

Methods Rituximab-treated patients from the Karolinska University Hospital (n=107) were enrolled. LON was defined as an absolute neutrophil count <1,500 cells/ μ L, occurring four weeks to two years following treatment, or later in cases of sustained B cell depletion, provided that other apparent causes were excluded. B cell activating factor (BAFF), a proliferation-inducing ligand (APRIL), IL-6, granulocyte-macrophage colony-stimulating factor (GM-CSF), and granulocyte colony-stimulating factor (G-CSF) were measured using ELISA prior to and post-treatment.

Results Thirty-two patients (29.9%) developed LON after a median time of 201.5 days (IQR: 66.8–322.0). Thirteen patients were admitted to the hospital; ten developed fever, and three developed critical conditions. BAFF levels increased from baseline (median: 0.62 ng/mL; IQR: 0.42–1.07) through the post-treatment measurement, both in patients who developed LON (median: 1.73 ng/mL; IQR: 1.03–2.56; p=0.005) and patients who did not (median: 1.03; IQR: 0.65–1.55; p=0.001), with significantly higher BAFF levels in the LON group (p=0.021). APRIL levels were higher in the LON group both at baseline (median: 1.54 versus 1.15 ng/mL; p=0.027) and post-treatment (median: 2.39 versus 1.11 ng/mL; p=0.011). IL-6 and GM-CSF levels decreased in the non-LON group (p<0.001). Cumulative rituximab and cyclophosphamide doses were found to be associated with the development of agranulocytosis (p=0.022 and p=0.021, respectively).

Conclusion Post-rituximab LON is a common complication in SLE. Although the phenomenon was self-limiting in most cases, a few patients developed life-threatening conditions; this highlights the importance of regular surveillance for neutrophil counts, fever and infections. Distinct roles of BAFF and APRIL are implicated; BAFF might contribute to granulopoiesis disruptions, whereas APRIL might have a value in distinguishing predisposed patients.

PS7:135 **AMG 592 IS AN INVESTIGATIONAL IL-2 MUTEIN THAT INDUCES HIGHLY SELECTIVE EXPANSION OF REGULATORY T CELLS**

¹N Tchao, ²KS Gorski, ³T Yuraszek, ⁴SJ Sohn, ⁵K Ishida, ⁶H Wong, ⁷K Park. ¹Amgen Inc., Department of Early Development, South San Francisco, USA; ²Amgen Inc., Department of Clinical Biomarkers, South San Francisco, USA; ³Amgen Inc., Department of Pharmacokinetics and Drug Metabolism, Thousand Oaks, USA; ⁴Amgen Inc., Department of Inflammation Research, South San Francisco, USA; ⁵Amgen Inc., Department of Comparative Biology and Safety Sciences, Thousand Oaks, USA; ⁶Amgen Inc., Department of Clinical Pharmacology, South San Francisco, USA; ⁷Amgen Inc., Department of Global Safety, Cambridge, USA

10.1136/lupus-2018-abstract.178

Background AMG 592 is an investigational IL-2 mutein designed for greater regulatory T-cell (Treg) selectivity and longer half-life than recombinant IL-2 (aldesleukin). We investigated the tolerability of AMG 592 and its effects on expansion of Tregs, conventional effector T-cells (Tcon), and natural killer (NK) cells.

Methods AMG 592 activity, in comparison with aldesleukin, was assessed by *in vitro* phosphorylated STAT5 (pSTAT5), Treg/Tcon/NK cell expansion, and cytokine production in primary human peripheral blood mononuclear cells (hPBMC). Effects on body temperature (Temp), C-reactive protein (CRP), and peripheral Treg/Tcon/NK cell numbers were evaluated in cynomolgus monkeys (CM). In an FIH study, healthy volunteers received single ascending SC AMG 592 doses (n=6/dose;

8 cohorts) or placebo (n=2/dose) for 28 days. Adverse events (AEs), pharmacokinetics (PK), pharmacodynamics, and cytokines were evaluated.

Results In hPBMC cultures, AMG 592 caused more selective Treg response (pSTAT5, proliferation) and lower proinflammatory cytokine levels than aldesleukin. Dose-dependent expansion of FoxP3 +Tregs was associated with increased Temp and CRP in aldesleukin-treated but not in AMG 592-treated CM. In the FIH study, AMG 592 was well tolerated, with no serious AEs. The most common AE across cohorts was grade 1 painless erythema at/near the injection site which resolved without treatment. Preliminary PK results indicate dose-related increases in AMG 592 serum exposure. AMG 592 caused robust, dose-dependent Treg expansion relative to Tcon in all treated individuals. Expanded Tregs had increased CD25 and FoxP3, and were enriched for recent thymic emigrants. At the highest dose, increase in Treg: Tcon ratio peaked at day 8 (~4 fold vs baseline) and remained elevated up to day 29. AMG 592-mediated Treg expansion was highly selective, with no directional change in NK cell numbers and minimal increase in Tcon; there were no increases in serum proinflammatory cytokines IL-6, TNF α , or IFN- γ above the limits of detection.

Conclusion AMG 592 caused dose-dependent, selective Treg expansion in healthy volunteers. Lack of proinflammatory cytokines and reduced inflammation markers suggest a wider therapeutic margin, and sustained Treg elevation implies less frequent dosing, compared with aldesleukin. Further investigation of AMG 592-induced Treg-mediated restoration of immune homeostasis in inflammatory and autoimmune diseases is warranted.

PS7:136 **APOPTOTIC EFFECT OF BLYS ON ENDOTHELIAL CELLS AND ENDOTHELIAL PROGENITOR CELLS IS MEDIATED BY BLYS RECEPTORS AND IS REVERTED BY BELIMUMAB**

FR Spinelli, C Barbati, F Ceccarelli, T Colasanti, L Massaro, F Morello, C Garufi, C Alessandri, G Valesini, F Conti. *Sapienza Università di Roma – Dipartimento di Medicina Interna e Specialità Mediche, Reumatologia, Rome, Italy*

10.1136/lupus-2018-abstract.179

Circulating endothelial progenitor cells (EPCs) are markers of endothelial function; their reduction and functional impairment in patients with Systemic Lupus Erythematosus (SLE), partially account for endothelial dysfunction. In murine models of atherosclerosis, treatment with a B Lymphocyte Stimulator (BLyS) reduced atherosclerotic plaque size and progression.

In a case study on SLE 20 women, our group confirmed a decrease in the number of EPCs, with a significant increase after treatment with Belimumab (BLM).

The aims of this study were: to evaluate the *ex vivo* and *in vitro* effects of BLyS stimulation and inhibition on the EPC colonies and on endothelial cells; to investigate BLyS receptor expression of on EPCs and endothelial cells.

EPCs were isolated from peripheral blood mononuclear cells and defined as CD34+/VEGF-R2 +double positive cells. To evaluate the ability to form colonies, the EPCs of 2 SLE patients and 2 healthy controls were cultured on fibronectin-coated dishes and incubated with BlyS or Blys and BLM and counted after 7 days.

Apoptosis of EPCs and endothelial cell line (EA.hy926) was evaluated after 6, 12 and 24 hours incubation with BLyS and after 6 hour with BLyS and BLM. EPC and EA.hy926 were