Introduction Multiple sclerosis (MS) has a presumed auto-immune aetiology involving complex interactions between at risk genotypes and environmental factors. Immune reactivity mediated by CD4+ and CD8+ T-cells in particular is thought to drive disease pathogenesis. As part of a wider research project, we used polychromatic flow cytometry to conduct a high definition analysis of infiltrating T-cell populations in the cerebrospinal fluid (CSF) of patients with neuroinflammatory disease.

Methods Patients attending for routine diagnostic lumbar puncture as part of their neuroinflammatory disease work-up at the University Hospital of Wales were consented to participate in this study. Sample collection started in August 2013 and is currently ongoing. In each case, the entire cell population from 10 mL of CSF was stained with a purpose-built panel comprising 13 directly conjugated monoclonal antibodies. Phenotypic analysis was performed using a custom-modified FACS Aria II flow cytometer with FlowJo software.

Results Across all patients (n=16), CD4 T-cells (mean=3,548/10 mL) predominated over CD8 T-cells (mean=545/10 mL) in CSF. The majority of CD8+ T cells had an effector memory phenotype with approximately 60% exhibiting a TEMRA phenotype (CD45RA+CCR7-).

Discussion These data extend previous immunophenotypic studies and define highly characteristic subsets of memory T-cells in the CSF of patients with neuroinflammatory disease.

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CSF IMMUNOPHENOTYPING IN PATIENTS WITH NEUROINFLAMMATORY DISEASE

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