Latest data on adalimumab therapy for ankylosing spondylitis, rheumatoid arthritis and psoriatic arthritis

Results recently presented at the Annual European Congress of Rheumatology in Paris, France, suggests that adalimumab is safe and effective in patients with ankylosing spondylitis, rheumatoid arthritis and psoriatic arthritis who are not responding to anti-TNF therapy.

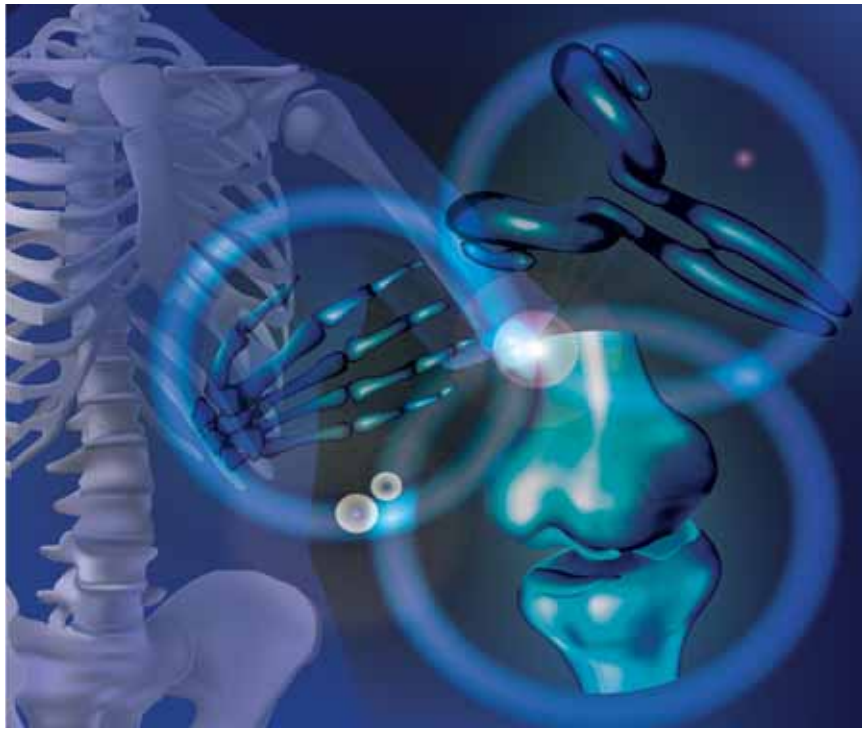
In a recent series of studies, adalimumab was found to be well tolerated and effective in patients with a number of arthritic conditions who had failed standard therapy, providing a potential second-line treatment option in these patients.

"The results of our study show that adalimumab offers new hope for those who have tried, but not responded well, to other treatment options for their diseases."

Patients with ankylosing spondylitis (AS), rheumatoid arthritis (RA) and psoriatic arthritis (PsA) are usually treated with the anti-TNF agents etanercept and/or infliximab. However, some patients are intolerant to these first-line options, while others fail to respond or become refractory to them over time. Adalimumab was found to be more effective in those patients who had become refractory to anti-TNF therapy or were intolerant of it than those who never responded to it.

"An increasing number of patients with rheumatic diseases, such as AS, RA or PsA, are experiencing an inadequate response to, or are intolerant of, treatment with existing anti-TNFs including etanercept or infliximab. The results of our study show that adalimumab offers new hope for those who have tried, but not responded well, to other treatment options for their diseases," commented Dr GR Burmester of Berlin University Hospital, Germany, who was involved in the studies.

Following 12 weeks of adalimumab therapy, 61% of AS patients who had become refractory to anti-TNF therapy achieved a 20% improvement in four areas that make up the AS severity index: pain, inflammation, function and patient's global assessment of disease activity. A total of 42% of patients gained a 40% improvement, with similar improvements seen in patients who were intolerant to anti-TNF therapy.



Of those who had experienced no response to previous treatment the response was lower, with 41 and 27% achieving improvements of 20 and 40%, respectively. Overall, the Bath Ankylosing Spondylitis Disease Activity Index (BASDAI) fell by -2.4 over the course of treatment with adalimumab in patients who had been previously treated with anti-TNF therapy, and by 2.9% in patients who had not received anti-TNF therapy previously.

