Molecular Mechanisms of Disease: Osteoarthritis

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Osteoarthritis (OA) has long been regarded as the dull disease of rheumatology; an inevitable consequence of ageing for which no treatment is possible. However, over the past seven years, largely through murine models of OA in genetically modified mice, this outdated model has been superseded. We now recognize a number of key pathways and molecules that drive disease, and these provide not only novel targets for therapeutic intervention, but also potential biomarkers for disease risk and progression. These studies reveal the critically mechanosensitive nature of pathogenic gene expression and remodelling processes in the diseased joint, thus finally demonstrating a link between abnormal mechanical joint loading and risk of arthritis. Studies have also uncovered important insights into why, where and how pain arises in an OA joint, and these have thrown up complex challenges in the management of patients with symptomatic disease.

Optimizing Therapy for Rheumatoid Arthritis

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Many studies over the past two decades have demonstrated that ‘tight control’ results in better outcomes for patients with rheumatoid arthritis (RA). Thus, the TICORA study showed that monthly rather than 3-monthly visits, frequent intra-articular injections, and therapy adjustments in cases of incomplete response provided significantly improved results compared to usual care. Other studies have highlighted the effectiveness of combination therapies (FinRACo), early aggressive intervention (BeSt; OPERA) and of having prespecified targets (CAMERA). In addition, more and more therapeutic agents are available.

So where are we to go from here? In this presentation, I will highlight data that suggest a change in our therapeutic approaches is needed. I will discuss the scientific strength of the data, point out holes highlighted the effectiveness of combination therapies (FinRACo), early aggressive intervention (BeSt; OPERA) and of having prespecified targets (CAMERA). In addition, more and more therapeutic agents are available.

Where are we to go from here? In this presentation, I will highlight data that suggest a change in our therapeutic approaches is needed. I will discuss the scientific strength of the data, point out holes in our knowledge, and suggest how individual practitioners may consider making adjustments in their approach to the individual patients, what organizational changes may be needed for rheumatological care provider units, and how payers can incorporate the latest scientific findings in their decisions which increasingly control the realities of rheumatological care.

Disclosures: The author has declared no conflicts of interest.

New Therapies for Rheumatoid Arthritis: Is There Room?

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The advent of biologic therapies has transformed the management of rheumatoid arthritis with unparalleled patient benefit. Since the introduction of tumour-necrosis factor inhibitors, the first class of biologics to be used, many further therapies, either within the same class or targeting different molecules or immune pathways have emerged, with similarly impressive outcomes. Indeed, it seems that whilst the rheumatologist attempts to determine how to use these drugs most effectively, yet more treatments continue to emerge. This explosion of drug development reflects the continued advances in understanding of disease pathogenesis but also begs the question, “is there room for more?”. This talk will discuss this question, highlighting how biologics, whilst highly effective, have introduced new complexities and considerations; as well as how new treatment approaches are influencing how therapies may be used effectively.

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Extra-Articular Complications in RA: Impact of Biologic Therapies and Unmet Patient Need

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Abstract not provided

Pain and Motor Function: Mechanisms and Treatment Approaches

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To ensure the smooth co-ordination of movement the brain relies on sensory input from its external and internal environments to inform the activation of a new movement and confirm the consequences of that movement once it has been performed. The efficient and effective processing of this system is crucial to ensure safety of the body within its environment. If sensorimotor integration becomes disrupted for any reason the body needs to be alerted promptly in order to take precautionary measures.

For those with chronic musculoskeletal pain (OA, FMS, CRPS) there is increasing evidence of altered sensory perceptions and disrupted motor planning at the peripheral and central level. Imaging data confirms changes in the motor and sensory cortical maps of those with chronic pain, that correlate with the intensity of pain perceived. Treatments aimed at reversing cortical reorganization have been shown to provide analgesic relief.

These changes in sensory input and motor output will be perceived by the patient and clinician as new signs and symptoms which cannot always easily be linked to objective underlying causes.

This lecture will outline how the sensory and motor systems interact in daily life and how central mechanisms become altered in the presence of pain. Delegates will have a greater understanding of central pain mechanisms and an insight into why patients may describe altered sensations and/or function which appear to defy evidence of clinical pathology.

