A7 REDUCTION OF NAÏVE T CELL FREQUENCY AND IL-7 PREDICT THE EVOLUTION OF ACPA-POSITIVE INDIVIDUALS WITH ARTHRALGIA TOWARDS UA AND RA

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Background Evolution towards rheumatoid arthritis (RA) from early symptoms is associated with profound dys-regulation of T cell subsets. Naïve cells frequency was the most discriminative T cell subset although, regulatory T cell (Treg) showed lower significance. ACPA-positive individual (ACPA+) with recent onset of musculoskeletal pain (arthralgia) are at high risk of developing undifferentiated arthritis (UA) and RA. The aim of the current study is to determine whether T cell subset and cytokine analysis can predict the development of UA/RA in ACPA+ individual arthralgia.

Methods 41 ACPA+ individuals were followed for up to 36 months. Absence of synovitis and diagnosis of UA/RA were based on expert clinical evaluation. 6 colour flowcytometry was performed using standard protocols. 55 healthy controls (HC) were used to build the age relationship with naïve cell frequency. ELISA was used to measure IL-7 serum levels.

Results The development of clinical synovitis was observed in 15 patients (36%) and diagnostic achieved for UA (n=10) and RA (n=5). 26 patients did not develop synovitis (arthralgia only) over 12–18 months however 10 were diagnosed with osteoarthritis and 2 with CTD. At recruitment, there was clear difference between ACPA+ and HC for naïve ($p=0.012$), inflammation induced cells (IRC) ($p=0.044$) and CD62L+Treg ($p=0.050$) frequencies. At follow-up, patient who developed UA had reduced, baseline naïve cells ($p=0.072$) compared to arthralgia and these were even further reduced in the group developing RA ($p=0.008$). Interestingly, patients with an OA/CTD diagnostic showed results closer to HC compared to patients with arthralgia who remained without diagnosis ($p=0.084$). Using the relationship between naïve T cells and age, UA/RA outcome was clearly associated with reduced frequency however, arthralgia and OA/CTD individuals remained within normal range. Baseline Treg frequencies were not reduced in ACPA+ patients compared to HC neither with any particular outcome.

Serum levels of IL-7 were reduced at baseline compared to HC ($p=0.001$). On follow-up, reduced IL-7 ($p=0.015$) was observed in the arthralgia group and further reduced in the group developing RA ($p=0.007$) compared to UA. Again the OA/CTD patients showed higher IL-7 ($p<0.070$) compared to the patients who remained with arthralgia only.

Conclusion The development of inflammatory symptom appears clearly predictable by further immunological dys-regulation of naïve T cell in ACPA+ individuals. Furthermore, data suggest that Treg's involvement may be in the true clinical phase as RA patients show reduced Treg frequency but not ACPA+ patients evolving towards an UA-RA outcome after 12–18 months.