Of patients with RA, over 65% of anti-TNF refractory and intolerant patients achieved a 20% improvement in symptoms according to the ACR scale when treated with adalimumab, while over 35% gained a 50% improvement. Among RA patients who never responded to TNF therapy, 51 and 26% achieved 20 and 50% symptom improvement, respectively. On average, RA patients who had been previously treated with anti-TNFs had a reduction in Disease Activity Scale of -1.9.

'Of patients with RA, over 65% of anti-TNF refractory and intolerant patients achieved a 20% improvement in symptoms when treated with adalimumab... while over 35% gained a 50% improvement.'

Of psoriatic arthritis patients who had received anti-TNF therapy in the past, 42% achieved a 50% symptom improvement. These patients had an average -2.1 drop in the Disease Activity Scale.

Patients with a disease duration of 9–12 years were enrolled into three open-label studies looking at AS, RA and PsA, with study populations of 1250, 6610 and 442 patients, respectively. Patients in all studies received a subcutaneous injection of 40 mg adalimumab every 2 weeks for 12 weeks in addition to their usual treatment (anti-TNF therapy discontinued).

Source: EULAR 2008, Paris, France, 11–14 June 2008. Abstract numbers: sat0299, ab0298, sat0317, thu0163. www.eular.org/

Priority Paper Alerts

LIGHT induces cell proliferation and inflammatory responses of rheumatoid arthritis synovial fibroblasts via lymphotoxin β-receptor.
Ishida S, Yamane S, Ochi T *et al*.: *J. Rheumatol.* 35(6), 960–968 (2008).

The aim of this study was to establish the effects of LIGHT (lymphotoxin-like, exhibits inducible expression and competes with herpes simplex virus glycoprotein D for herpes virus entry mediator, a receptor expressed by T lymphocytes) on the proliferation and gene expression of fibroblast-like synoviocytes (FLS) from patients with rheumatoid arthritis (RA). This study showed that LIGHT was upregulated in both synovial fluid and synovium of RA patients compared with osteoarthritis patients. Their results further suggested that LIGHT signaling via lymphotoxin-β receptor (LTβR) plays an important role in the pathogenesis of RA by affecting crucial processes such as the proliferation and activation of RA-FLS. This study identifies regulation of LIGHT-LTβR signaling as a new therapeutic target for RA treatment.

Alcohol consumption is associated with decreased risk of rheumatoid arthritis; results from two Scandinavian case–control studies.
Källberg H, Jacobsen S, Bengtsson C *et al*.: *Ann. Rheum. Dis.* DOI: 10.1136/ard.2007.086314 (2008) (Epub ahead of print).

This study aimed to determine the association between the risk of rheumatoid arthritis (RA) and alcohol consumption in combination with smoking and the HLA-DRB1 shared epitope. Data from two independent case–control studies of more than 2750 people with RA, the Swedish EIRA and the Danish CACORA, were used to estimate the odds ratio of developing RA for different amounts of alcohol consumed. Results showed an inverse association between alcohol intake and risk of RA and coupled with the recent demonstration of a preventative effect of alcohol in experimental arthritis, these results suggest that alcohol may protect against RA. These results suggest the potential role of lifestyle in determining the risk of developing RA and strongly emphasize stopping smoking, but not necessarily to abstain from alcohol in order to diminish the risk of RA. This study highlights the potential for RA preventative measures to be identified, and reinforces the importance of preventative measures.

Sugary soft drinks may increase risk of gout

At the Annual Meeting of the British Society for Rheumatology, Hyon K Choi, a rheumatologist at the University of British Columbia (Canada) stated that consumption of fructose-containing soft drinks may underlie the sudden increase in gout among American adults in recent decades.

> 'Serum uric acid levels increased significantly with increasing sugary soft-drink consumption.'

High-fructose corn syrup came on the market in 1967 and since then there has been a doubling of the incidence and prevalence of gout, particularly among the male population.