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Changes in Sensorimotor Behaviour with Pain and How to Capture These in a Movement Analysis Laboratory

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Sensorimotor control of movement is complicated and difficult to study. The underlying mechanisms for certain movement behaviour are often unknown, and it may be hard to identify which specific sensory input that drives the movement and what processes that determine whether the outcome is going to be successful or not.
Deficits in neuromuscular coordination may lead to pain, or pain may cause changes in movement patterns. Some of these patterns will preside even if the pain goes away. This lecture will address how to capture and monitor human movement strategies and muscular activation patterns in a movement analysis laboratory by recording kinematic (movements), kinetic (forces) and electromyographic (EMG: signals from muscles) data. These techniques provide detailed information which cannot be obtained by simple observation by the human eye. Such data reflect how the brain controls the movements, and help to increase our understanding of sensorimotor control. The usefulness of this type of methodology in rehabilitation to monitor changes or progress over time, and in research will be discussed. Examples will be given for various types of test conditions and movement tasks such as grasping, balance performance and other types of coordination in healthy subjects and in subjects with various clinical diagnoses like patellofemoral pain, reconstructed or conservatively treated anterior cruciate ligament (ACL) injury and osteoarthritis.

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I76. PSORIATIC ARTHRITIS
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Abstract not provided
THE MANAGEMENT OF UPPER LIMB DYSFUNCTION IN PEOPLE WITH RHEUMATOID ARTHRITIS

I83. CURRENT SURGICAL MANAGEMENT OF THE RHEUMATOID HAND AND WRIST: INDICATIONS AND OUTCOMES

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Rheumatoid arthritis most commonly affects the small joints of the hands and feet and >75% of patients have some hand disability. Many rheumatologists are unclear of the benefits of surgery and this is compounded by the relative lack of long-term studies demonstrating efficacy. Furthermore, the pattern of disease has changed in the post biologics era. The joints of the hand and wrist rely on the periarticular structures for maintenance of alignment and function. Therefore, even when the inflammatory process is effectively controlled, previous elongation of ligaments and imbalance of the tendons means that deformities can continue to progress to become fixed and significantly impair function. Hence soft tissue realignment and rebalancing of the forces can improve hand function even once the disease is quiescent.

Guidelines for surgical referral include deteriorating function, progressive deformity, persistent pain, persistent or localized synovitis, nerve compression or tendon rupture. Surgical procedures include synovectomy and soft tissue alignment for early disease, arthroplasty and arthrodesis for more advanced disease with joint destruction. A close partnership between the referring rheumatologist, surgeon and therapist is essential to achieve optimal outcomes and maintain upper limb function.

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I84. HAND AND UPPER LIMB FUNCTION ASSESSMENT IN RHEUMATOID ARTHRITIS

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Hand and upper limb function is critical for maintaining independence in self-care, for employment and everyday activities. It is estimated that the hands and wrists are affected in 80-90% of patients with RA. As the disease progresses, patients adapt to maintain function so that loss of function may be insidious and not easily clinically apparent.

Assessment of the efficacy of treatment and monitoring of a patient’s functional status should include accurate measurement of hand and upper limb function. Physical measures alone do not necessarily reflect an improvement in the ability to perform functional tasks. This is best assessed by a combination of physical measures and questionnaires. Function (or its loss) can be conceptualized at the body or impairment level, at the person/activity or disability level, or at the societal/participation or handicap (“challenged”) level. A patient-centred approach using Patient Rated Outcomes Measures (PROM’s) assesses health at the activity and participation level from the patient’s perspective.

Wide use measures such as the Stanford Health Assessment Questionnaire (HAQ) and the Arthritis Impact Measurement Scale 2 (AIM2) were designed to facilitate clinical research and clinical management of RA but require more meaningful reflection of arthritis patient’s abilities. The physical measures, functional tests and PROM’s that are useful in the clinical situation and have been shown to be reliable, valid and sensitive to change in patients with RA will be discussed. This session will be of interest to allied health professionals and rheumatology practitioners.

Disclosures: The author has declared no conflicts of interest.

I82. ASK THE EXPERTS: MYOSITIS

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Abstract not provided

I85. EXERCISE THERAPY IN THE MANAGEMENT OF UPPER LIMB DYSFUNCTION IN RHEUMATOID ARTHRITIS OUTCOMES

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INFECTION AND ITS TRAINEES

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National clinical guidelines recommend that physical therapy should be an integral part of the management of patients with rheumatoid arthritis (RA). Upper limb and hand dysfunction can occur early in RA and exercise is a common component of treatment. However, few studies specifically evaluate the effect of exercise on the upper limbs and those that do concentrate on the hand and wrist ignoring the contribution of the elbow and shoulder to effective global upper limb function.

