degradation. In addition, we provide for the first time experimental evidence that the acid secreted upon metabolic activation is not only a product of anaerobic (lactate, acetate) or aerobic (carbonate) glycolysis, but may be associated with a specific V-ATPase located in vacuolar membranes in the cytoplasm or on the surface of the cells. Preliminary data corroborate this conclusion, since a V-ATPase was located on the cell surface by immunohistochemistry and a V-ATPase encoding mRNA was detected by RT/PCR in the respective cells.

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THU0111 FC GAMMA RECEPTOR I AND III EXPRESSION BY MACROPHAGES OF COLLAGEN TYPE II SUSCEPTIBLE MICE IS HIGHER AND DIFFERENTLY REGULATED COMPARED TO OTHER STRAINS

¹AB Blom, ¹PL Van Lent, ¹AE Holthuysen, ²C Jacobs, ³I Tchetverikov, ¹LB Van de Putte, ¹WB Van den Berg. ¹Rheumatology; ²Nephrology, University Medical Centre St. Radboud, Nijmegen; ³TNO Prevention and Health, Leiden, The Netherlands

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Background In a previous study we found that knee joints of mice, susceptible for collagen type II arthritis (DBA/1, B10. RIII) display enhanced sensitivity to immune complexes (ICs) compared to other strains (C57BL/6, BALB/c). Higher and prolonged inflammation and more severe cartilage damage was observed. Murine synovial macrophages as well as IL-1 determine IC mediated arthritis and these cells communicate with ICs using three classes of Fcγ receptors mediating intracellular signalling: FcγRI and III are activating and FcγRII is an inhibitory receptor.

Objectives To investigate whether macrophages of mice that are prone to develop collagen type II arthritis are hypersensitive to ICs by differential FcγR expression and regulation.

Methods Basal expression of FcγR on macrophages of all strains was determined by immunohistochemistry on naïve whole knee joint sections and FACS-analysis using 2.4G2 antibody. Peritoneal macrophages were stimulated with ICs and cells were processed for RT-PCR. Using primers specific for FcγRI, II or III semiquantitative RT-PCR was performed. In addition, peritoneal macrophages of all strains and of mice lacking functional FcγRI and III (FcR γ-chain^{-/-}) were stimulated and tested for the production of IL-1 and stromelysin.

Results Basal expression of FcγR was significantly higher on synovial and peritoneal macrophages of DBA/1 and B10. RIII mice (mean fluorescence resp 440 ± 50 and 360 ± 30) if compared to C57BL/6 and BALB/c (mean fluorescence resp 240 ± 30 and 280 ± 30). After stimulation with ICs, mRNA levels of FcγRI and III were significantly higher in DBA/1 and B10. RIII mice. At day 2, FcγRI expression was 50× higher and FcγRIII was 10× higher. At day 3, FcγRI and III expression were both 10× higher. In contrast, FcγRII mRNA levels were down regulated 50× for DBA/1 and 10× for B10. RIII if compared to C57BL/6 and BALB/c. When DBA/1 and B10RIII peritoneal macrophages were stimulated with ICs (100 µg/ml), a twofold higher and prolonged production of IL-1 was measured if compared to other strains. Macrophages of FcR γ-chain^{-/-} mice

showed no detectable amounts of IL-1 after IC stimulation, indicating the role of FcγR in stimulation of cells using ICs. In addition, also stromelysin production was significantly increased in DBA/1 macrophages.

Conclusion Collagen type II arthritis sensitive mice are hyper reactive to IC through higher basal expression of FcγR on macrophages of these strains and stronger up regulation of stimulatory as well as down regulation of inhibitory FcγReceptors, resulting in higher and prolonged expression of IL-1 and stromelysin.

THU0112 ANAEMIA IN RHEUMATOID ARTHRITIS

¹P Athanassiou, ²E Griva, ³I Kostoglou-Athanassiou, ¹P Konstantopoulou, ⁴S Papazoglou, ⁵D Rontogianni, ¹G Vezyroglou, ⁴T Kontomerkos. ¹Department of Rheumatology, Asklepieion Hospital, Voula; ²Department of Haematology, ³Department of Endocrinology, Metaxa Hospital, Pireaus, Greece; ⁴Department of Rheumatology; ⁵Department of Histopathology, General Hospital of Athens "G. Gennimatas", Athens

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Background Rheumatoid arthritis (RA) is accompanied by haematological abnormalities. It is well known that anaemia in RA may have plural aetiology, however no correlation has been performed between anaemia and the morphology of blood cell precursors in the bone marrow in RA.

Objectives The aim was to investigate the aetiology of anaemia in RA by analysing blood, bone marrow aspirate and bone marrow biopsy findings.

Methods RA patients were included in the study, n = 51, aged 58.7 ± 1.2 (range 17–85) years. None of the patients was taking any disease modifying agents and 26 were newly diagnosed and had never taken any treatment for RA, duration of disease of the remaining being 9.1 ± 1.8 (range 0.5–35) years. In all patients antinuclear antibodies, anti-dsDNA antibodies and serum rheumatoid factor were measured. Haematocrit, haemoglobin, MCV, MCH, MCHC, serum iron, serum ferritin, serum iron-binding capacity, serum folate and vitamin B12 levels were also measured and indirect and direct Coombs' test was performed. In all patients a bone marrow aspirate was obtained and a bone marrow biopsy was performed.

Results In 51 RA patients haemoglobin levels were 11.3 ± 0.2 g/dl (mean ± SEM), haematocrit 35.0 ± 0.6%, MCV 80.5 ± 1.4 fl, MCH 25.9 ± 0.5 pg, MCHC 32.0 ± 0.1%, serum iron levels 72.9 ± 4.8 µg/dl, serum iron-binding capacity 343.4 ± 7.4 µg/dl, ferritin levels 119.5 ± 23.1 µg/dl, folate 12.4 ± 1.9 ng/ml and vitamin B12 levels 722.6 ± 301.3 pg/ml. In 32 of 51 patients with haemoglobin 12 g/dl, hyperplasia of red blood cell precursors was noted in 12, megaloblastoid alterations in 4 and erythroblastic islets in 2 patients. No correlation was observed between the presence or absence of anaemia and the dysplastic alterations in the blood cell precursors in the bone marrow in the RA patients studied.

Conclusion The aetiology of anaemia in RA patients seems to be multifactorial. Dysplastic alterations in blood cell precursors were noted in all the groups of RA patients, irrespective of the presence of anaemia, indicating either that inflammatory cytokines may affect the microenvironment of the bone marrow in RA or that in RA the stem cell in the bone marrow is defective being implicated in the pathogenesis of the disease.