Preventative measures in gout treatment have emphasized limiting the consumption of purine-rich foods, as uric acid is a breakdown product of purine. However, it has come to light that the carbohydrate fructose can also increase uric acid, in a process involving the breakdown of adenosine triphosphate to adenosine monophosphate, the latter being a uric acid precursor, explained Choi. Fructose is also a key player in impaired glucose tolerance, increases in insulin resistance and hyperinsulinemia, which could indirectly elevate serum uric acid levels.

In a large study published by the *British Medical Journal*, 51,000 men aged 40–45 years were asked dietary questions and were followed since 1986. Since then, 755 new cases of gout were diagnosed with the multivariate relative risk of gout for five or six servings of sugary soft drinks being 1.29 and rising by 85% to 1.85 for two or more servings per day.

Another study published in *Arthritis & Rheumatism* surveyed 14,761 participants aged 20 years and older and found that serum uric acid levels increased significantly with increasing sugary soft-drink consumption. Multivariate ratios for hyperuricemia were 1.82 amongst those who consumed four or more servings per day.

After taking age and gender into account, individuals who drank six cups of coffee per day presented serum uric acid levels 0.43 mg/dl lower than those who did not drink coffee.

> 'Patients at risk for gout should alter their diet by limiting purine-rich foods such as beer and certain meats and avoiding sugary soft drinks and processed foods containing fructose.'

Choi suggested that patients at risk for gout should alter their diet by limiting purine-rich foods such as beer and certain meats and avoiding sugary soft drinks and processed foods containing fructose. However, of note is the fact that purine-rich vegetables, such as spinach and beans, do not alter uric acid levels. Choi has suggested that this may be due to different bioavailability.

Source: BSR Annual Meeting & BHPR Spring Meeting 2008. Liverpool, UK, 22–25 April 2008. www.bsrconference.org.uk/

Danger of musculoskeletal infections in children due to *Staphylococcus aureus*

Reports at the Annual Meeting of the Pediatric Orthopedic Society of North America highlighted community-acquired methicillin-resistant *Staphylococcus aureus* (MRSA) as a key factor in causing an increasing number of sudden, severe musculoskeletal infections in otherwise healthy children. John P Lubicky, Professor of Orthopedic Surgery at Indiana University (IN, USA) and Shawn R Gilbert of the University of Alabama at Birmingham (AL, USA) have both suggested that unfamiliarity with musculoskeletal presentation of community-acquired MRSA infections may be causing dangerous delays in diagnosis.

Lubicky set out in search of MRSA-positive musculoskeletal infections treated from January 2003 to February 2008, and found 12 community-acquired cases in children who did not have an underlying disease. He emphasized that many of these children are healthy, but had been active before falling sick. A total of 11 children required surgical interventions, and complications including pyomyositis occurred in seven children, septic arthritis in six and osteomyelitis in ten. Four children had septic emboli and one had pneumonia. Lubicky recommended MRI of the whole body to check for multiple remote sites, and advised that abscesses should be drained early and repeatedly.

He further suggested starting empiric antibiotic treatment against both methicillin-susceptible and methicillin-resistant bacterial strains. A 6-week course consisting of parenteral administration is usually adequate, followed by oral antibiotics against susceptible isolates.

In Alabama, when Gilbert and colleagues searched community-acquired septic arthritis or osteomyelitis cases from 2001 to 2007, 156 cases of culture-proven *S. aureus* infections were identified. When further studied, 66 cases were methicillin resistant, including eight cases of multifocal musculoskeletal infection. Over time, serious complications became more common. In the multifocal cases, four children presented with bacteremia, and six had septic emboli.

"Some joints that were affected weren't symptomatic, either because the children weren't having pain or they were so sick they couldn't tell you what was hurting," Gilbert explained.

Source: 2008 Annual Meeting of the Pediatric Orthopedic Society of North America. Albuquerque, NM, USA, 29 April – 3 May 2008. www.posna.org/meetings/anmeet/anmeet_08.asp

Immune-modulating drugs may carry risks of serious infections

Drugs commonly prescribed to treat immunological conditions such as rheumatoid arthritis and inflammatory bowel disease may carry the risk of serious infections other than the known risk of TB, according to the results of a new survey. These findings suggest that physicians should be vigilant not just for TB, but for a range of different infections in patients taking these drugs.

