

## P02-07

### NEUROBIOLOGICAL SUBSTRATE OF AUTISM SPECTRUM DISORDER - CEREBRAL BLOOD FLOW DISTRIBUTION OF <sup>11</sup>C-BUTANOL AS ASSESSED BY PET/CT

M. Pagani<sup>1,2</sup>, I. Manouilenko<sup>3</sup>, S. Stone-Elander<sup>4</sup>, R. Odh<sup>1</sup>, D. Salmaso<sup>2</sup>, A.-M. Danielsson<sup>1</sup>, R. Hatherly<sup>1</sup>, H. Jacobsson<sup>1</sup>, S.A. Larsson<sup>1</sup>, **S. Bejerot**<sup>3</sup>

<sup>1</sup>Nuclear Medicine, Karolinska Hospital, Stockholm, Sweden, <sup>2</sup>ISTC, CNR, Rome & Padua, Italy, <sup>3</sup>Psychiatry, St. Göran's Hospital, <sup>4</sup>Karolinska Pharmacy and Dept Clin Neurosciences, Karolinska Institutet, Stockholm, Sweden

**Background:** Functional studies in Autism Spectrum Disorder (ASD) have shown localised focal hypoperfusion and abnormalities in the anatomic-functional connectivity of limbic-striatal "social" brain. However, no common regional abnormalities have been found across studies.

The aim of this study was to investigate the cerebral blood flow (CBF) at rest in subjects with ASD as compared to a group of healthy controls.

**Methods:** In this preliminary investigation six normal intelligence patients with ASD and 5 age and sex matched healthy controls (HC) were examined using PET/CT camera and, as CBF tracer, <sup>11</sup>C-butanol, a radiopharmaceutical produced on-site. The combination of these two methodologies reduced the whole examination time to less than 10 minutes. Statistical Parametric Mapping was implemented to analyse the data.

**Results:** As compared to HC, ASD showed a highly significant CBF increase (height threshold  $p=0.001$ ,  $p < 0.0001$  at voxel-level), bilaterally, in large portions of the cerebellum, of the visual associative cortex and of the posterior parietal lobe.

**Conclusions:** This preliminary study was performed by the state-of-the-art neuroimaging methodologies that reduced considerably the examination time and resulted in less stress and more reliable investigations. The occipital and parietal associative cortex as well as the cerebellum showed an increased CBF in ASD, underscoring their involvement in the disease and raising methodological and diagnostic issues to be considered when exploring the neuroanatomy of ASD.