Short, intensive, individually supervised exercise sessions improve sensorimotor function and disability in people with RA, however, they are labour intensive and expensive to implement. Home exercise regimens also improve sensorimotor performance and function and, if individually tailored and sustained in the longer term, could promote disease self-management. However, maintaining the commitment and motivation to exercise regularly is challenging for people with RA and needs supporting by health care professionals. This presentation will report the results of a randomized controlled trial evaluating an upper limb home exercise programme, supplemented with 4 supervised group exercise and interactive educational sessions, aimed at improving global upper limb function and disease self-management in people with early RA.

Disclosures: The author has declared no conflicts of interest.

I86. THE ROLE OF UPPER LIMB SPLINTING IN THE MANAGEMENT OF PEOPLE WITH RHEUMATOID ARTHRITIS

Jo Adams1

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Wrist and hand splints are provided for patients with rheumatoid arthritis to reduce pain, swelling, improve biomechanical functioning and improve hand/upper limb performance. Proximal interphalangeal joint swan neck hyperextension, working wrist splints and thumb boutonniere splints have evidence of effectiveness within post-biologic era RA patients. The aims of this session are to provide a concise overview of the published evidence of current splints and to discuss some of the challenges for researchers in conducting clinical effectiveness studies for splinting interventions. In particular; identifying the active ingredient in splint interventions that are often part of a complex package requiring adherence to splint wear, establishing splinting dosage and recording outcome that matters to patients. Advances in splinting interventions will be considered including more recent, less well researched splints. The session is intended to be applicable to health professionals working with patients with RA and upper limb involvement.

Disclosures: The author has declared no conflicts of interest.

I87. PRESENTATION AND DISCUSSION FACILITATION

NICE speaker1

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Abstract not provided

NICE AND NHS EVIDENCE AND THE INFORMATION REVOLUTION

I88. A YEAR IN POLITICS: AN UPDATE ON POLITICAL INFLUENCES ON RHEUMATOLOGY AND ITS TRAINEES

Chris Deighton1 and Alan Nye2

1Rheumatology, Derbyshire Royal Infirmary, Derby, United Kingdom; 2GP SRC, Pennine MSK Partnership, Manchester, United Kingdom

The Health and Social Care Bill sets the triple challenge for the English NHS of the greatest changes in the history of the organization, at a rapid pace (in spite of the pause for the Futures Forum), and against the backdrop of having to save £20 billion by 2015. Furthermore, there is an expectation that the new NHS will have patients at the centre of the reforms, with commissioning driven by quality and outcomes, and that integration which will be achieved across primary and specialist care even though increasing commercialization will be encouraged. Rheumatologists cannot be complacent, because if they are not instrumental in assisting changes to their service to meet these challenges, then changes will inevitably be imposed on them, and in a fashion which may be unpalatable, and potentially decrease the quality of their service. We will present two viewpoints, first from Dr Alan Nye, GP, President Elect of the Primary Care Rheumatology Society and Director of Pennine MSK Partnership which provides community based rheumatology services in Oldham, and Dr Chris Deighton, consultant rheumatologist Royal Derby Hospital and President Elect of the BSR. At the time of writing, it is difficult to predict what the impact of these reforms will be in 6 months time, particularly with the world economy in crisis. These talks will give up-to-date overviews of:

- The reforms and impact on specialist musculoskeletal care generally and rheumatology particularly
- Examples of where this is working well
- Examples of where there are still challenges
- What the BSR is doing to influence the process and assist rheumatologists
- Tactics for ensuring that integrated care is promoted
- Tactics for ensuring that care is patient centred, and quality and outcomes driven
- Tactics to demonstrate a specialist service is cost effective

At the end of these talks it is hoped that all attendees will better appreciate the challenges that rheumatology faces, but be inspired by the opportunities, and the progress that colleagues have already made around the country.

Disclosures: The authors have declared no conflicts of interest.

IMPROVING WORK PARTICIPATION: NEW DEVELOPMENTS IN REDUCING WORK ABSENCE FOR PEOPLE WITH MUSCULOSKELETAL CONDITIONS

I89. WHAT NEXT FOR MUSCULOSKELETAL CONDITIONS AND WORK?

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The talk will consider the symptomatic and functional effects of musculoskeletal disorders – whether common or rare – and the implications and possible consequences for work and working life. Newer approaches to the management of these conditions in the context of threats to work and sickness absence are described. There is strong evidence that inadequate or delayed attention to functional capability compared with that given to clinical symptoms can jeopardize return to sustained work. The talk will emphasize the importance of early intervention to initiate and enable effective vocational rehabilitation and so minimize the risks to employment and wellbeing that are strongly associated with delay. An approach is described that draws together the interests and concerns of working age patients, employers and the multi-disciplinary expertise to achieve the best possible health and vocational outcomes, giving fresh emphasis to the role of the clinician in providing the advice and support necessary to ensure effective vocational rehabilitation.