Autoimmune diseases encompass a wide range of different diseases, all of which are a consequence of the immune system wrongly identifying self-antigens as foreign, resulting in an aberrant immune response against the body's own cells and tissues. Prominent examples of autoimmune diseases include celiac disease, irritable bowel syndrome and rheumatoid arthritis.

Among the medications used to treat such disorders are drugs that curb the immune response through inhibiting the action of the proinflammatory cytokine TNF-α. It has already been established that these anti-TNF-α agents are associated with an increased risk of TB infection and, to date, much attention has been focused on cases of TB occurring in patients using these drugs.

A recently published article presented the results of a nationwide survey that was carried out in order to identify a range of serious infections in patients receiving anti-TNF-α compounds. In this survey, 426 infectious disease physicians, members of the Emerging Infections Network of the Infectious Diseases Society of America, reported on the infections they had observed within the previous 6 months. In this context, cases of *Staphylococcus aureus*, histoplasmosis and nontuberculosis mycobacterial infections were all reported more commonly than TB.

The results of this study suggest that patients using anti-TNF-α therapy might be at an increased risk of a number of serious infections, and that physicians should be cautious of infections other than TB in individuals who are either currently using or initiating anti-TNF-α therapy.

Source: Winthrop KL, Yamashita S, Beekmann SE, Polgreen PM; Infectious Diseases Society of America Emerging Infections Network: Mycobacterial and other serious infections in patients receiving antitumor necrosis factor and other newly approved biologic therapies: case finding through the Emerging Infections Network. *Clin. Infect. Dis.* 46(11), 1738–1740 (2008).

Heel ultrasound may predict fracture risk

It has been shown that an ultrasound exam of the heel may be an indicator of a heightened risk of fracture in women as a result of osteoporosis, according to a new multicenter study published in the *Journal of Radiology* this month. Radiation-free ultrasound of the heel may be used to better select women who need further bone density testing, such as a dual-energy x-ray absorptiometry exam.

According to the study's lead author Idris Guessous, senior research fellow in the Department of Internal Medicine at Lausanne University Hospital in Switzerland, "Osteoporosis is a major public health issue expected to increase in association with worldwide aging of the population". She continued, "The incidence of osteoporosis will outpace economic resources, and the development of strategies to better identify women who need to be tested is crucial".

Osteoporosis is a disease characterized by low bone mass and is associated with the deterioration of bone tissue. The National Osteoporosis Foundation have outlined that 10 million Americans currently have osteoporosis, and approximately 34 million more are estimated to have low bone mass, increasing their risk of developing the disease. Approximately 80% of those affected are women. Dr Guessous stated that, "Patients with osteoporosis are not optimally treated because of a lack of general awareness and that a simple prediction rule might be a useful clinical tool for healthcare providers to optimize osteoporosis screening".

"The incidence of osteoporosis will outpace economic resources, and the development of strategies to better identify women who need to be tested is crucial"

In this study, 6174 women aged between 70 and 85 years with no previous formal diagnosis of osteoporosis were screened with heel-bone qualitative ultrasound (QUS). The latter represents a diagnostic test used to assess bone density. QUS was used to calculate the stiffness index, which is an indicator of bone strength, at the heel.

Risk factors such as age, history of fractures or a recent fall and the results of the heel-bone ultrasound were used to develop a predictive rule to estimate the risk of fractures. The results showed that 1464 women (23.7%) were considered lower risk, and 4710 (76.3%) were considered higher risk.

Questionnaires were mailed to study participants every 6 months for up to 32 months to record any changes in medical conditions. In the group of higher risk women, 290 (6.1%) developed fractures whereas only 27 (1.8%) of the women in the lower risk group developed fractures. Of the 66 women who developed a hip fracture, 60 (90%) were in the higher risk group. Results from this study showed that not only is heel QUS effective at identifying high-risk patients who should receive further testing, but it may also be useful in identifying patients for whom further testing can be stopped. Dr Guessous concluded that, "Heel QUS in conjunction with clinical risk factors can be used to identify a population at a very low fracture probability in which no further diagnostic evaluation may be necessary".

