

**Methods:** We evaluated 6 patients (4 female, 2 male; age range 26-54 years, average 43.5 years) with therapy-refractory TLE due to mesiotemporal sclerosis or other focal brain anomalies. To delineate the epileptogenic zone, clinical evaluation, ictal and interictal surface EEG using the international 10-20 system, brain MRI, interictal CBF SPECT using  $^{99m}\text{Tc}$ -ECD, BDR SPECT and FDG coincidence PET were performed. The CBF SPECT, BDR SPECT and coincidence PET scans were viewed independently by 2 observers considering the regional cerebral blood flow, BDR density and FDG uptake asymmetry in the temporal lobe visually as none (0), low (1), moderate (2) and high (3).

**Results:** Ictal and interictal EEG recordings located the epileptogenic focus in all patients in the temporal region. Both the BDR SPECT and the FDG coincidence PET located the epileptogenic focus correctly in circumscribed areas of the temporal lobe in all patients, whereas brain MRI revealed focal anomalies only in 5 of 6 cases. The lateralisation to the right (n=4) and left hemisphere (n=2) by interictal CBF SPECT, BDR SPECT and FDG coincidence PET corresponded to the EEG findings in all patients. The visual consideration of the asymmetry revealed a slightly but not statistically significant higher value for the FDG coincidence PET (observer 1: mean 2.333, SD 0.516; observer 2: mean 2.000, SD 0.632) than for the BDR SPECT (observer 1: mean 1.667, SD 1.033; observer 2: mean 1.833, SD 0.753). Visual consideration of the interictal CBF SPECT revealed mean values of 2.000 for both observers. The inter-observer variability was higher in the BDR SPECT than in the FDG coincidence PET and the interictal CBF SPECT, but the difference was not significant.

**Conclusion:**  $^{18}\text{F}$ -FDG PET using a coincidence detection camera system shows slightly but not statistically significant higher subjective values of asymmetry in patients with medically intractable TLE than BDR SPECT. Thus, in institutions without a dedicated PET scanner, both methods provide useful additional functional information in the detection of epileptogenic foci, especially when combined with an additional interictal CBF SPECT.



AT0200401

16.8

### Blood Flow Changes in Alzheimer's Disease Induced by Lactate

<sup>1</sup>L. Pávics, <sup>2</sup>J. Kálmán, <sup>1</sup>T. Séra, <sup>2</sup>Z. Janka, <sup>3</sup>L. Csernay

University of Szeged, Departments of <sup>1</sup>Nuclear Medicine and <sup>2</sup>Psychiatry, <sup>3</sup>International Medical Centre, Szeged, Hungary

Lactate, as metabolite of the glycolysis is a source of energy of the nerves. In vitro and in vivo experiments showed the neuroprotective effect of lactate and improvement of brain function after ischaemic injury. Intravenous infusion of lactate increases the global cerebral blood flow (CBF). In Alzheimer disease (AD) characteristic regional blood flow abnormalities and in the cerebrospinal fluid abnormal lactate levels were detected.

**Aim:** Since disturbed CBF and vasoregulation was found in AD the effect of intravenous Na-lactate on CBF and related metabolic parameters was examined in order to assess the CBF response in the AD brain.

**Methods:** In twenty (14 woman, 6 man, age +/- SD.: 74+/-7 years) patients with Alzheimer's disease (DSM IV, MMT.:13+/-6) self-control study was performed. rCBF SPECT ( $^{99m}\text{Tc}$ -HMPAO) investigations were fulfilled during 5mg/kg body weight 0.5 M Na-lactate infusion and in control state (0.9 % saline infusion) one week apart. The rCBF changes visually and by Statistical Parametric Mapping were analysed. ECG, blood pressure, heart rate, venous blood pH, pCO<sub>2</sub>, bicarbonate, serum lactate and cortisol level were measured before and after the

## ABSTRACTS

SPECT investigation. Acute Panic Inventory and anxiety rating scales were used to assess the psychiatric effect of lactate.

**Results:** The serum lactate levels increased in average from 0.8 mmol/L to 4.6 mmol/L, and 6.1 mmol/L 10 and 20 minutes after lactate infusion respectively. Compensatory changes were found in the venous blood pH, pCO<sub>2</sub> and bicarbonate levels. Significant psychiatric symptoms and blood pressure and heart rate increase were not observed. The serum cortisol level remained unchanged. At the baseline investigation all of the patients have bilateral temporal or parietal hypoperfused areas in 8 patients with other additional localisation of abnormalities. In 12 patients the global cerebral blood flow increased, in 8 decreased rCBF was detected by visual evaluation. According to the SPM analysis the lactate infusion produced a statistically significant ( $p < 0.05$ ) rCBF decrease in tempo-occipital and central areas.

**Conclusion:** In Alzheimer disease the lactate infusion produces a possible global increase of cerebral blood flow with relative hypoperfusion at the temporo-occipital and central areas. Vasoregulation and metabolic changes might be responsible for this finding but the exact mechanism of this effect must be further elucidated.

16.9



AT0200402

### Gastroesophageal Reflux (GER) and Respiratory Disease in Children

Shazia Fatima

Nuclear Medicine, Oncology & Radiotherapy institute (NORI) Islamabad.  
Pakistan

#### Aim:

- To identify any possible relationship between recurrent lower respiratory tract infection and GER.
- To identify any possible relationship between asthma and GER
- To determine the prevalence of GER in children suffering from RLRTI & Bronchial asthma
- To evaluate the sensitivity and accuracy of different GER diagnostic modalities.

**Methods:** Thirty children with recurrent lower respiratory tract infection and bronchial asthma were evaluated for possible presence of the GER. Radionuclide gastroesophageal scintigraphy was performed in all these 30 patients (Age range 6 months- 10 years). Patients also underwent ultrasonography and/or Barium swallow or fluoroscopy on separate day. Patients were grouped according to presenting complaints and investigative modalities. Group A was the patients of RLRTI, which underwent GER scintigraphy, Barium studies and ultrasonography. Group B patients were patients with bronchial asthma who underwent all 3 investigations. Group C was patients with RLRTI who underwent GER scintigraphy and barium studies only. Patients with Bronchial asthma who underwent barium studies and GER scintigraphy were included in group D. Group E & F were patients with RLRTI and bronchial asthma who underwent ultrasonography and GER scintigraphy only respectively. For each group, reflux index was calculated in all positive patients.

**Results:** GER reflux of varying degrees was observed in 20% patients. The severity of the clinical symptoms was directly proportional to the severity of gastroesophageal reflux. Reflux index was positively correlating with clinical symptoms as well. When compared with other