Results: vPCA and dPCA were similar for sociodemographic, clinical and CSF features. Relative to controls, only vPCA patients showed alterations of all global, temporal, and parietal metrics. The k-means analysis identified two clusters of 26 and 10 subjects, similar for clinical and cognitive features. However, patients from Cluster 1 were significantly younger and had lower levels of CSF amyloid-beta compared to Cluster 2 patients.
Conclusion: Our findings suggest the potentially high sensitivity of graph-analysis and connectomic in capturing signs of neurodegeneration in PCA. The MRI-based machine learning approach, albeit unable to capture clinical phenotype differences, provided indications about underlying disease pathology. These findings offer potential biomarkers for non-invasive diagnosis of neurodegenerative conditions.
Disclosure: Supported by: Italian Ministry of Health (#GR-2010-2303035; #GR-2011-02351217), Philippe Chatrier and France Alzheimer Foundations, Fondation pour la Recherche sur Alzheimer.

EPR-147

Cortico-cortical signal transmission and brain connectivity in healthy individuals as a model for studying AD

V. Castelnovo[1], E. Canu[1], G. Bertazzoli[2], A. Malvaso[3], C. Bagattini[4], D. Calderaro[1], F. Freri[1], C. Fracassi[4], M. Marizzoni[5], V. Nicolosi[4], F. Agosta[6], M. Bortoletto[4], M. Filippi[7]
[1]Neuroimaging Research Unit, Division of Neuroscience, IRCCS San Raffaele Scientific Institute, Milan, Italy, [2]Neurophysiology Lab, IRCCS Istituto Centro San Giovanni di Dio Fatebenefratelli, Brescia, Italy; and Center for Mind/Brain Sciences CIMeC , University of Trento, Rovereto, Italy, [3]Neuroimaging Research Unit, Division of Neuroscience, IRCCS San Raffaele Scientific Institute, and Vita-Salute San Raffaele University, Milan, Italy, [4]Neurophysiology Lab, IRCCS Istituto Centro San Giovanni di Dio Fatebenefratelli, Brescia, Italy, [5]Laboratory Alzheimer's Neuroimaging & Epidemiology , IRCCS Istituto Centro San Giovanni di Dio Fatebenefratelli, Brescia, Italy, [6]Neuroimaging Research Unit, Division of Neuroscience, and Neurology Unit, IRCCS San Raffaele Scientific Institute, and Vita-Salute San Raffaele University, Milan, Italy, [7]Neuroimaging Research Unit, Division of Neuroscience, Neurology Unit, Neurorehabilitation Unit, and Neurophysiology Service, IRCCS San Raffaele Scientific Institute, and Vita-Salute San Raffaele University, Milan, Italy

Background and aims: Signal following a transcranial magnetic stimulation (TMS) pulse can be tracked by electroencephalography (EEG). We wish to establish how contralateral time of signal transmission (STT), specifically the TMS-evoked potential (TEP)'s P20 latency, following a TMS pulse of specific brain nodes is related to the integrity of interhemispheric white matter (WM) fibers.
Methods: 28 healthy controls underwent an MRI and a TMS-EEG session. Resting-state fMRI maps were used to define default mode-DMN and executive control-ECN network nodes to be stimulated: left and right inferior parietal (IPL;DMN) and dorsolateral prefrontal (DLPFC;ECN). Fiber tracking of the main intra- and interhemispheric WM tracts was performed (probtrackx, FSL). TEP's P20 latency for each contralateral area of the stimulated node and DTI indices from each tract were obtained. The ability of WM measures to predict TEP's P20 latency were explored using multiple linear regression models.
Results: We observed that lower WM integrity of the splenium predicts lower TEP's P20 latency after left IPL stimulation. These findings were neither observed for intra-hemispheric connections nor within the ECN.
Conclusion: In healthy controls, we demonstrated that the WM integrity of the splenium predicts the interhemispheric P20 latency within the DMN following a TMS pulse of the left IP nodes. These findings reflect interhemispheric and network specificity. P20 latency is a promising measure of brain interhemispheric connectivity. After our initial validation, this approach could provide a novel single-subject marker of brain connectivity in early cases of Alzheimer's disease.
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EPR-148

Sex-related differences in Amyotrophic Lateral Sclerosis: a brain 2-[18F]FDG-PET study

F. Di Pede[1], A. Canosa[1], A. Martino[2], A. Giuliani[3], C. Moglia[1], R. Vasta[1], F. Palumbo[1], G. Polverari[4], F. De Mattei[1], M. Daviddi[1], G. Fuda[1], G. De Marco[1], M. Pagani[2], A. Calvo[1], A. Chiò[1], U. Manera[1]
[1]ALS Centre, 'Rita Levi Montalcini' Department of Neuroscience, University of Turin, Turin, Italy, [2]Institute of Cognitive Sciences and Technologies, C.N.R., Rome, Italy, [3]Environment and Health Department, Istituto Superiore di Sanità, Rome, Italy, [4]Positron Emission Tomography Centre AFFIDEA-IRMET S.p.A., Turin, Italy

Background and aims: The neuroanatomical correlates of sex in Amyotrophic Lateral Sclerosis (ALS) have been studied in animal models and human neuropathological series, but they remain unclear. This study is aimed at exploring the brain metabolic differences related to sex.
Methods: We collected two groups of male (m-ALS) and female ALS (f-ALS) patients (n=130 each), who underwent 2-[18F]FDG-PET at diagnosis. They were matched for site of onset (bulbar/spinal), cognitive status (normal/impaired), and King's stage. We included two groups of 84 male (m-HC) and 84 female (f-HC) age-matched healthy controls (HC). We compared m-ALS and f-ALS including age as covariate on one hand, and m-HC and f-HC on the other hand, employing the two-sample t-test model of SPM12. Then, a differential network analysis was performed. Starting from