Source: Guessous I, Cornuz J, Ruffieux C, Burckhardt P, Krieg MA: Osteoporotic fracture risk in elderly women: estimation with quantitative heel US and clinical risk factors. *Radiology* 248(1), 179–184 (2008).

US FDA recommends approval of rheumatoid arthritis drug

It has been announced by Roche, makers of the rheumatoid arthritis (RA) drug tocilizumab (Actemra™), that the Arthritis Advisory Committee of the US FDA has recommended approval of the drug, which is an interleukin (IL)-6 receptor-inhibiting monoclonal antibody for use in adults with moderate-to-severe RA. The vote was almost unanimous, with 10 to 1 in favor of the approval, and was made after the presentation of the results from five Phase III clinical trials. Three of these trials were carried out in patients who had not exhibited an adequate response to DMARDs; one trial was carried out in patients who had shown an inadequate response to TNF therapy; and the final trial compared Actemra to methotrexate, which is the current standard of care. The trials found that treatment with Actemra, either alone or in comination with other drugs, significantly reduced the symptoms of RA compared with current DMARDs.

"Based on the compelling data presented, and this positive recommendation from the committee, we remain hopeful that the FDA will approve Actemra for the treatment of RA."

"We are pleased with the FDA advisory committee's very positive recommendation for Actemra, which helps move this promising new therapy closer to becoming available for patients who suffer from the debilitating symptoms of RA," said William M Burns, CEO of Roche's Pharmaceuticals Division. "Based on the compelling data presented, and this positive recommendation from the committee, we remain hopeful that the FDA will approve Actemra for the treatment of RA and provide a new option to patients who are not achieving adequate symptom relief with current therapies".

Source: Roche Press Release
www.roche.com/med-cor-2008-07-30

Combination therapy may improve remission rates for rheumatoid arthritis sufferers

A combination of methotrexate and etanercept may improve remission rates within the first year of therapy for patients with active, early-stage, moderate-to-severe rheumatoid arthritis (RA), compared with methotrexate alone. This combination treatment may enable patients to achieve remission early on in their disease, thereby preventing serious joint damage.

Rheumatoid arthritis is a chronic autoimmune disorder of unknown etiology, whereby the body mounts an aberrant attack on the joints, causing inflammation and damage. Joints can become red, swollen, tender and stiff, leading to substantial loss of function and mobility.

Various treatments for the condition are available, with the primary aim of therapy being to induce remission, usually by reducing or eliminating the inflammation. If the disease is successfully brought into remission, especially at an early stage when it can be at its most destructive, it can be possible to avert serious damage to the joints.

In a recent trial – known as the COmbination of Methotrexate and ETanercept in Active Early Rheumatoid Arthritis (COMET) study – researchers investigated the potential treatment methods for RA, comparing a combination of methotrexate plus etanercept with methotrexate alone. In total, 543 patients were randomly assigned to receive either individual or combination therapy and, after 1 year, individuals were followed up to assess the condition of their disease.

The results of this study are very promising, providing strong evidence to support the use of methotrexate in combination with etanercept for the treatment of RA; patients receiving this combination therapy were almost twice as likely to achieve remission, with 50% of such patients achieving remission, compared with just 28% of patients receiving methotrexate only.

Perhaps the single most important benefit to those patients who were able to bring their RA into remission early was their increased functionality. Indeed, the maintenance of mobility afforded by the combination treatment certainly appears to have had a discernable knock-on effect on the ability of RA patients to remain in employment: "The COMET trial showed that patients who received combination therapy have a nearly threefold reduction in work stoppage compared with those who took high-dose methotrexate alone. The ability to remain a productive member of the workforce has implications for patients, employers and society as a whole", say the authors.

Source: Emery P, Breedveld FC, Hall S *et al.*: Comparison of methotrexate monotherapy with a combination of methotrexate and etanercept in active, early, moderate to severe rheumatoid arthritis (COMET): a randomised, double-blind, parallel treatment trial. *Lancet* 372(9636), 375–382 (2008).

