hemiparesis and ataxic gait. He was treated with IV steroids, persisting neurological sequels as slight left hemiparesis and limb ataxia. The recurrent relapses and the increasing number of active lesions in MRI supported the decision of starting natalizumab, although he was JC positive. Within the first 36 hours after the first injection, he presented worsening of pre-existing symptoms (internuclear ophthalmoplegy, left hemiparesis and dysmetria with ataxic gait) and developed frontal syndrome, dysphagia to liquids and left C4 sensitive level. Anti-AQP4 and anti-natalizumab antibodies were negative. MRI showed increase of the number of supra and infratentorial T2-hyperintensities as well as the enlargement of pre-existing lesions in MRI. He was treated with methylprednisolone 2 g daily for five days and completed 5 sessions of plasmapheresis in alternate days. Progressive recovery was reported along the treatment and at the time of discharge he presented the previous neurological sequels.

**Discussion:** The mechanism by which a first injection of natalizumab precipitates a clinical relapse is unknown. It is speculated that natalizumab promote the release of proinflammatory mediators from lymphocytes present in the central nervous system, especially when administered during an active phase of RRMS.

**PO0025**

**Oligoclonal bands and other multiple sclerosis predictors of disease evolution**

José Tomás1, Inês Baldeiras3,4, Maria Helena Ribeiro2,4, Maria João Leitão3, Sónia Batista1, Carla Nunes1, Lívia Sousa1, Carmo Macário1

1Neurology department, Coimbra Hospital and Universitary Center (CHUC), Coimbra, Portugal, 2Faculty of Medicine, Coimbra, Portugal, 3Center for Neuroscience and Cell Biology, Coimbra, Portugal, 4Neurochemistry Laboratory, CHUC, Coimbra, Portugal

**Background and purpose:** The presence of oligoclonal IgG bands (OCBs) restricted to the CSF is consistent with intrathecal IgG synthesis and is currently the only biomarker, apart from MRI, that is accepted in the diagnosis of Multiple Sclerosis (MS). However, its putative role as a prognostic factor in MS is still controversial. Our objective was to assess the influence of several predictive factors, including presence of OCBs, in MS evolution.

**Methods:** From the patients that performed OCBs test in our neurology department between March 2001 and October 2014, the cases with diagnosis not compatible with MS or with incomplete data (provided from local MS database or individual medical records) were initially excluded. Data of the remaining patients (n=252) were analysed for associations between OCBs pattern and clinical factors (gender, age at onset, disease duration, EDSS score, disease course and MRI).

**Results:** Most of the patients (207/252; 82%) had OCBs restricted to CSF (OCB+), while 43 (21%) had no detectable CSF OCBs (OCB-). Two patients showed a similar pattern of OCBs in serum and in the CSF and were further excluded from the analysis. The female to male ratio was alike in the OCB+ and in the OCB- group (p=0.240). Clinical course was similar in the 2 groups: PPMS versus “other clinical courses” did not differ significantly between the two groups (OCB+: 4.7%; OCB-: 4.8%; p=1.000), as well as frequency of secondary progression of RRMS (OCB+: 6.1%; OBC-: 7.3; p=0.773). Concerning the initial symptom of MS being medullary, there was a significant statistical difference (OCB+: 32.9%; OCB-: 16.3%; p=0.031). No further variables were significantly associated with the result of the OCBs test: disease duration, EDSS at different points in time, variables related with disease course, positive MRI and the use of high-dose intravenous methylprednisolone to treat relapses in the 3 months before the lumbar puncture.
Discussion/Conclusions: Our results suggest that MS patients with positive CSF OCBs have no gender predominance and no differences regarding progression of the disease or incapacity. On the contrary, the medullary presentation seems to be significantly more frequent in the positive CSF OCBs group. One of the limitations of the study was the imbalance between the number of positive and negative OCBs patients. Also RRMS patients with atypical clinical presentations or unusual MRI features were more likely to have had CSF work-up, suggesting a testing bias.

**PO0026**

**Multiple Sclerosis in a 9 year-old girl: a challenge from diagnosis to treatment**

Helena Rocha¹,², Tiago Gomes¹,², Diana Amaral³, Mafalda Sampaio³,⁴, Joana Guimarães¹,², Maria José Sá¹,⁵, Miguel Leão⁴,⁶

¹Department of Neurology, Centro Hospitalar de São João, Porto, Portugal, ²Faculty of Medicine, University of Porto, Porto, Portugal, ³Department of Pediatrics, Centro Hospitalar de São João, Porto, Portugal, ⁴Pediatric Neurology Unit, Department of Pediatrics, Centro Hospitalar de São João, Porto, Portugal, ⁵Faculty of Health Sciences, University Fernando Pessoa, Porto, Portugal, ⁶Department of Genetics, Centro Hospitalar de São João, Porto, Portugal

**Background:** Clinical presentation of multiple sclerosis (MS) before the age of 10 years is rare, corresponding to only about 1% of all MS cases. We present a pediatric patient with an established diagnosis of MS, highlighting some clinical and paraclinical particularities of the disease in this age group.

**Case Report:** A nine year-old Portuguese girl presented to the pediatrics emergency department with mild headache and left hemiparesis of subacute onset. Her past medical history was unremarkable as well as her family history. On physical examination she had no fever or altered mental status. A left VII cranial nerve palsy, ipsilateral hemiparesis with brisk reflexes and Babinski sign were noticed. The following investigation was performed: brain MRI depicted a right sided tumefactive lesion involving the semioval center and corpus callosum with T2-hyperintensity and contrast-enhancement and smaller cortico-subcortical and periventricular lesions without expression on T1 or contrast-enhancement; serum tests were normal except for a low vitamin D level and immunological evidence of previous infections with Epstein-Barr virus, cytomegalovirus and herpes simplex type 1 virus; CSF study had normal cellular profile and IgG index and negative oligoclonal bands. The patient was treated with methylprednisolone (30mg/Kg) for 5 days with a notorious benefit. A few days after discharge she presented involuntary movements of the left limbs. Brain MRI performed two months after the first event showed the same lesions, although without contrast enhancement. After exhaustive differential diagnosis discussion tumefactive form of MS was assumed. High dose methylprednisolone was administered for 5 days and then interferon beta-1a was prescribed. No relapses were noticed since then; EDSS score is 1.

**Discussion:** We present a pediatric MS case with an impressively large demyelinating lesion clinically expressed by an isolated motor deficit. Tumefactive lesions and negative oligoclonal bands are more frequently reported in this age group than in adult onset MS forms. Treatment with disease-modifying drugs is still a challenging decision.

**PO0028**

**Quality of life of caregivers of patients with sclerosis: Literature review**

Ana Certo, Ana Galvão, Maria Gomes, Ana Louçano

IPB, Bragança, Portugal

**Background:** The quality of life of the caregiver is essential, since it interferes with the care that it provides to the sclerosis carrier. And this decreases depending on the development of the condition. Caregivers of patients with sclerosis, are a population exposed to risks that affect your overall health. Therefore, it is imperative the need for action to these.

**Purpose:** To evaluate the quality of life sclerosis carrier caregiver.

**Methods:** This is a qualitative study, based on the published scientific literature review. To this end, we used the scientific databases by keyword: (i) “caregivers”; (ii) “carriers sclerosis”; (iii) “quality of life”; (iv) “disease”. Inclusion criteria: scientific evidence only in caregivers of sclerosis patients.

**Results:** It is evident that the symptoms reported by caregivers due to the pathology of the stage, will worsen to changes in the same. The stress level that is high. The cost of caring for the long-term dependent patients has consequences on quality of life and health of caregivers.

**Discussion:** It is crucial to be a specific intervention targeted to caregivers of sclerosis patients. The reason for this statement relates to the fact that they are “A care unit,” where they are exposed to high levels of stress that affect the quality of life.
Quality of life of caregivers of patients with sclerosis: Literature review
Ana Certo, Ana Galvão, Maria Gomes, Ana Louçano
IPB, Bragança, Portugal

Background: The quality of life of the caregiver is essential, since, it interferes with the care that it provides to the sclerosis carrier. And this decreases depending on the development of the condition. Caregivers of patients with sclerosis, are a population exposed to risks that affect your overall health. Therefore, it is imperative the need for action to these.

Purpose: To evaluate the quality of life sclerosis carrier caregiver.

