improvement for patients suffering from rheumatic diseases, only in rare cases a therapy-free remission is achieved. In most cases stopping of treatment results in disease relapse. Apparently, components of the immune system are refractory to conventional immunosuppression and can drive the inflammation. Experimental and clinical evidence suggests that cells of the immunological memory persist despite immunosuppression and if pathogenic play a major role in the chronification of the disease. In particular long-lived memory plasma cells secreting autoantibodies represent a major therapeutic challenge. Once generated, they are not subject to physiological and even conventional therapeutic immune regulation. Their elimination may be prerequisite to curative therapies. A detailed understanding the lifestyle of long-lived memory plasma cells will be important to address this cell type therapeutically.

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SP0087 HOW ANTIGEN PRESENTING CELLS CAN BE TURNED INTO TOLEROGENIC CELLS

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Antigen presenting cells (APCs) lay at the heart of all immune responses. Whereas we generally consider APCs as cells that stimulate immune reactivity, they are also critically important for avoiding autoreactivity. Thus in health our tissues are patrolled by cells such as immature dendritic cells, which downregulate responses to self-antigens. Corruption of this process is a central factor in autoimmunity.

A number of groups have developed methods to generate "tolerogenic" antigen presenting cells, that mimic the cells which regulate self-tolerance in health. It is hypothesised that administration of such cells, loaded with autoantigens, to patients with autoimmune disease should be able to overcome autoreactivity and re-establish immune regulation. Our own group has developed a therapeutic approach based upon autologous tolerogenic dendritic cells, which we derive from circulating peripheral blood monocytes. Unlike conventional mature DC, which produce IL-12p70 and other pro-inflammatory cytokines, tolDC produce no IL-12p70 but high levels of IL-10. They deviate naïve T-cells towards an IL-10-producing, anti-inflammatory phenotype and induce hyporesponsiveness in memory T-cells. In mixed cultures they dominate mature, pro-inflammatory DC and down-regulate T-cell activation. Their phenotype is stable in the presence of pro-inflammatory stimuli. Equivalent murine tolDC switch off collagen-induced arthritis, with immune deviation from IL-17 to IL-10 production by CD4+ T cells and a reduction in type II collagen-specific T cell responses.

In a phase 1 trial (AuToDeCRA), we demonstrated that these cells are safe when administered into a recently inflamed target knee joint of patients with inflammatory arthritis. However, in that safety study we were unable to demonstrate a tolerogenic effect in vivo. Furthermore, we have reason to believe that administered cells may remain in the target joint, whereas a disease-modifying effect is likely to require migration to secondary lymphoid tissues. Moving forwards we are designing a study that will address the optimal administration route for tolDC, based on a technique to track the cells in vivo and to measure their effect on autoreactivity.

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THURSDAY, 15 JUNE 2017

What to do about comorbidity?

SP0088 NEW DRUGS, BUT STILL COMORBIDITY

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As the population ages the simultaneous presence of multiple pathological conditions in the form of comorbidity and multimorbidity is more a rule than an exception. Comorbidity is reported in 35 to 80% of all ill people (Taylor et al. 2010). Comorbidity and multimorbidity are challenging researchers, clinicians and policy makers as these persons require more frequent appointments and hospitalizations and are at a greater risk for drug interactions, disability and mortality (Slater 2011).

Although numerous chronic disease prevention strategies and treatment guidelines have been developed, they mainly address single conditions and ignore the presence of co-existing conditions (van der Noyen 2016). Especially physical activity in its different forms has numerous preventive and curative effects in most of the diseases in addition to drugs. These benefits are such as increased muscle force and aerobic capacity, maintenance of bone and cardiovascular health, decreased inflammation and pain, improved function and well-being.

Studies reveal that more than 80% of rheumatoid arthritis (RA) patients carry two or more comorbid conditions (Krisnan et al. 2005). However, according to the QUEST-RA study (5,235 patients from 21 countries), only 14% of all patients reported to perform physical exercise at least 3 times weekly. Physical inactivity was associated with female sex, older age, obesity, comorbidity, disability, disease activity, pain and fatigue (Sokka et al. 2008). Traditionally, patients with RA were advised to limit physical exercises due to a fear that exercises might increase disease activity and be harmful for joints but more recent studies show that they benefit from exercise (Baillet et al. 2012).