Bone fracture risk in men with prostate cancer

Researchers at the Garvan Institute for Medical Research (Sydney, Australia) have revealed a correlation between prostate cancer and an increased risk of bone fracture.

Data analysis from the Dubbo Osteoporosis Epidemiology Study at the institute suggests that men with prostate cancer face a 50% higher risk of fracture, which increases to almost double the risk if they are receiving treatment.

Tuan Nguyan, the Associate Professor who instigated the study after hearing speculation on the topic, stated "This is a controversial area, which has been under discussion for at least 3 years. The results suggest a link between the two diseases, although we still do not understand the mechanisms." Nguyan and colleagues analyzed 822 males from Dubbo (Australia) for almost 20 years. All the males were aged 60 years or over in 1989 when the study began. In total, 43 of the 822 males subsequently developed prostate cancer. Of these, 22 received androgendeprivation therapy (ADT) and 21 did not. Results revealed that, in comparison with the males without prostate cancer, those with the disease showed a 50% increase in the risk of fracture. For patients undergoing ADT, the risk was increased approximately twofold.

Nguyan commented that "The results have important implications in practice for several reasons. First, most of the men who developed prostate cancer started out with a higher than average bone mineral density (BMD). Second, developing prostate cancer clearly increased their risk of fracture. Third, ADT treatment doubled their risk of fracture." It is evident that the increased BMD in males with prostate cancer did not offer them any more protection from fracture, and the mechanisms underlying this process are not yet understood. "Osteoporosis in men often remains untreated, even after a fracture. It is highly unlikely, therefore, that any of the men at higher risk will be receiving antifracture therapy," Nguyan stated.

It can be deduced from this study that patients with prostate cancer (particularly those receiving ADT) should consider being tested for osteoporosis. Nguyan concluded: "More and more we are seeing ways in which diseases are connected. In treating one disease, we must be careful not to increase the risk of another. As we understand these connections, we learn how better to treat the whole person."

Source: Ahlborg HG, Nguyen ND, Center JR, Eisman JA, Nguyen TV: Incidence and risk factors for low trauma fractures in men with prostate cancer. *Bone* 43(3), 556–560 (2008).

American College of Rheumatology issues new arthritis guidelines

New guidelines for the treatment of rheumatoid arthritis have been issued by the ACR and coauthored by doctors at the University of Alabama at Birmingham (UAB; AL, USA), and aim to prevent joint damage and disability. The last set of RA treatment guidelines from the ACR was published in 2002.

"The recommendations developed are not intended to be used in a 'cookbook' or prescriptive manner, or to limit a physician's clinical judgment," stated lead author Kenneth Saag, a professor in the UAB Division of Clinical Immunology and Rheumatology, "They provide guidance based on clinical evidence and expert panel input".

> "The recommendations developed are not intended to be used in a 'cookbook' or prescriptive manner, or to limit a physician's clinical judgment,"

The recommendations focus on several classes of anti-arthritic drugs, such as DMARDs. Newer, genetically engineered DMARDs (biologics) are being used in combination with existing drugs, which is improving the treatment of RA, in particular by reducing damaging inflammation. Key recommendations include: methotrexate or leflunomide therapy for most RA patients; anti-TNF agents etanercept, infliximab or adalimumab along with methotrexate can be used in new or early RA cases with worsening and severe symptoms; treatment with methotrexate, leflunomide or biologics should not be initiated or resumed if RA patients have active bacterial infection, shingles (herpes-zoster), hepatitis B, hepatitis C and active or latent TB; and anti-TNF agents should not be prescribed to patients with a history of heart failure, lymphoma or multiple sclerosis. The full guidelines are available on the ACR website.

Source: American College of Rheumatology www.rheumatology.org

Study finds that obese patients should be offered knee-replacement surgery

It has been reported in a small study published in the *Annals of the Rheumatic Diseases* that there is no justification for denying obese patients knee-replacement surgery. It was found that obese patients benefit almost as much as other patients.

> 'The study concluded that the improvements in physical function following TKA are sustained beyond 5 years, and that there appears to be no justification to withhold the procedure from obese individuals.'