Methods: This is a qualitative study, based on the published scientific literature review. To this end, we used the scientific databases by keyword: (i) “caregivers”; (ii) “carriers sclerosis”; (iii) “quality of life”; (iv) “disease”. Inclusion criteria: scientific evidence only in caregivers of sclerosis patients.

Results: It is evident that the symptoms reported by caregivers due to the pathology of the stage, will worsen to changes in the same. The stress level that is high. The cost of caring for the long-term dependent patients has consequences on quality of life and health of caregivers.

Discussion: It is crucial to be a specific intervention targeted to caregivers of sclerosis patients. The reason for this statement relates to the fact that they are “A care unit,” where they are exposed to high levels of stress that affect the quality of life.
CO0029
To be at work or not to be?
Comparing presenteeism and quality of life between MS patients and healthy workers
Aristides Ferreira¹, Ana Margarida Passos¹, Mariana Neves¹, Cláudia Sousa², Maria José Sá²
¹Instituto Universitário de Lisboa (ISCTE-IUL), Lisbon, Portugal, ²Hospital de São João, Porto, Portugal

Background: In recent years there has been a growing interest in the study of quality of life (QoL) in patients with multiple sclerosis (MS). However, despite the interest of this topic, the study of QoL and well-being in patients with MS in the workplace is a totally unexplored area of research.

Purpose: (1) To compare productivity in spite of both presenteeism and QoL of individuals with and without MS (2) To analyze the influence of psychological antecedents of depression and anxiety on productivity in spite of presenteeism and QoL of MS patients.

Methods: A total of 82 subjects with MS and 172 subjects without MS were examined with the BDI, the BSI (anxiety subscale), the Stanford Presenteeism Scale and the subscale of Fatigue of Hamburg Quality of Life Questionnaire in Multiple Sclerosis. The MS group had none-to-moderate levels of impairment in EDSS (0-3.5).

Results: As hypothesized, our results showed that subjects without MS had more QoL than MS patients.

Discussion: These Results indicate that QoL is lower for workers with MS thus, suggesting that organizations have to promote higher conditions for employees with this disease. Hence, QoL can be increased toward more efficient HR practices, enhanced work designs and more flexible schedules, promoting a better balance between family and work-life.

PO0030
Late-onset multiple sclerosis - epidemiological and clinical features
Joana Parra, Sónia Batista, Inês Correia, Carla Nunes, Lívia Sousa, Maria Carmo Macário
Centro Hospitalar e Universitário de Coimbra, Coimbra, Portugal

Background and purpose: Multiple sclerosis (MS) is the most frequent demyelinating acquired disorder of the central nervous system. It occurs mainly in young adults but it is estimated that 1,1-12,7% of patients have a disease onset after the age of 50. These late-onset MS (LOMS) patients are described as presenting different clinical features and prognosis.

Methods: We included all the patients (N = 62) followed in our Demyelinating disorders clinic with a definite diagnosis of MS (2010 McDonald criteria) with disease onset after the age of 50. A group of adult-onset MS patients (N = 62), matched for disease duration, was included consecutively according to alphabetical listing in iMED database. We analyzed epidemiological, clinical, laboratory and imaging features of both groups.

Results: Of the 869 MS patients followed in our hospital, 62 (7,13%) have LOMS with a mean present age of 63,79 (±6,71) and a mean age of disease onset of 53,85 (±3,55). We found no differences between the two groups in terms of gender and in terms of time until diagnosis. Clinical presentations associated with a better prognosis (visual and sensory) were less common in the LOMS group (6,1% vs. 36,6%, p=0,001). Initial EDSS score had no statistical difference between the two groups, but present EDSS was significantly higher in LOMS patients (4,5 vs. 2,0, p<0,001). Index of progression (change of EDSS unit per year) was significantly higher in LOMS patients (0,43 vs. 0,26, p<0,001). Progressive forms are more frequent in LOMS than adult-on-
set MS patients (32.0% vs. 12.9%, p=0.002). We found no differences in frequency of positive CSF oligoclonal bands and abnormal visual evoked potentials. Localization of white matter lesions and presence of active lesions was similar between the two groups.

**Discussion:** In our LOMS population, clinical presentations classically associated with a worse prognosis and the proportion of progressive forms of disease was more frequent, which is consistent with literature data. Moreover, the disease seems to be more aggressive with higher index of progression and reaching higher EDSS scores. Contrary to previous studies we found no differences in laboratory and imaging characteristics.

**PO0031**

**Temporal evolution of peripheral lymphocyte subsets during fingolimod treatment in relapsing multiple sclerosis**

Joana Meireles1,2, Andreia Costa1,2, Maria José Sá1,3, Pedro Abreu1,2

1Neurology Department, Centro Hospitalar S. João, Porto, Portugal, 2Clinical Neuroscience and Mental Health Department, Faculty of Medicine of University of Porto, Porto, Portugal, 3Health Sciences Faculty, Fernando Pessoa University, Porto, Portugal

**Background:** Fingolimod is an inhibitor of the sphingosine 1-phosphate receptor, approved for the treatment of Relapsing-Remitting Multiple Sclerosis (RRMS). One of its effects is sequestration of lymphocytes inside secondary lymphoid organs. Despite a consequent reduction in the peripheral lymphocytes count, not all subsets are equally affected, with a preferential depletion of naïve and central memory T cells, but not effector T cells from peripheral circulation. Recently some studies have addressed the impact of the drug in the peripheral lymphocyte subsets with conflicting results.

**Purpose:** To evaluate the peripheral lymphocyte subsets during the follow-up of a cohort of RRMS patients.

**Methods:** We designed a retrospective observational study of fingolimod treated RRMS patients in our centre (n=28). We included patients with RRMS on fingolimod, who had a baseline and follow-up immunological screen. Patients who had been treated with other Disease Modifying Drug (DMD) within 3 months of baseline evaluation were excluded. Demographic and clinical data were analysed and immune phenotypes were collected at baseline, 3, 9 and 14 months.

**Results:** Seven patients were included in this study, 4 of them women. Median age was 39 years-old (minimum: 21; maximum 49). Median duration of disease when starting fingolimod was 10 years (minimum 7; maximum 19). Previous Expanded Disability Status Score was 4.0 (minimum 2.0; maximum 5.5). All patients had been treated with a DMD. The evaluation of peripheral lymphocyte subsets during follow-up showed a marked decrease in total lymphocyte count and CD4+ subpopulation. CD8+ subpopulation gradually increased after an initial reduction at 3 months. This finding, allied to the marked decrease in CD4+ subpopulation, resulted in a sustained decrease in the CD4+/CD8+ ratio over time. A decrease in CD3+ subpopulation was observed mainly at 3 months with posterior increase to half of the baseline values. CD19+56+ (natural killer cells) decreased in the first evaluation but increased to higher than baseline values during the follow-up.

**Discussion:** Our results are concordant with previous literature stating that fluctuations in lymphocytes of fingolimod treated patients may reflect changes in total CD8+ effector cells, a population less regulated by this agent, due to its lower affinity for sphingosine receptor, explaining CD8+ greater contribution to the remaining peripheral lymphocyte pools. In respect to natural killer cells subpopulation, literature data is conflicting. Nevertheless recent research showed an increased frequency of this cell type in fingolimod treated patients, similarly to our results.
**CO0032**

**Familial multiple sclerosis: A center’s experience**

Miguel Tábua-Pereira, Inês Correia, Joana Parra, Inês Marques, Sónia Batista, Carla Nunes, Lívia Sousa,
Mª Carmo Macário

*Centro Hospitalar e Universitário de Coimbra, Coimbra, Portugal*

**Background and purpose:** Patients with family history of multiple sclerosis (MS) have long been object of study. According to literature, about 10-20% of the patients have family history of multiple sclerosis. There is evidence of a strong familial component in the etiology of MS, with family history increasing in 7-fold the risk of developing the disease. Anticipation of age at onset in the younger generations has also been demonstrated. In this study we aim to analyze these characteristics in a portuguese cohort.

**Methods:** From a cohort of 869 patients with multiple sclerosis (diagnosed by the McDonald criteria of 2005 or 2010), 30 patients with first degree family history of MS were identified. Retrospective analysis of the patients’ files was conducted. Patients with family history were pairwise compared to 60 patients (1:2) with multiple sclerosis without family history, randomly selected within the patients with same time of disease (±1 year). Demographic and clinical variables were analyzed. Mann-Whitney or -square test were used to compare the variables between groups. Bonferroni post-hoc correction for multiple comparisons was performed.