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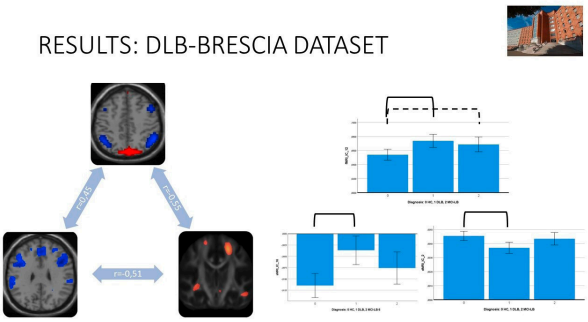
each patient, 94 brain ROIs and metaROIs were extracted, along with their respective (normalized) metabolic levels. By building two correlation networks we assessed differences in connectivity between m-ALS and f-ALS.
Results: F-ALS showed clusters of relative hypermetabolism including bilateral medial frontal, parietal, and occipital cortices, and left temporal cortex, compared to m-ALS. No significant difference emerged between m-HC and f-HC. In node-wise comparison between m-ALS and f-ALS, 2 metaROIs showed significantly higher connectivity in f-ALS compared to m-ALS (right mid cingulate cortex and left superior and medial frontal gyrus).
Conclusion: Sex impacts brain metabolism in ALS and underlies differences in brain connectivity. Sex should be considered when evaluating results in clinical trials, since sex-related brain metabolic differences might be associated with a heterogeneity in treatment response.
Disclosure: No conflicts of interest to declare.

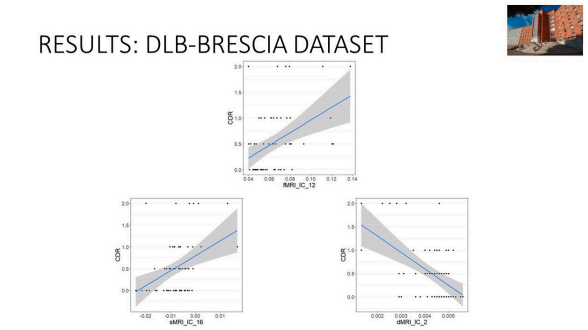
EPR-149

Multimodal Fusion Imaging in Dementia with Lewy Body: an original insight into routes leading to Neurodegeneration

M. Giunta[1], P. Andrea[1], G. Alice[1], C. Daniele[2], T. Clara[1], P. Enrico[3], G. Roberto[2], P. Alessandro[1]
[1]Neurology Unit, Department of Clinical and Experimental Sciences, University of Brescia, Italy, [2]Neuroradiology Unit, Department of Molecular and Translational Medicine, University of Brescia and ASST Spedali Civili Hospital, Brescia, Italy, [3]Department of Molecular and Translational Medicine, University of Brescia and ASST Spedali Civili Hospital, Brescia, Italy

Background and aims: Data fusion analyses enable the integration of different modalities of MRI evaluating gray and white matter integrity as well as functional connectivity to find out possible alterations across modalities.
Methods: DLB patients, at prodromal (pDLB, n=15) and dementia stages (DLB-DEM, n=19), were included and compared to Healthy Controls (HC, n=27). Each participant underwent 3T MRI session and neurological assessment. A multivariate analysis (P-GICA) was carried using Structural, DTI and fMRI data to identify the maximally correlated components from each modality. The different distribution of components among d-DLB, p-DLB and HC groups and correlations with clinical features were then assessed.
Results: P-GICA detected 3 correlated components, describing a pattern of atrophy clustering in middle-inferior frontal gyrus, as well as superior and inferior parietal lobules in p-DLB and DLB-DEM. The linked fMRI ICs showed a reduced connectivity in hubs of Dorsal Attention Network and an overactivation in regions belonging to Ventral Attention Network in DLB. DTI analyses revealed reduced FA values in patients in superior and inferior longitudinal fasciculi. The integrative components significantly distinguish between HC and DLB-DLB,, with significative correlations with disease severity.





Conclusion: This study provided an original profile of DLB-related neurodegeneration, in which fronto-parietal atrophy is associated to DAN-VAN disconnection and WM disintegration in bundles underpinning their interactome. These results leverage strengths of a novel multimodal fusion approach pointing out a connectivity rearrangement in early stages of DLB, defining the combination of GM and WM structural changes driving to functional failure.
Disclosure: Nothing to disclose.

EPR-150

Multimodal fusion imaging reveals structural correlates of precuneus Hyperactivation in the early stages of in AD

M. Giunta[1], P. Andrea[1], P. Enrico[2], C. Daniele[3], G. Roberto[3], P. Alessandro[1]
[1]Neurology Unit, Department of Clinical and Experimental Sciences, University of Brescia, Italy, [2]Department of Molecular and Translational Medicine, University of Brescia and ASST Spedali Civili Hospital, Brescia, Italy, [3]Neuroradiology Unit, Department of Molecular and Translational Medicine, University of Brescia and ASST Spedali Civili Hospital, Brescia, Italy

Background and aims: While different MRI modalities apport their own contribution to the comprehension of neurodegeneration, multimodal approach can integrate different structural and functional MRI data to find out changes across modalities.

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