Disclosures: The author has declared no conflicts of interest.

I90. WHAT HAS THE ‘FIT-NOTE’ DONE FOR US?

Bill Gunneyon1

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Abstract not provided
I91. RHEUMATOLOGY AND WORK: EVOLVING PRACTICE
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There is currently great interest in work and arthritis both for the benefits to society and to the individual and as justification for the use of expensive drugs.
There are many effects of arthritis on employment and cost effectiveness is crucial to future use of drugs.
The balance of benefits and costs of working are totally individual even without arthritis. Some illustrative cases will be presented.
Once work is lost it ceases to be a target.

Treat early and effectively.
Don’t disrupt work with treatment processes.
The current state of research in this area and some recent initiatives to minimize work disability will be reviewed.

Disclosures: The author has declared no conflicts of interest.

I92. THE BARRIERS FOR RETURNING TO WORK
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Abstract not provided.

WHAT’S NEW IN ANKYLOSING SPONDYLITIS PATHOGENESIS, ASSESSMENT AND TREATMENT

I93. OVERVIEW OF ANKYLOSING SPONDYLITIS GENETICS AND PATHOGENESIS
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Ankylosing Spondylitis (AS) is an immune-mediated inflammatory rheumatic disease with a major genetic contribution, and a likely ubiquitous environmental trigger. The heritability of AS is estimated to be as high as or >90%. The role of the Human Leukocyte Antigen HLA-B27 has been known for >30 years, and possession HLA-B27 contributes the greatest single genetic risk, albeit a minority of the total genetic risk, with many new genetic factors being identified. Thus recent GWAS studies have shown that ERAP polymorphisms are important in B27+ cases (implicating antigen presentation), and have also implicated cytokine pathways including the Th17 pathway. The talk will discuss the immune cells, cytokines and genes implicated by genetic studies in AS pathogenesis, before moving on to the role of HLA-B27.

HLA-B27 may cause AS because it has an abnormal cell biology, and recent research has shown that it can trigger both an intracellular “stress” response (which can include IL23 production) and can stimulate Th17 cells through interaction of abnormal cell-surface B27 forms with natural killer family receptors.

The tissue distribution of SpA is critical and recent theories explaining this mechanistically will be presented.
Understanding the immune pathogenesis of AS will give great opportunities for more effective targeted therapy. Additionally the efficacy (or otherwise) of biological therapies including anti-TNF and anti-Th17 gives us invaluable information about the roles of these pathways in disease.

Disclosures: The author has declared no conflicts of interest.

I94. WHAT’S NEW IN THE CLINICAL ASSESSMENT OF AS?
Desirée van der Heijde 1
1Rheumatology, Leiden University Medical Center, Leiden, Netherlands

In AS, there is a major focus on patient reported outcome measures. These include the BASDAI and BASFI as well as the ASAS 20 response criteria. Although these generally function well, there was a need to incorporate also objective signs of disease activity in the assessment. Especially, as the assessment of disease activity by patients and physicians are driven by completely different aspects and correlate only moderately. Particularly, the evaluation and use of more effective (expensive) TNF-blockers required better outcome measures. In addition to the ASAS 20 response criteria, more strict criteria have been developed and validated: ASAS 40 and ASAS 5/6 criteria. The ASAS-40 use the same four domains as the ASAS-20 response criteria (pain, function, morning stiffness, patient global) but now with 40% improvement and 2 units on a 0-10 scale in at least three domains without worsening in the remaining domain. The ASAS 5/6 criteria are fundamentally different as these include two objective domains: acute phase reactants and spinal mobility. At least five domains should show an improvement of 20%, consequently there needs to be improvement in at least one objective domain.

Another new development is the ASDAS which is a continuous measure of disease activity, similarly developed as the DAS for RA. The ASDAS includes patient reported outcomes as well as CRP. There has been an extensive validation programme showing that the ASDAS is a reliable, discriminative and sensitive measure, performing at least equally well to BASDAI but in most circumstances better. Cut-offs for clinically important as well as major improvement, and levels of inactive disease, moderate/high and very high disease activity have been defined. The use of the ASDAS as the primary outcome in a trial with a TNF-blocker reduces the number of patients by ~40% in comparison to the use of the BASDAI with maintaining similar power. As an alternative to the ASDAS with CRP there is an ASDAS with ESR to be used in cases where CRP is not available. However, the two ASDAS scores are not interchangeable.

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I95. NEW THERAPIES FOR ANKYLOSING SPONDYLITIS, TARGETING THE TH17 PATHWAY?
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Abstract not provided.