**Results:** From the 30 patients with positive family history, 11 were siblings, 5 have children with MS, and 14 have parents (in 4 cases the father, in the remaining cases the mother) with multiple sclerosis. Patients with family history showed lower age of onset (p<0.001; with a median age of 26 versus 34 in the control group) and age at diagnosis (p<0.001), but with lower number of relapses in the first year of disease (p<0.001) and lower disability at onset (measured by EDSS - p=0.006). Current EDSS (median 2.0 in both groups) and time to progression (median of 6 years) were similar. No other differences with statistic significance were found.

**Discussion:** Familial multiple sclerosis in our sample is associated with an earlier onset disease, but with an initial more benign course. However, the current disability is similar. Although a greater awareness of the patients for the disease with the patients with an affected relative may bias the results, the earlier onset is in accordance with results found in the literature. Carter effect couldn’t be demonstrated, as the size of the sample was very small for this analysis.

**PO0033**

**Multiple sclerosis-associated tremor treated with deep brain stimulation: Report of 2 cases**

Andreia Veiga1, Ana Filipa Santos2, Paulo Linhares3,4, Clara Chamadoira3, Margarida Ayres Basto3, Carina Reis3, Luis Augusto4, João Pedro Costa3, Carolina Garrett3,5, Rui Vaz3,5, Maria José Rosas3

1 Serviço de Neurologia do Centro Hospitalar de Trás os Montes e Alto Douro, Vila Real, Portugal,
2 Serviço de Neurologia do Hospital de Braga, Braga, Portugal,
3 Unidade de Doenças do Movimento e Cirurgia Funcional do Centro Hospitalar de São João, Porto, Portugal,
4 Serviço de Neurorradiologia do Centro Hospitalar de São João, Porto, Portugal,
5 Faculdade de Medicina da Universidade do Porto, Porto, Portugal

**Background:** Multiple sclerosis (MS)-associated tremor is usually not responsive to medical therapy being thalamic DBS at VIM nucleus reported as an option in refractory cases with a maximal benefit between 30-80% depending on the best series. Two recent studies showed promising results on DBS at zona incerta, especially in those cases with prominent cerebellar features. We report 2 cases of MS associated tremor treated with DBS in zona incerta.

**Case reports:** 2 female patients with 42 and 40 years old, with MS evolving at 6 and 27 years respectively, sent to Movement Disorders Functional Surgery Unit because of a disabling postural and action tremor involving...
head, trunk and limbs and not responsive to medical therapy. In Fahn-Tolosa e Martin scale (FTMS) their scores where 119 and 65 respectively. At neurological exam spastic paraparesis was found in both, but the second as autonomous gait. Brain MRI showed in both the features related to MS. DBS in zona incerta was performed and the stimulation parameters where adjusted to maximal benefit. Nowadays, their FTMS where 90 and 30, being in the first one the clinical benefit restricted by her worst neurological condition.

**Discussion:** MS-associated tremor is a clinical challenge being DBS at zona incerta a possible therapeutic option especially in those patients with proprioceptive impairment. The lack of specific scales to evaluate this medical condition is a restraint to infer the maximal benefit of the surgery.

---

**PO0034**

**A Multiple Sclerosis mimic**

Carlos Andrade\(^1,3\), Helena Rocha\(^1,3\), Andreia Albuquerque\(^2,3\), Maria José Sá\(^1,4\)

\(^1\)Department of Neurology, Centro Hospitalar de São João, Porto, Portugal, \(^2\)Department of Gastroenterology, Centro Hospitalar de São João, Porto, Portugal, \(^3\)Faculty of Medicine University of Porto, Porto, Portugal, \(^4\)Faculty of Health Sciences, Universidade Fernando Pessoa, Porto, Portugal

**Background:** Multiple sclerosis (MS) is an exclusion diagnosis and other diseases should be considered if atypical features are present. We describe the clinical case of a patient in whom a gluten sensitivity neurological syndrome was first misdiagnosed as multiple sclerosis.

**Case report:** A 27-years-old female patient presented with a mild left side hemiparesis. Her initial brain MRI showed multiple white matter hyperintense lesions, with a periventricular distribution. CSF was normal, and, although oligoclonal bands were absent, MS was suspected, and interferon beta 1b was prescribed. In the following years, an almost daily migraine-like headache developed, but no other relapses were recorded. A subsequent brain MRI revealed some features atypical for MS, with periventricular and corticosubcortical white matter lesions and also lesions in the basal ganglia. Spinal MRI was normal and ANCA antibodies were elevated. MS diagnosis was questioned and interferon was stopped. ANCA-associated vasculitis was suspected but since no systemic involvement was seen, no treatment was taken. By the age of 39, patient presented with generalized choreic movements that progressively developed two weeks before admission. In the previous 3 months, she complained of general weakness, undetermined weight loss and mild diarrhea. On admission, generalized chorea was observed, associated with mild lower limb ataxia. Laboratory tests showed hemoglobin: 9.9g/dL (normal: 12-16g/dL), mean corpuscular volume: 77.4fL (normal: 87-103fL), with several deficiencies: iron, folic acid and vitamin B12 and low ferritin. ANCA antibodies remained elevated (ANCA PR3: 89U/mL [normal:<20U/mL] and ANCA MPO: 54U/mL [<20U/mL]). Although seldom described, chorea has been reported in celiac disease and antigliadin IgA and anti-tissue transglutaminase IgA were tested and elevated (66.0U/mL [normal: <7U/mL] and 107.0U/mL [normal: <7U/mL] respectively). Duodenal biopsy was performed and histological analysis was consistent with celiac disease. Gluten-free diet was initiated and deficiencies were supplemented. After 4 days, headaches greatly improved and 3 months later, choreic movements were significantly reduced and ataxia resolved. After most of clinical investigation was performed, the patient’s mother remembered that she was “allergic” to gluten in her childhood and thought it had been “cured”.

**Discussion:** Gluten sensitivity comprises a large spectrum of neurological manifestations and gluten encephalopathy, a recently described disorder, is composed of migraine-like headaches and central nervous system white matter abnormalities, with or without focal neurological deficits. As pointed out in our case, it can mimic MS. Choreic movements pointed to the correct diagnosis. Screening for gluten sensitivity should be considered in atypical MS cases.
PO0035

Polyglandular autoimmune syndrome: coincidental or Multiple Sclerosis mimic?

Carlos Andrade1,3, Joana Oliveira2,3, Paula Freitas2,3, Davide Carvalho2,3 Joana Guimarães1

1Department of Neurology, Centro Hospitalar São João, Porto, Portugal, 2Department of Endocrinology, Centro Hospitalar São João, Porto, Portugal, 3Faculty of Medicine, University of Porto, Porto, Portugal

**Background:** Multiple sclerosis (MS) is an autoimmune disorder that has been associated with other systemic autoimmune conditions such as thyroid or inflammatory bowel disease. However, association between polyglandular autoimmune syndrome (PAS) and MS has been seldom described and some reports documented central nervous system involvement by PAS.

**Case report:** A 32-years-old female patient presented with an acute, mild painful, unilateral loss of vision. She had a past medical history of partial thyroidectomy by follicular thyroid adenoma and primary hypothyroidism by lymphocytic thyroiditis, treated with 100 md/day of levothyroxine. She had also latent autoimmune diabetes of adults (LADA), with anti-GAD positive antibodies. Her neurological examination only revealed a right afferent pupillary defect. Laboratory tests showed vitamin B12 deficiency and autoimmune screening was positive to antithyroid, antiparietal cell and anti-intrinsic factor antibodies. Anti-gliadin and anti-tissue transglutaminase antibodies were negative. No signs of adrenal insufficiency were present; basal ACTH and cortisol and cosyntropin test were normal. This fulfills the diagnostic criteria of PAS type III. Brain MRI showed periventricular, juxtacortical and infratentorial white matter lesions, with no gadolinium enhancement. Spinal MRI also revealed two small lesions. CSF analysis had negative oligoclonal bands and was otherwise normal. Visual evoked potentials were consistent with bilateral demyelinating optic neuropathy. Vitamin B12 was supplemented. Clinical isolated syndrome was suspected but no treatment was initiated. During follow up (1 year), no other relapse was recorded and brain MRI remained stable.

