

**Increased percentage of CD14+ monocytes in acute Charcot osteoarthropathy**NL Petrova<sup>1</sup>, G Mabileau<sup>2</sup>, A Sabokbar<sup>2</sup>, ME Edmonds<sup>1</sup><sup>1</sup>Diabetic Foot Clinic, King's College Hospital, London, UK<sup>2</sup>Botnar Research Centre, University of Oxford, Oxford; UK

**Background and aims:** Recently, we have demonstrated that osteoclasts generated *in vitro* from patients with acute Charcot osteoarthropathy were functionally more aggressive and exhibited a considerable increase in the extent of their resorbing activity in response to the cytokine receptor activator of nuclear factor  $\kappa$ B ligand (RANKL). It is possible that this increased osteoclastic activity may be a result of a relative increase in the proportion of CD14+ monocytes (osteoclast precursors) in peripheral blood mononuclear cells (PBMCs). Thus the aim of this study was to measure the percentage of CD14+ monocytes in acute Charcot osteoarthropathy. **Material and methods:** We studied 11 diabetic patients with recent onset of acute Charcot osteoarthropathy and these were matched for age, gender and type of diabetes with 10 diabetic patients with no previous history of Charcot osteoarthropathy. We also studied 6 aged and sex-matched healthy controls. Peripheral blood mononuclear cells were isolated from EDTA treated whole blood and were labelled with an anti-CD14 monoclonal antibody labelled with phycoerythrin. Data was acquired using FACSCalibur-BD and analysed by CellQuest software. **Results:** The mean percentage of CD14+ monocytes in PBMCs was significantly greater in the patients with acute Charcot osteoarthropathy ( $8.7 \pm 3.4$  %) compared with diabetic patients ( $5.2 \pm 3.3$  %) and healthy controls ( $4.0 \pm 2.5$  %), ( $p=0.013$ ). Furthermore, the percentage of CD14+ monocytes in acute Charcot osteoarthropathy was 1.7 times and 2.1 times greater when compared with the percentage in diabetic patients ( $p=0.028$ ) and healthy controls ( $p=0.009$ ). **Conclusion:** This study has shown that in acute Charcot osteoarthropathy there is a relative increase in the percentage of CD14+ monocytes, acting as osteoclast precursors, and these findings may explain the increased bone resorption of the acute Charcot foot.