Compared to RA, osteoarthritis (OA) is more common with prevalence of ∼150 million people world-wide. In OA comorbidity rates vary between 68–85% in different studies. The most frequently occurring co-morbidities are diabetes, hypertension, cardiovascular disorders, obesity and back pain. De Rooij et al. (2016) have developed tailored exercise therapy for knee OA and comorbidity. In their study during the 20-week program 76% of the participants needed adaptations to frequency, type, intensity or duration of exercise sessions. In addition, 96% needed education and coaching related to comorbidities.

In our study group-based strength and balance training for two years was offered for community-dwelling participants aged >75 years. The results showed that those who did not start in the group had more comorbidities, lower cognition, higher sedative load, higher risk of malnutrition, and poorer self-reported health than those who started in the gym. Despite of multimorbidity and hospital admissions, many older adults were capable of long-term regular training (Aartolahti et al. 2015).

With multimorbidity multi-drug therapies are common and they increase the risk of side effects. Exercise is also beneficial for health and it should be considered as a non-pharmacological drug. As for any other drugs, individual dosing of exercise is very important as well.

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SP0089 HOW TO PREVENT AND TREAT CARDIOVASCULAR COMORBIDITY WITH EXERCISE?

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Low cardiorespiratory fitness is a strong predictor of cardiovascular disease and all-cause mortality in healthy people as well as in patient groups. Unfit individuals have twice the risk of death from all causes, and tailored exercise is important to improve fitness.

It is well established that patients with inflammatory rheumatic diseases have increased risk for cardiovascular disease compared with healthy population, and it is therefore particularly important that these patients benefit from the risk-reducing effect of exercise. Exercise has traditionally been recommended as part of the treatment for patients with rheumatic diseases, but exercise programs has mainly focused on improving mobility and reducing pain. Further, patients with active disease has been recommended to exercise with low intensity. To increase cardiorespiratory fitness, however, high intensity exercise is needed. It is therefore encouraging that recent studies show that patients with active rheumatic disease tolerate intensive cardiorespiratory- and strength exercises and can benefit from such health-enhancing training. Recent research in this field will be presented and discussed.

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SP0090 COMORBIDITY-ADAPTED EXERCISE FOR PATIENTS WITH KNEE OSTEOARTHRITIS

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Exercise therapy is a key intervention in the management of patients with knee OA[1]. However, comorbidity is present in 68 to 85% of patients with OA (e.g. cardiac disease, diabetes type 2, obesity)[2,3]. Comorbidity interferes with exercise therapy. In clinical practice, comorbidity is a frequent reason to exclude patients from exercise therapy. If accepted into an exercise program, both therapists and patients tend to reduce exercise intensity to a level unlikely to be effective, because of fear of aggravating symptoms of the comorbid disease. Further, the effect of exercise therapy in patients with knee OA and severe comorbidity is not known. Patients with unstable medical conditions, precluding safe participation in an exercise program, are excluded from clinical trials. In view of the effectiveness of exercise therapy in knee OA and the high prevalence of comorbidity, there is a great need for comorbidity-related adaptations to exercise therapy. In this lecture a strategy (i3-S strategy) will be presented on how to develop comorbidity-related adaptations to exercise therapy in an index disease (e.g osteoarthritis)[4]. According this strategy we have developed a tailored exercise program for patients with knee OA and comorbidity. Subsequently, to evaluate the efficacy of the tailored exercise program for patients with knee OA and comorbidity (cardiac disease, diabetes type 2, COPD and obesity (body mass index $\geq$30kg/m^2) a randomized controlled trial (n=126) was performed in a secondary care setting. The results showed that tailored exercise therapy greatly improved physical functioning, reduced pain and

was also safe for patients with knee OA and (severe) comorbidity[5]. At present we are implementing and evaluating the protocol in primary care.

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THURSDAY, 15 JUNE 2017

Data visualisation: tables and graphs for publication and presentation I & II

SP0091 DATA VISUALISATION: TABLES AND GRAPHS FOR PUBLICATION AND PRESENTATION

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This workshop (held both on Thursday and on Friday) is an introduction to the principles of good graph and table design as pioneered by Cleveland[1] and Tufte[2] and updated by Few[3] so that the participant can better answer the following questions:

Which of the messages in my research results requires a graph or table? Recognizing how graphs improve on simple statistics and convey much more information. Knowing when a table is better, or keeping the data in the body text.