**Discussion:** Polyglandular autoimmune syndrome is caused by an autoimmune process in multiple endocrine glands. It has been seldom associated with other autoimmune disorders such as Sjögren’s syndrome, myasthenia gravis, rheumatoid arthritis and primary biliary cirrhosis. Less than 10 cases were described with central nervous system involvement and/or multiple sclerosis. It’s not clear if there is a concomitant occurrence of two separated diseases or if they may share the same physiopathology. Moreover, vitamin B12 deficiency is fairly common in this condition, thus providing a potential cause of SNC disease. In our case, “watchful and waiting” approach was decided.

PO0036

Pregnancy in multiple sclerosis: outcomes from a Portuguese centre

Ana Monteiro1,2, Diogo Fitas1, Joana Guimarães1,2, Maria José Sá1,4

1Serviço de Neurologia do Centro Hospitalar de São João, Porto, Portugal, 2Faculdade de Medicina da Universidade do Porto, Porto, Portugal, 3Unidade de Neurologia da Unidade Local de Saúde do Alto Minho, Viana do Castelo, Portugal, 4Faculdade de Ciências da Saúde da Universidade Fernando Pessoa, Porto, Portugal

**Background:** Background: Multiple sclerosis (MS) is most frequent in young women, in their childbearing age. Hence, several issues arise concerning fertility and pregnancy risk in these patients.

**Purpose:** To evaluate the impact of pregnancy in disease activity and disability and to evaluate pregnancy outcomes in a Portuguese cohort of women with MS.

**Methods:** All pregnancies between 2000 and 2014 were retrospectively evaluated. Demographic and clinical data from the patients were reviewed, including immunomodulation (IMD) before, during and after the pregnancy, relapses and annualized relapse rate, EDSS scores and pregnancy outcomes.
Results: Thirty women with relapsing-remitting MS became pregnant during follow-up (N=37 gestations). Disease duration and age at gestation were 11±4 and 31±5 years, respectively. Annualized relapse rate (ARR) was significantly reduced after pregnancy (0.58±0.33 vs 0.28±0.30, p=0.002). The number of relapses was significantly reduced during pregnancy (p=0.001), but significantly increased during post-partum (p=0.0008). Six patients had relapses during pregnancy (20%). The EDSS score remained stable before and after pregnancy (0.0±1.0, p=0.75). Most women were on IMD before pregnancy (87%) and medication was suspended in all pregnancies (51% before gestation and 49% after gestation). During lactation 50% women were on IV immunoglobulin. Most pregnancies were uneventful, but 16% had complications. There were 7 (19%) abortions during follow-up, 4 of which on IMD. Of the 27 complete gestations, 6 were premature births. Gestational age was 38±2 weeks. Most deliveries were dystocic (63%). APGAR at 1st and 5th minutes were 8.1±1.5 and 9.3±1.0, respectively, and median weight at birth was 3052±540g.

Discussion: The results from our study are consistent with those from other series. Pregnancy seems to have a beneficial effect on MS activity, although an increase in relapses was noted in the immediate post-partum. Also, most babies were born healthy, suggesting that pregnancy is safe for MS women.

PO0037
Quality of life of the person with multiple sclerosis
Rosa Martins, Carlos Albuquerque
1Department of Neurology, Centro Hospitalar São João, Porto, Portugal, 2Department of Endocrinology, Centro Politecnico de viseu, Viseu, Portugal

Background: Multiple Sclerosis (MS) is an inflammatory, demyelinating and unpredictable disease, which its origin and treatment is yet unknown. It is the chronic neurological disease that more affects young adults, at working age, and might develop into situations of varying levels of disability.

Purpose: This study’s main objective was to understand the perception of quality of life (QOL), from vulnerability to stress and social support of people with MS, as well as the socio-demographic, clinical and psychosocial influences.

Method: It was conducted a cross-sectional, descriptive-correlational study, of quantitative nature, where 54 MS patients attended, most of them were women (61.1%), married (72.2%), with an age average of 42 years, employed (37.0%) , with an age average of 33 years old at the beginning of the disease. To measure the variable the following instruments were used: Social-Demographic/Clinic Questionnaire, Multiple Sclerosis Scale and Quality of Life, Barthel Index, Scale of Vulnerability to Stress and Social Support Scale.

Results: In the context of the socio-demographic and clinical variables the MS patients between 20 and 31 years, employed, with younger age at the beginning of the disease, without sequelae and with reduced level of dependence have better physical functioning; the patients that have associated disease are the one’s who report a greater bodily pain and a better cognitive functioning; the one’s that show higher functional capacity have better social skills; the one’s who carry out rehabilitation have better mental health; MS patients between 56 and 67 years with a higher age at the beginning of the disease are the one’s who manifest worse sexual functioning; the one’s who have better general QOL are those who are satisfied with their jobs. There are also significant influences between QOL and all factors of vulnerability to stress, as well as between QOL and all factors of social support (in relation to psychosocial variables).

Discussion: The evidences found merge down to other studies reaffirming the importance of the study of QOL, confirmed with this study that people with MS show impairment in the face of the general healthy Portuguese population.

**PO0038**

**Social support network and quality of life of multiple sclerosis patients**

David Costa¹, Maria José Sá¹,², José Calheiros³

¹Department of Neurology, Hospital S. João, Porto, Portugal, ²Faculty of Health Sciences, University Fernando Pessoa, Porto, Portugal, ³Faculty of Health Sciences, University of Beira Interior, Covilhã, Portugal

**Background:** The positive effect of the Social Support on depressive symptoms and Health-Related Quality of Life (HRQOL) in multiple sclerosis (MS) patients is well recognized. However, the relationship of the Social Support Network (SSN) on HRQOL of MS patients is rather unknown.

**Purpose:** To analyse the relationship between SSN and HRQOL in MS patients.

**Methods:** The sample is composed by 150 MS consecutive patients attending our MS Clinic, who gave written consent; illiterate subjects were excluded. To assess the socio-demographic data (sex, age group, marital status, educational level, occupation level, occupation status, household) a specifically designed questionnaire was applied. The HRQOL dimensions were measured with Short-Form Health Survey Questionnaire-SF36 and SSN with the Medical Outcomes Study Social Support Survey (MOS-SSS). The Spearman’s correlation was used to compare the magnitude of relationship between SSN and HRQOL.

**Results:** The mean patient age was 41.7 years (± 10.4; range: 18-70 yr); MS clinical course was relapsing-remitting in 85.3% (n=128 cases), secondary progressive in 10.7% (n=16 cases) and primary progressive in 4.0% (n=6 cases); the mean EDSS was 2.5 (±2.4; range: 0-9); the mean duration was 9.1 years (± 6.4; range 1-25 yr). A statistically significant correlation between the structure of SSN (relatives, friends, participation in meetings, sports in group, voluntary work) and mental dimension of HRQOL was found. The same correlation was observed for the physical dimension except for the question about the number of friends you can trust to talk about almost everything.

**Discussion:** Our results are similar to other studies we analyzed. However, our study shows that the SSN composition by relative’s ties is more important in HRQOL than the social participation (sports in group, meetings, volunteer work).

The health professional working with MS patients has to care for each individualized patient as well as for its SSN as important elements of adaptation to illness and HRQOL.

**PO0039**

**Hospital amenities and elderly patients with MS**

David Costa¹, Ana Monteiro¹,², Celeste Bastos³, Maria José Sá¹,⁴

¹Department of Neurology, Hospital S. João, Porto, Portugal, ²Faculty of Medicine, University of Porto, Porto, Portugal, ³Faculty of Social Sciences, Catholic University, Braga, Portugal, ⁴Faculty of Health Sciences, University Fernando Pessoa, Porto, Portugal

**Background:** Multiple sclerosis (MS) is a chronic, debilitating disease that requires continuous assistance in specific outpatient clinics. Disease onset is typically in young adults and, most patients will live with the disease most of their lives. Hence, elderly patients with MS are an important portion of MS clinics, with special needs and potential for higher disability. Hospital amenities could be an important factor in the quality of care of these patients.

