Background: Giant cell arteritis (GCA) is the most frequent form of vasculitis affecting the large sized vessels. GCA occurs more frequently in females and exclusively in individuals > 50 years of age but it is unclear how gender and age relate to GCA pathogenesis. In balancing the immune response and preventing immune dysfunction, immune checkpoints are crucial. Recently, the co-inhibitory checkpoint molecule programmed cell death-1 (PD-1) and its ligand PD-L1 were found to be aberrantly expressed in GCA (1). However, data on age and gender related effects on immune checkpoint expression is limited.

Objectives: To further investigate the contribution of immune checkpoints in GCA pathogenesis and how this relates to ageing and gender differences, we first studied PD-1 expression as a function of age and gender in healthy males and females from Roche which were paid to the UMCG, Peter Heeringa: None declared. Shering-Plough and MSD from 1991-2011, Elisabeth Brouwer Speakers bureau: Dr. Brouwer as an employee of the UMCG received speaker fees and consulting fees from Roche which were paid to the UMCG, Peter Heeringa: None declared. Disclosure of Interests: None declared. DOI: 10.1136/annrheumdis-2019-eular.3912

Methods: studied PD-1 expression as a function of age and gender in healthy males and females. To further investigate the contribution of immune checkpoints in GCA pathogenesis and how this relates to ageing and gender differences, we first studied PD-1 expression as a function of age and gender in healthy males and females.

Objectives: To further investigate the contribution of immune checkpoints in GCA pathogenesis and how this relates to ageing and gender differences, we first studied PD-1 expression as a function of age and gender in healthy males and females.

Methods: Whole blood cells of 13 young healthy donors (mean age 25.5 years, female/male ratio 7:6) and 20 elderly healthy donors (mean age 72.7 years, female/male ratio 11:9) were stained for CD3, CD4, CD45RA, CD25 and PD-1 with monoclonal antibodies and expression was measured with flow cytometry.

Results: Percentages of PD-1+ cells within CD4+ T cells, memory CD4+ T cells and the subset of non-suppressive regulatory T cells (Tregs, defined as CD4+CD25RA-CD25int) were decreased in elderly post-menopausal females compared to elderly males (Figure 1A-C; p<0.05). Furthermore, the frequency of PD-1+ cells within non-suppressive Tregs was also decreased in post-menopausal females compared to young females (Figure 1B; p<0.05). Conclusion: PD-1 expression is decreased in (subsets of) CD4+ T cells of post-menopausal females when compared to younger females and elderly males. These findings suggest that post-menopausal status in females can influence PD-1 expression. Further studies on the relation between hormonal changes and immune checkpoint expression may contribute to understanding why elderly females are predisposed to develop GCA.

REFERENCE
with AS, suggesting that hydrogen production in the small intestine may be related to inflammation. In addition, with increasing age of the female, hydrogen and methane produced in the small intestine may increase, with increasing age of the male, small intestine may reduce the production of hydrogen, suggesting a reason why there are more female patients than male in some autoimmune disease.

**Figure 1** Differences in hydrogen and methane levels in different autoimmune diseases in the lactose breath test: (A and B) The production of hydrogen in the small intestine of patients with ankylosing spondylitis is significantly higher than that of other autoimmune patients. (C and D) Methane production in the small intestine showed no significant difference between the groups. *P < 0.05; **P < 0.01; ***P < 0.001. RA: rheumatoid arthritis, SLE: systemic lupus erythematosus, SS: Sjögren’s syndrome, AS: ankylosing spondylitis.

**Figure 2** Correlation between the age of autoimmune patients and the hydrogen and methane values in the lactose breath test: (A1-A4) The age of female patients is positively correlated with the production of hydrogen and methane in the small intestine. (B1-B4) The age of male patients is negative related to the production of hydrogen in the small intestine.

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**Disclosure of Interests:** None declared


**AB0035**

**THE CHARACTERISTICS OF CIRCULATING FOLLICULAR T LYMPHOCYTE SUBSETS IN PATIENTS WITH RHEUMATOID ARTHRITIS AND THE EFFECT OF TFR/TFH BALANCE ON DISEASE ACTIVITY**

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**Background:** Rheumatoid arthritis (RA) is a highly disabling autoimmune disease. T lymphocyte subsets imbalance causing immune dysfunction is essential stages in the occurrence and development of RA diseases. Recent studies show that the interaction of both follicular helper T (Tfh) cells and follicular regulatory T (Trf) cells are important frontier scientific direction to maintain autoimmune tolerance, and Tfr/Tfh balance may play a pivotal role in the formation of lymphoid germinal center and the production of autoantibodies(1-3).

**Objectives:** The aim of this study was to explore the clinical characteristic of peripheral follicular T cell subsets in patients with RA and healthy individuals, and the effects of Tfr/Tfh balance on autoantibody formation and disease activity. Searching for new immunomodulatory targets from it.

**Methods:** The study included 26 patients with a diagnosis of RA according to the 1987 revised criteria of the American College of Rheumatology and 17 healthy individuals as control group. All follicular T cell subsets from them were assessed by flow cytometry(Figure1). Using isotypic controls to distinguish follicular T cell subsets that were not clearly clustered. In addition, we measured all peripheral lymphocyte subsets in RA patients by Flow Cytometry. IgG, IgA, IgM,RF were measured using Turbidimetric inhibition immuno assay. Anti-CCP was measured using ELISA. We also collected relevant clinical information and made DAS28 score.

**Results:** (1)Compared with healthy controls, the proportions of CD4+CXCR5+PD-1+Tfh cells were higher in RA patients (P=0.029). In contrast, patients with RA had much lower level of CD25+CXCR5+FoxP3+Tfr cells (P=0.010). And there were significant differences of Tfr/Tfh between these two groups (P=0.000). (2)Among 26 RA patients, there was obvious correlation between Tfr/Tfh and the DAS28 value (r=0.422, P=0.032). But there was no correlation between Tfr/Tfh and ESR (P=0.05). Correlation between CD4+CD25+FoxP3+Treg cells and Tfr cells was also analyzed (r=0.722, P=0.000)(Figure2). (3) We have not found correlation between Tfr/Tfh and autoantibodies maybe for the small sample content.

**Conclusion:** Treg cells may come from directional transformation of Tfr cells and Treg cells indicates that Tfr cells may come from directional transformation of Treg. There is a Tfr/Tfh imbalance in RA patients, which suggests a potential mechanism of RA disease severity. However, more samples are needed to confirm whether it is related to the production of autoantibodies to affect disease activity.

**REFERENCES**