The study followed-up 325 patients over the age of 45 years from three English health districts approximately 6 years after they had undergone total knee arthroplasty (TKA), along with 363 controls who were matched for age and sex but had not undergone knee replacement. The study determined the participants' age, sex, comorbidities, body mass index (BMI) functional status and preoperative radiographic severity of osteoarthritis. Their functional status was then assessed at follow-up via a postal questionnaire. The study found that the patients who had undergone TKA experienced an improvement in physical function score from their initial levels, whereas there was a deterioration in the control patients. The improvement in physical function was found to be smaller in obese compared with non-obese patients, but this compared favorably with the decline observed in the obese control patients. The study concluded that the improvements in physical function following TKA are sustained beyond 5 years, and that there appears to be no justification to withhold the procedure from obese individuals.

At present, approximately 55,000 knee replacements are carried out in England due to osteoarthritis. However, in some parts of the country the surgery is restricted to individuals with a BMI of less than 30 kg/m^2.

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"The long-term improvement in physical function that we observed in patients who have undergone TKA is striking when set against the decline that occurred in [the comparison group]," say the authors. "These benefits extend to patients [who are obese] and, provided appropriate selection criteria are applied with regard to fitness for surgery, there seems no justification for withholding [knee-replacement surgery] from patients who are obese," they conclude.

Source: Cushnaghan J, Bennett J, Reading I *et al.*: Long-term outcome following total knee arthroplasty: a controlled longitudinal study. *Ann. Rheum. Dis.* DOI: 10.1136/ard.2008.093229 (2008) (Epub ahead of print).

Arthritis drugs could prove useful in the treatment of other autoimmune conditions

"In autoimmune diseases, such as arthritis, we discovered that cytokines are over-produced, causing the immune system to fight itself, resulting in inflammation and tissue destruction."

A team of researchers led by Professor Marc Feldmann from Imperial College London, UK, was involved in the development of three anti-TNF-α drugs, infliximab, etanercept and adalimumab. These drugs have proved to be successful in the treatment of rheumatoid arthritis. Following on from further study, Prof. Feldmann now believes that these drugs may also prove useful in the treatment of other medical conditions, such as atherosclerosis.

"In autoimmune diseases, such as arthritis, we discovered that cytokines are over-produced, causing the immune system to fight itself, resulting in inflammation and tissue destruction," said Prof. Feldmann. "We further found that by blocking just one cytokine – TNF-α – we were able to block all the cytokines involved in the inflammation, with remarkable clinical results".

The blockade of TNF-α has also been successful in the treatment of many other chronic inflammatory conditions, including Crohn's disease, psoriasis, psoriatic arthritis, ankylosing spondylitis and ulcerative colitis. Other research in the newly emerging field of 'anti-cytokine therapy' has shown that there is promise in this area for the treatment of even more conditions, such as acute alcoholic hepatitis. However, Prof. Feldmann believes they have further potential in the treatment of other conditions; this research will be discussed in his presentation at the 2008 Congress of European Pharmacological Societies. Prof. Feldmann said: "During the conference I will be discussing the potential therapeutic targets in tissue affected by atherosclerosis, which is caused by a chronic inflammatory response in the walls of the arteries, in large part, caused by an excessive immune response to cholesterol. I will also discuss whether it is possible – even likely – that cytokines play a critical role in all diseases involving multiple biological processes, thus providing therapeutic targets for all unmet medical needs".

'The blockade of TNF-α has also been successful in the treatment of many other chronic inflammatory conditions, including Crohn's disease, psoriasis, psoriatic arthritis, ankylosing spondylitis and ulcerative colitis.'

Source: 2008 Congress of European Pharmacological Societies (EPHAR) www.ephar2008.org/

About the Bulletin Board

The Bulletin Board highlights some of the most important events and research in the field of rheumatology. If you have newsworthy information, please contact:

Shreeya Nanda, Commissioning Editor,
Future Rheumatology;
Future Medicine Ltd,
Unitec House, 2 Albert Place,
London N3 1QB, UK
Tel.: +44 (0)20 8371 6090;
Fax: +44 (0)20 8343 2313
s.nanda@futuremedicine.com