**Purpose:** To evaluate elderly patient perception on hospital amenities in MS clinic of a tertiary hospital and to assess whether perception is influenced by demographic or clinical factors.
Methods: All MS patients aged $\geq 60$ years observed in our MS clinic between April and June 2014 were included. Clinical and demographical data were obtained and a questionnaire on hospital amenities was applied. Descriptive statistics was conducted and the Mann-Whitney U and Kruskal-Wallis tests were used to compare clinical and demographical data to questionnaire results.

Results: Thirty-two patients (72% female) were included. Age was $63\pm 5$ years and disease duration was $16\pm 9$ years. Most patients had relapsing-remitting disease (88%). Patient satisfaction with hospital amenities, welcoming from the healthcare team, ambience and access to information was higher than with hospital signage, mobility support and waiting room conditions. Most patients (75%) considered hospital amenities important for the quality of their care. Retired patients were less satisfied with hospital access and access to information than working patients ($p=0.016$ and $p=0.051$).

Discussion: Hospital amenities are an important factor to patient satisfaction with care and it should be a decisive requisite in clinics organization and functioning. These results highlight the importance of improving physical conditions and human relations in clinics, in order to attenuate the difficulties felt by patients, as a result of increasing disability and disease progression.
Trends in the treatment of Multiple Sclerosis in Portugal in 2014: Results of the national cross-sectional PORT-MS study

Sara Varanda7, Raquel Samões2, João Ferreira3, José Tomás5, Miguel Grilo5, João Sequeira4, Joana Morgado4, Carlos Andrade5, Jorge Reis5, Joana Guimarães5, Lívia Sousa6, João Cerqueira7, José Vale1, Maria José Sá5, João de Sá3, Ana Martins da Silva2, Rui Pedrosa4, Paulo Alegria1

1 Serviço de Neurologia, Hospital Beatriz Ângelo, Loures, Portugal, 2 Serviço de Neurologia, Centro Hospitalar do Porto – Hospital de Santo António, Porto, Portugal, 3 Serviço de Neurologia, Centro Hospitalar de Lisboa Norte – Hospital de Santa Maria, Lisboa, Portugal, 4 Serviço de Neurologia, Centro Hospitalar de Lisboa Central – Hospital de Santo António dos Capuchos, Lisboa, Portugal, 5 Serviço de Neurologia, Centro Hospitalar de São João, Porto, Portugal, 6 Serviço de Neurologia, Centro Hospitalar Universitário de Coimbra, Coimbra, Portugal, 7 Serviço de Neurologia, Hospital de Braga, Braga, Portugal

Background: In Portugal, there was not a multicentric study on the general characteristics of Multiple Sclerosis (MS) patients and their disease. National data on the patterns of treatment of these patients was also lacking.

Purpose: To describe the use of disease modifying treatments (DMT) in the treatment of MS in Portugal in actuality.

Methods: Patients fulfilling McDonald 2010 criteria in 7 participating centers were sequentially recruited from May to November 2014. A systematized Case Report Form was applied collecting retrospective and present data focusing on: date and place of residency at birth, at first symptoms and at diagnosis of MS, gender, migrations abroad during life, clinical type of MS, current clinical state, current treatment, education, status of employment, need for a caregiver, involvement in clinical trials, familial MS and pregnancy. These data together constitute the PORT-MS study. Here we focus on the results related to treatment.

Results: 561 patients included. Current age is 42.9±12.4 years-old (Relapsing Remitting (RR) MS 42.0±12.1, Primary Progressive (PP) MS 52.5±11.3, p<0.001), disease duration after diagnosis is 9.4±7.2 years (similar RRMS and PPMS). Median EDSS is 2.5 (RRMS 2.0, PPMS 6.0). At diagnosis, 90.6% had RRMS, 0.9% in SPMS, 8.6% PPMS, but at inclusion 9.5% of those RRMS at diagnosis had evolved to SP. 84.5% of the total, 88.4% of RRMS at diagnosis (independently of progression to SPMS in actuality), 90.4% of currently in RRMS, 70.8% of RRMS at diagnosis that evolved to SPMS in the meanwhile, 36.8% of PPMS (with or without relapses) and 48% of all progressive forms together were under DMT in May 2014. Those not under DMT are older (49.6±13.2 years-old), 50% have progressive forms, median EDSS is higher (4.0). RRMS not under DMT: 15% refused, 15% very recent diagnosis, 70% cause unknown. For the total patients, 87.8% of EDSS <= 4.0 are under DMT, as are 74.7% of 4.5-6.0 and 64% of EDSS >=6.5. For all those under DMT (n=474): interferons 56.5%, Glatiramer Acetate 18.4%, Natalizumab 11.6%, Fingolimod 9.7%. For patients currently in RRMS (n=415) the distribution is very similar. For the 59 cases with progressive forms the use of new or alternative treatments is slightly more pronounced.

Discussion/Conclusions: Data on about 10% of the national MS population was gathered; it’s generally consistent with international reports. The proportion under DMT is relatively high in all types of MS, but second line therapies are underrepresented. A high proportion of relatively young patients are retired due to disease.
Discussion/Conclusions: Our data, comprising about 10% of the national MS population, suggests that globally there is a big proportion of patients under DMT in Portugal, including in high EDSS and progressive forms. Second line therapies are underrepresented.

PO0042

Is it really a vasculopathy or a mimicker?

Ana Aires1,2, Margarida Ayres-Basto3, Elsa Azevedo1,2
1Department of Neurology, São João Hospital Center, Oporto, Portugal, 2Faculty of Medicine, Porto University, Oporto, Portugal, 3Department of Neuroradiology, São João Hospital Center, Oporto, Portugal

Background: Leukoencephalopathies are a group of disorders that affect the white matter of the brain. These diseases are not age specific, although more prevalent with aging, may be inherited or acquired and evolution may differ according to etiology. White matter structural changes are commonly identified on MRI. Sometimes, even considering clinical and imaging findings, it can be challenging to make a differential diagnosis, namely between demyelinating syndromes and vasculopathies.

Case report: 53-year-old female with dyslipidaemia, migraine without aura and previous smoking habits and irrelevant family history. She presented to neurology outpatient clinic, sent by ophthalmology, because she had white matter lesions in MRI, performed to study a right eye paramacular scotoma. Neurological examination was unremarkable. Blood tests screening including for prothrombotic and autoimmune disorders, Cerebral Autosomal-Dominant Arteriopathy with Subcortical Infarcts and Leukoencephalopathy (CADASIL), Fabry disease, MELAS (mitochondrial encephalomyopathy, lactic acidosis, and stroke-like episodes), Krabbe disease, mucopolysaccharidosis type IVB and metachromatic leukodystrophy was negative. Cerebrospinal fluid analysis was unremarkable, including negative oligoclonal bands. Cervical and transcranial Doppler and transthoracic echocardiogram were normal, as well as motor, auditory and somatosensory evoked potentials. Repeated brain MRI in 2009 and 2014 showed similar findings, with several hyperintense areas on T2 and FLAIR sequences, in periventricular white matter, corpus callosum and also with cortico-subcortical location (Fazekas III); these lesions had no gadolinium enhancement or restricted water diffusion. Angio-MRI of basal brain arteries and spinal cord MRI scan were normal. During 5 follow-up years the patient had no other clinical neurological focal event.

Discussion: We highlight with this clinical case the difficulty in specifying etiology in some young adult patients with white matter lesions. In this case there are no clinical events suggesting either stroke or multiple sclerosis relapses, there is no relevant family history, all the etiologic investigation was negative, and the lesions, although significant, did not seem to progress in a 5-year period. A possible residual cause could eventually be a slowly progressive metabolic disease not yet described or recognized.