How can I best convey the message? Striving for clear vision by choice of graph, scaling, discrimination of data series, minimizing non-data ink, avoiding chart junk. Striving for clear understanding through a balance between data and explanation. Using order, subheadings, formatting and rules to guide your reader through your table data.

Is my graph/table truthful? Creating a direct proportion between graph and data quantities, avoiding forms prone to misinterpretation, labels to prevent ambiguity; keeping data in context, avoiding more dimensions in the graph than in the data.

This year's course will extend introductory material available via YouTube clips on the ARD website (ard.com)!

Direct link: https://www.youtube.com/playlist?list=PLXU14EQbU_V9JpmolAKsaCC0VjJzbxzAN

Note that you can also sign up for a special lecture followed by a poster tour after the session, devoted to poster design!

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Disclosure of Interest: M. Boers Consultant for: Director of Epiconsult BV that offers training in data visualization
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Difficult to reach patient groups

SP0092 THE VICIOUS CIRCLE OF EDUCATIONAL LEVEL AND RISK OF POVERTY IN RHEUMATOID ARTHRITIS - RESULTS OF A CROSS-SECTIONAL MULTICENTER STUDY IN GERMANY

M. Zaenker[1,2]. *[1]Rheumatology Dept., Immanuel Klinikum Bernau & Heart Center Brandenburg, Bernau; [2]Brandenburg Medical School, Neuruppin, Germany*

This lecture will provide an overview on the dimensions of poverty in general and describe methods of assessing the risk of poverty in patients with rheumatoid arthritis (RA).

Based on results of a cross-sectional multicenter study of RA-patients from outpatient-clinics in Brandenburg and Saarland, Germany, this talk will give a rationale for how patients with RA are threatened by poverty due to treatment-related expenses, disability and early retirement compared to the general population.

It will be highlighted, that the equalized disposable income of RA patients is significantly lower than in general population and RA patients share a doubled risk of poverty, even in social-welfare well-secured countries such as Germany.

Further, the talk will demonstrate that both lower educational level and socio-economic state are associated with more severe disease course of RA and various underlying mechanisms will be discussed.

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SP0093 THE CHALLENGES AND SOLUTIONS FOR ENGAGING PATIENTS FROM ETHNIC BACKGROUNDS IN RHEUMATOLOGY CARE

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Rheumatoid Arthritis (RA) is a condition with no cure and can cause disability[1]. RA affects nearly 1 in 100 adults. Early disease is characterised by pain and other features of inflammation, such as heat, swelling of joints, and loss of function. RA is associated with increased costs of co-morbid conditions (such as cardiovascular (CVD) associated with RA[2]. CVD associated with RA is the most common cause of death in RA patients. The risk of developing CVD is worse in some ethnic groups[3;3;4]. Furthermore, RA causes physical damage and social, economic, psychological and cultural problems that impact on all aspects of patient life.

There are effective treatments available for RA[5]; however, non-adherence to medicines (not taking medicines as prescribed) is a significant issue in RA[6]. Patients' perceptions play an important role in adherence to medicines. Our research in the UK, has showed differences between individuals from ethnic groups on how they view their medicines[7]. These views can potentially impact on medication adherence and patients' satisfaction with information they receive in clinic.

In the UK, we have recently shown that patients from different ethnic backgrounds with RA were disstaified with the information they receive about medicines[7]. Patients beliefs about medicines and illness pereceptions were found to be associated with satisfaction with information received by clinicans. Furthermore, the British Society of Rheumatology (BSR) led a national audit to investigate the delivery of care across UK rheumatology services. In this audit of early inflammatory arthritis service, we found patients from different ethnic backgrounds expressed greater impact of the disease on functional disability, fatigue, emotional well-being, physical well-being and coping and worse in older patients. This can impact on the way patients perceive their disease activity and information received on treatments. If we understand the needs of patients from ethnic backgrounds we can help improve the health outcomes. This session will provide the audience with insight into some solutions from the UK that might be helpful in order to improve satisfaction with information, disease enagement and treatment adherence.

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