PO0043

Neuromyelitis Optica Spectrum Disorders in Siblings

Luís Braz1,2, Mafalda Sampaio3, Maria José Sá1,3, Joana Guimarães1,2
1Neurology Department, Centro Hospitalar de São João, Porto, Portugal, 2Neurology and Neurosurgery Unit of Clinical Neurosciences and Mental Health Department, Faculty of Medicine, University of Porto, Porto, Portugal, 3Faculty of Health Sciences, University Fernando Pessoa, Porto, Portugal, 4Pediatric Neurology Unit – Pediatrics Department, Centro Hospitalar de São João, Porto, Portugal

Background: Neuromyelitis Optica (NMO) is a demyelinating disease of the CNS in which presence of autoantibody NMO-IgG, supports distinction from other inflammatory and autoimmune disorders of the CNS. Even with modern assays, there are up to 25% of “seronegative NMO”. The concept of NMO spectrum disorders
Programa-MultipleSclerosis_(20Fev2015).indd   52

The biochemistry, infectious and immunological studies revealed no abnormalities; CSF study showed slight hypothyroid goiter with biopsy-proven chronic lymphocytic inflammation and positive thyroid-related antibodies. After corticotherapy, she recovered partly and started immunosuppression with azathioprine, keeping clinically stable. Four years later she tested positive for NMO-IgG, so the diagnosis of NMO was assumed and the immunosuppressive regimen was kept. In the following years she developed several brainstem, spinal, and ocular relapses with cumulative disability. Systemic evaluation revealed sinoatrial disease and bilateral lung nodules suggestive of sarcoidosis. In subsequent chest CT and scintigraphy the lung nodules resolved and there was no inflammatory activity compatible with sarcoidosis. Her last relapse was last year and she is actually on azathioprine plus corticosteroids. Her 6 years older brother had a left optical neuritis at the age of 14. One year later he developed paraparesis. Neuroaxis MRI showed a longitudinally extensive cervico-thoracic lesion but no signal change on the cerebral parenchyma. He was put on azathioprine and corticosteroids and recovered completely. Two years later he tested negative for NMO-IgG and, with the diagnosis of seronegative NMO, kept on immunosuppression with clinical stability thereafter. Systemic evaluation revealed positive antinuclear antibodies, normal chest CT and a scintigraphy with inflammatory activity in thoracic ganglia, compatible with possible sarcoidosis. He remains clinical asymptomatic on immunosuppressive therapy for the last 10 years.

Discussion: In up to 20-30% patients with NMOSD there is association with autoimmune disorders. There is only one report of NMOSD associated with sarcoidosis, but up to 40% of patients show autoantibodies without disease evidence. We report two sibling diagnosed with NMO with two completely different clinical courses. They both show some evidence of a systemic inflammatory disease, suggesting sarcoidosis, but without supporting diagnostic criteria. This exemplifies the challenge of diagnosis and management of NMOSD and the autoimmune associated disorders.

Case Report: A 4 years old girl developed severe bilateral optical neuritis and 6 months after presented with tetraparesis. Neuroaxis MRI showed subcortical, diencephalic and pons lesions, together with a longitudinally extensive cervico-thoracic lesion. CSF analysis showed no oligoclonal bands (OCB) and infectious, immune, metabolic and vascular study were negative. She recovered partly after corticotherapy and started immunosuppression with azathioprine, keeping clinically stable. Four years later she tested positive for NMO-IgG, so the diagnosis of NMO was assumed and the immunosuppressive regimen was kept. In the following years she developed several brainstem, spinal, and ocular relapses with cumulative disability. Systemic evaluation revealed sinoatrial disease and bilateral lung nodules suggestive of sarcoidosis. In subsequent chest CT and scintigraphy the lung nodules resolved and there was no inflammatory activity compatible with sarcoidosis. Her last relapse was last year and she is actually on azathioprine plus corticosteroids. Her 6 years older brother had a left optical neuritis at the age of 14. One year later he developed paraparesis. Neuroaxis MRI showed a longitudinally extensive cervico-thoracic lesion but no signal change on the cerebral parenchyma. He was put on azathioprine and corticosteroids and recovered completely. Two years later he tested negative for NMO-IgG and, with the diagnosis of seronegative NMO, kept on immunosuppression with clinical stability thereafter. Systemic evaluation revealed positive antinuclear antibodies, normal chest CT and a scintigraphy with inflammatory activity in thoracic ganglia, compatible with possible sarcoidosis. He remains clinical asymptomatic on immunosuppressive therapy for the last 10 years.

Discussion: In up to 20-30% patients with NMOSD there is association with autoimmune disorders. There is only one report of NMOSD associated with sarcoidosis, but up to 40% of patients show autoantibodies without disease evidence. We report two sibling diagnosed with NMO with two completely different clinical courses. They both show some evidence of a systemic inflammatory disease, suggesting sarcoidosis, but without supporting diagnostic criteria. This exemplifies the challenge of diagnosis and management of NMOSD and the autoimmune associated disorders.

Case Report: A 4 years old girl developed severe bilateral optical neuritis and 6 months after presented with tetraparesis. Neuroaxis MRI showed subcortical, diencephalic and pons lesions, together with a longitudinally extensive cervico-thoracic lesion. CSF analysis showed no oligoclonal bands (OCB) and infectious, immune, metabolic and vascular study were negative. She recovered partly after corticotherapy and started immunosuppression with azathioprine, keeping clinically stable. Four years later she tested positive for NMO-IgG, so the diagnosis of NMO was assumed and the immunosuppressive regimen was kept. In the following years she developed several brainstem, spinal, and ocular relapses with cumulative disability. Systemic evaluation revealed sinoatrial disease and bilateral lung nodules suggestive of sarcoidosis. In subsequent chest CT and scintigraphy the lung nodules resolved and there was no inflammatory activity compatible with sarcoidosis. Her last relapse was last year and she is actually on azathioprine plus corticosteroids. Her 6 years older brother had a left optical neuritis at the age of 14. One year later he developed paraparesis. Neuroaxis MRI showed a longitudinally extensive cervico-thoracic lesion but no signal change on the cerebral parenchyma. He was put on azathioprine and corticosteroids and recovered completely. Two years later he tested negative for NMO-IgG and, with the diagnosis of seronegative NMO, kept on immunosuppression with clinical stability thereafter. Systemic evaluation revealed positive antinuclear antibodies, normal chest CT and a scintigraphy with inflammatory activity in thoracic ganglia, compatible with possible sarcoidosis. He remains clinical asymptomatic on immunosuppressive therapy for the last 10 years.
area from D2 to D5. Despite corticotherapy she hadn't significant recovery and 3 weeks after she kept the same sensory complaints added of distal motor deficit and tonic spasms in her right leg. She tested positive for antibody anti-NMO/AQP4. After new cycle of corticotherapy she gradually recovered. One month later she had a new episode of left optic neuritis with recovery after corticotherapy. Given two optic neuritis and one longitudinally extensive myelitis, with positive serum test for NMO antibody, she was diagnosed with NMOSD with hypothyroidism and started on Azathioprine, being thereafter asymptomatic.

**Discussion:** In up to 20-30% patients with NMOSD there is association with autoimmune disorders among which autoimmune thyroiditis is considered to be one of the most common. In the literature the reference to “thyroid disease” and seroprevalence of thyroid-related antibodies in NMOSD patients, range between 5.6% and 20.5%, but case reports/series with definite clinical, analytical and histological characterization of the thyroiditis are rare. This suggests that the co-existence of autoimmune thyroiditis and NMO might be greater than what is found in case-reports/series with definite data supporting the diagnosis. We present a case of a patient with clear data consistent with autoimmune thyroiditis who, more than a decade later, was diagnosed with NMO.

**PO0045**

**Survival and mortality in Multiple Sclerosis - a hospital based study**

David Costa¹, Luis Braz¹,², Maria José Sá¹,³  
¹Neurology Department, Centro Hospitalar de São João, Porto, Portugal, ²Neurology and Neurosurgery Unit of Clinical Neurosciences and Mental Health Department, Faculty of Medicine, University of Porto, Porto, Portugal, ³Faculty of Health Sciences, University Fernando Pessoa, Porto, Portugal

**Background:** The causes of death and factors influencing mortality in patients with Multiple Sclerosis (MS) are not well established, with contradictory data from studies with different populations and methodologies. To our knowledge, there is no study of this scope in MS patients in Portugal.

**Purpose:** Characterize a Portuguese population of hospital-based patients deceased with MS. Analyze survival, causes of death and factors that originate differences in the survival of these patients.

**Methods:** We retrospectively analyzed demographic and clinical information from patients with definite diagnosis of MS followed in Centro Hospitalar de São João (CHSJ) deceased between 1998 and 2014. Clinical data was obtained through clinical registration available in CHSJ, death certificates and cohabitants information. A case-by-case analysis of causes of death was made. We made a statistical analysis of survival curves for lifetime (LT) and for survival time after diagnosis (SAD) as well as analysis of the relationship between survival (LT and SAD) and gender, degree of disability, form of disease and cause of death.

**Results:** There were 25 deaths during the study period. The average cohort LT was 51.8 years, with a significant superiority in females. The average SAD was 12.6 years. The cause of death was attributable to MS in 36% of patients. Respiratory infections (36%), stroke (16%), cardiac arrest (12%) and death from violent causes (12%) were the main causes of direct death. There was absence of statistically significant influence of gender, degree of disability, form of disease or cause of death in the survival of the cohort, both in individual and grouped analysis of these variables. Vascular comorbidities (36%) and metabolic ones (36%) were the most frequent in the study population.

**Discussion:** The first Portuguese study on survival and causes of death in patients with MS was accomplished. A complete record of deaths with subsequent clinical and demographic analysis was obtained. The average LT and SAD are lower than those revealed by international studies. The percentage of causes of death attributed to MS is lower than that revealed by other studies. The LT and the SAD are not significantly related to gender, degree of disability, form of disease or cause of death. The small cohort size and retrospective study design limited more forceful findings and the use of a comparator population.
**PO0046**

**Acute Myelitis: 7 year-retrospective study**

Luis Braz¹, ², Leonor Almeida¹, Carlos Andrade¹, ³, Joana Guimarães¹, ³

¹Neurology Department, Centro Hospitalar de São João, Porto, Portugal, ²Pneumology Department, Centro Hospitalar de São João, Porto, Portugal, ³Neurology and Neurosurgery Unit of Clinical Neurosciences and Mental Health Department, Faculty of Medicine, University of Porto, Porto, Portugal

**Background:** Acute transverse myelopathy is an acute condition with impaired function of the spinal cord. In addition to the compressive causes it is important to consider non-inflammatory and inflammatory etiologies. The latter include infections, systemic autoimmune diseases and primary CNS demyelinating diseases such as multiple sclerosis (MS), Neuromyelitis Optica (NMO), Acute Disseminated encephalopathy (ADEM) and idiopathic acute inflammatory myelitis (IAMT). To date, there is no description of this condition in the Portuguese population.

**Purpose:** To analyze demographic, clinical and para-clinical data and the follow-up of a group of patients with acute spinal cord syndrome of inflammatory etiology, and try to establish relations with the diagnosis and prognosis. Describe the differences between myelitis associated with MS/CIS and of other inflammatory etiologies.

**Methods:** 7 year-retrospective study based on medical records of admitted patients with an acute spinal cord syndrome. Adult patients with inflammatory etiologies were included.

**Results:** We identified 100 cases of acute myelopathy and from these we included 44 with inflammatory etiology: 21 MS (47.7%); 7 Clinical Isolated Syndrome-CIS (15.9%)- all except one evolved to MS; 3 post-infectious myelitis (6.8%); 3 NMO (6.8%); 2 ADEM (4.5%); 3 myelitis associated with autoimmune disease (7.0%) - 1 Systemic Lupus Erythematosus, 1 Behcet’s Disease, 1 Sarcoidosis- and 5 AITM (11.4%). Significant differences between these groups were found regarding to autonomic symptoms, pain and gait autonomy at the onset, brain and spinal MRI lesion features and recurrence of myelitis. The diagnostic groups were further classified in acute myelitis associated with MS (MS and CIS) and other acute myelitis. Presentation at younger age, with autonomic gait and without autonomic or pain symptoms favors CIS/MS diagnosis as well as the existence of multiple and small lesions in spinal MRI and the presence of oligoclonal bands in CSF. In general, neurological disability at the end of the follow-up was correlated with age at event, motor symptoms, presence of pyramidal signs, and smaller lesions in spinal MRI and inversely correlated with an autonomous gait at the onset.

**Discussion:** The principal aim of describing an acute myelitis cohort in Portuguese population was accomplished. In our cohort 44% of acute myelopathies were of inflammatory cause. Some clinical features at presentation and in the complementary exams might help to differentiate CIS/MS from other inflammatory etiologies. We also found some clinical and para-clinical characteristics that correlate with neurological disability in the follow-up.

**PO0047**

**Anti-neuronal Antibodies Determination by line-blot in a University Hospital: 7 years experience**

Yuliana Eremina¹, ², Ana Marinho¹, João Pedro Ramos¹, Maria José Teles¹, ³, Luis Delgado¹, ⁴

¹Clinical Pathology Department, São João Hospital Centre, Porto, Portugal; ²Cancer Biology Department, Institute of Molecular Pathology and Immunology, University of Porto, Porto, Portugal; ³EPIUnit, Institute of Public Health, University of Porto, Porto, Portugal; ⁴Laboratory of Immunology, Basic and Clinical Immunology Unit, University of Porto Medical School, Porto, Portugal

**Background:** Paraneoplastic neurologic syndromes are a heterogeneous group of neurologic disorders that are associated with cancer. Anti-neuronal antibodies support the paraneoplastic nature of a neurologic disorder and can narrow the search for an occult tumor.
**Purpose:** to evaluate the clinical use (requested department, suspected diagnosis, analytical panel) of anti-neuronal antibodies detection in a retrospective survey.

**Methods:** The frequency of determination and positivity of anti-neuronal antibodies against Amphiphysin, CV2, PNMA2 (Ma2/Ta), Rl, Yo and Hu was evaluated in a large university hospital (São João Hospital). Detection of the 6 IgG specificities was performed by Line-Blot – test strips coated with highly purified antigens or/and antigen fragments (Neuronal Antigens Profile 2 EUROLINE, EUROIMMUN, Medizinische Labordiagnostika AG).

**Results:** Since August 2007 till December 2014 we received 876 samples for anti-neuronal antibodies determination for 792 patients. 619 requests (70.7%) were received from Neurology Department. The presence of 1 up to 3 antibody specificities was found in 78 cases that corresponded to 54 patients (6.8% of all patients) with 36 requested from Neurology Department (66.7% of "positive" patients). The most frequently found anti-neuronal antibodies were anti-PNMA2 (n=31 patients, 57.4%) and anti-Yo (n=15 patients, 27.7%). All positive cases can be classified into three main groups according to requested analytical panel: I - suspicion of a neoplasm (anti-neuronal antibodies along with others tumor markers, n=12), II - suspicion of a systemic autoimmune process (additional non-specific auto-antibodies were requested, n=14), III - complex diagnostic panel (combining: tumor, autoimmune and infection markers, n=28). Patients' age varied between the groups: I - 69.4±12.4 years, II - 53.4±23.8 years, III - 57.8±15.7 years, with significantly older patients in the group I comparing to the other groups (p<0.01).

**Discussion:** The neoplasms typically associated with a specific anti-neuronal antibody were found in 3 cases in group I (25%), none - in the group II (0%) and 9 - in the group III (36%); 5 patients (distributed in all groups) had neoplasms usually not associated with the studied anti-neuronal antibodies specificities. In 13 patients (3 - in group II and 10 - in group III) were diagnosed: tuberculosis, HIV, hepatitis B or C, syphilis and, in individual cases, lepra, CMV, EBV, enterovirus/prion infections with no neoplasm revealed. More detailed investigation of positive cases is needed to better differentiation of paraneoplastic syndromes from other neurologic syndromes, especially at younger age.

The latter include infections, systemic autoimmune diseases and primary CNS demyelinating diseases such as multiple sclerosis (MS), Neuromyelitis Optica (NMO), Acute Disseminated encephalopathy (ADEM) and idiopathic acute inflammatory myelitis (IATM). To date, there is no description of this condition in the Portuguese population.
<table>
<thead>
<tr>
<th>AUTHOR INDEX</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Abreu, Nélia</td>
<td>0005</td>
</tr>
<tr>
<td>Abreu, Pedro</td>
<td>0022, 0031, 0040</td>
</tr>
<tr>
<td>Aires, Ana</td>
<td>0042</td>
</tr>
<tr>
<td>Albuquerque, Andreia</td>
<td>0034</td>
</tr>
<tr>
<td>Albuquerque, Carlos</td>
<td>0037</td>
</tr>
<tr>
<td>Alegria, Paulo</td>
<td>0040, 0041</td>
</tr>
<tr>
<td>Almeida, Ana</td>
<td>0001</td>
</tr>
<tr>
<td>Almeida, Leonor</td>
<td>0046</td>
</tr>
<tr>
<td>Alves, Ivânia</td>
<td>0019</td>
</tr>
<tr>
<td>Amaral, Diana</td>
<td>0023, 0026</td>
</tr>
<tr>
<td>Andrade, Carlos</td>
<td>0034, 0035, 0041, 0046</td>
</tr>
<tr>
<td>Augusto, Luís</td>
<td>0033</td>
</tr>
<tr>
<td>Ayres-Basto, Margarida</td>
<td>0033, 0042</td>
</tr>
<tr>
<td>Azevedo, Elsa</td>
<td>0042</td>
</tr>
<tr>
<td>Baldeiras, Inês</td>
<td>0010, 0025</td>
</tr>
<tr>
<td>Bastos, Celeste</td>
<td>0039</td>
</tr>
<tr>
<td>Batista, Sónia</td>
<td>0005, 0010, 0018, 0025, 0030, 0032, 0040</td>
</tr>
<tr>
<td>Braz, Luis</td>
<td>0043, 0044, 0045, 0046</td>
</tr>
<tr>
<td>Calheiros, José</td>
<td>0038</td>
</tr>
<tr>
<td>Capela, Carlos</td>
<td>0040</td>
</tr>
<tr>
<td>Carnero-Pardo, Cristóbal</td>
<td>0008</td>
</tr>
<tr>
<td>Carvalho, Davide</td>
<td>0035</td>
</tr>
<tr>
<td>Cerqueira, João</td>
<td>0006, 0007, 0014, 0010, 0040, 0041</td>
</tr>
<tr>
<td>Certo, Ana</td>
<td>0028</td>
</tr>
<tr>
<td>Chamadoira, Clara</td>
<td>0033</td>
</tr>
<tr>
<td>Correia, Inês</td>
<td>0010, 0030, 0032</td>
</tr>
<tr>
<td>Costa, Andreia</td>
<td>0015, 0022, 0031</td>
</tr>
<tr>
<td>Costa, David</td>
<td>0038, 0039, 0045</td>
</tr>
<tr>
<td>Costa, João Pedro</td>
<td>0033</td>
</tr>
<tr>
<td>Costa, Lúcia</td>
<td>0004</td>
</tr>
<tr>
<td>Delgado, Luís</td>
<td>0047</td>
</tr>
<tr>
<td>de Sá, João</td>
<td>0040, 0041</td>
</tr>
<tr>
<td>Eremina, Yuliana</td>
<td>0047</td>
</tr>
<tr>
<td>Eustáquio Furtado, Guilherme</td>
<td>0021</td>
</tr>
<tr>
<td>Felgueiras, Helena</td>
<td>0020</td>
</tr>
<tr>
<td>Fernanda Garcia, Jéssica</td>
<td>0021</td>
</tr>
</tbody>
</table>
Ferreira, Aristides 0009, 0011, 0029
Ferreira, João 0040, 0041
Ferreira, José Pedro 0021
Ferreira, Marisa B 0006, 0007
Figueiredo, José 0006, 0007
Fitas, Diogo 0036
Freire, Antonio 0021
Freitas, Paula 0035
Gabriel, João Paulo 0001
Galego, Orlando 0018
Galvão, Ana 0028
Garrett, Carolina 0033
Gomes, Maria 0028
Gomes, Tiago 0023, 0026
Gonçalves, Ana Sofia 0010
Gonçalves, Gerly 0008
Gouveia, Ana 0005, 0018
Grilo, Miguel 0040, 0041
Guimarães, Joana 0004, 0015, 0023, 0026, 0035, 0036, 0041, 0043, 0044, 0046
Leão, Miguel 0023, 0026
Leitão, Maria João 0010, 0025
Linhares, Paulo 0033
Lopes, Emanuela 0008
Louçano, Ana 0028
Macário, Mª Carmo 0005, 0025, 0030, 0032
Macedo, António F. 0006, 0007
Machado, Bela 0017
Machado, Egídio 0018
Madureira, Pedro 0004
Magro, Fernando 0004
Marinho, Ana 0047
Marques, Fernanda 0014
Marques, Inês 0032
Marques-Matos, Cláudia 0015
Martinho, António 0010
Martins Campos, António 0020
Martins da Silva, Ana 0024, 0040, 0041
Martins, Joana 0024
Martins, Rosa 0037
Matas, Andreia 0001
Mateus, Cátia 0019
Meireles, Joana 0031
Miguel, Olga 0006, 0007
Monteiro, Ana 0036, 0039
Monteiro, Susana 0014
Morgado, Joana 0041
Mota, Cristina 0014
Moura, Cristina 0018
Neves, Mariana 0029
Neves, Sofia Pereira 0014
Nunes, Carla 0005, 0025, 0030, 0032
Oliveira, Joana 0035
Pais, Joana 0019
Parra, Joana 0030, 0032
Parreira, Marta 0006, 0007
Passos, Ana Margarida 0009, 0011, 0029
Pedrosa, Rui 0040, 0041
Peixoto, Bruno 0008
Pereira, Diana Rodrigues 0014
Pereira, Miguel 0021
Pereira, Paulo A 0007
Pereira, Paulo S 0006
Pimenta, Sofia 0004
Pinheiro, Joaquim 0020
Pinto, Joana 0008
Pinto, Madalena 0015
Rama, Luís 0021
Ramos, João Pedro 0047
Reis, Carina 0033
Reis, Jorge 0041
Ribeiro, José 0005
Ribeiro, Maria Helena 0025
Rigueiro Neves, Mariana 0009, 0011
<table>
<thead>
<tr>
<th>Name</th>
<th>Number(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rocha, Helena</td>
<td>0023, 0026, 0034</td>
</tr>
<tr>
<td>Rosas, Maria José</td>
<td>0033</td>
</tr>
<tr>
<td>Salgado, Paula</td>
<td>0024</td>
</tr>
<tr>
<td>Sá, Maria José</td>
<td>0009, 0011, 0015, 0022, 0023, 0026, 0029, 0031, 0038, 0038, 0034, 0036, 0040, 0041, 0043, 0045</td>
</tr>
<tr>
<td>Samões, Raquel</td>
<td>0040, 0041</td>
</tr>
<tr>
<td>Sampaio, Mafalda</td>
<td>0023, 0026, 0043</td>
</tr>
<tr>
<td>Santos, Ana Filipa</td>
<td>0033</td>
</tr>
<tr>
<td>Santos, Ernestina</td>
<td>0024, 0040</td>
</tr>
<tr>
<td>Santos, Telma</td>
<td>0020</td>
</tr>
<tr>
<td>Sequeira, João</td>
<td>0040, 0041</td>
</tr>
<tr>
<td>Silva, Ângela</td>
<td>0008</td>
</tr>
<tr>
<td>Silva, Cristina</td>
<td>0016</td>
</tr>
<tr>
<td>Silva, Miguel</td>
<td>0005</td>
</tr>
<tr>
<td>Sousa, Cláudia</td>
<td>0009, 0011, 0029</td>
</tr>
<tr>
<td>Sousa, Inês</td>
<td>0006, 0007</td>
</tr>
<tr>
<td>Sousa, Lívia</td>
<td>0005, 0010, 0021, 0025, 0030, 0032, 0040, 0041</td>
</tr>
<tr>
<td>Sousa, Luísa</td>
<td>0024</td>
</tr>
<tr>
<td>Tábuas-Pereira, Miguel</td>
<td>0032</td>
</tr>
<tr>
<td>Tedim Cruz, Vítor</td>
<td>0019</td>
</tr>
<tr>
<td>Teles, Maria José</td>
<td>0047</td>
</tr>
<tr>
<td>Tomás, José</td>
<td>0025, 0040, 0041</td>
</tr>
<tr>
<td>Ulba Chupel, Matheus</td>
<td>0021</td>
</tr>
<tr>
<td>Valado, Ana</td>
<td>0010</td>
</tr>
<tr>
<td>Vale, José</td>
<td>0040, 0041</td>
</tr>
<tr>
<td>Varanda, Sara</td>
<td>0040, 0041</td>
</tr>
<tr>
<td>Vaz, Rui</td>
<td>0033</td>
</tr>
<tr>
<td>Veiga, Andreia</td>
<td>0033</td>
</tr>
<tr>
<td>Videira, Gonçalo</td>
<td>0022</td>
</tr>
<tr>
<td>Vieira, Bítia</td>
<td>0022</td>
</tr>
</tbody>
</table>