shortcoming of time-averaged estimates is that they do not really *predict* radiological outcome.

Objectives To investigate, using multivariate longitudinal regression analysis, whether disease activity can *predict* radiological progression with a fixed time lag of 6 months.

Methods 5 years follow-up data of RA-patients having participated in the COBRA trial (a 56-weeks double blind controlled trial in 146 patients with early, DMARD-naïve, RA which compared COBRA-combination therapy with sulfasalazine monotherapy) were used. After the completion of the trial, patients had been followed for another 4 years, and X-rays of hands and feet, as well as assessments for disease activity, were obtained with 6 months intervals. X-rays were scored according to the van der Heijde-modified Sharp-method in a chronological order. The 28 joints disease activity score (DAS28) was calculated. Generalised estimating equations (GEE) was used to study the relationship between DAS28 and time (explanatory variables) and radiological damage (dependent variable). Every individual damage score was adjusted for its previous score (6 months earlier) (autoregression) in order to study radiological

Results The interpretation of the beta's in the Table 1 is that each additional DAS28 point, measured at any time point, predicts a mean radiological progression of 0.52 Sharp-points during the following 6 months interval. The negative sign for time indicates that radiological progression in this study decreased over time.

Abstract THU0152 Table 1

	Beta	95% CI	P-value
Time	-1.02	-1.80 to -0.24	0.01
DAS28 (6 m. earlier)	0.52	0.20 to 0.68	0.001

Conclusion By using GEE we have shown that DAS measured at any time point during a 5 years follow-up predicts radiological progression during the following 6 months. GEE is an appropriate method to study longitudinal relationships between outcome and explanatory variables in RA.

THU0153 OPEN-LABEL EVALUATION OF THE QUALITY OF LIFE OF PATIENTS TREATED WITH ETANERCEPT IN COMMON RHEUMATOLOGY USAGE (ECRU)

¹J Hermann, ²A Aytekin, ³J Bröll, ⁴A Dunky, ²J Nowak, ⁵F Singer, ⁶J Smolen. ¹Med. Department LKH, Graz; ²Med. Department, Wyeht Lederle, Wien; ³2. Med. Department, KFI, Wien; ⁴5. Med. Department, Wilheminspital, Wien; ⁵SKA, Laab Im Walde; ⁶Int. Med. III, AHK, Wien, Austria

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Background Tumour Necrosis Factor-alpha (TNF α) plays an important role in the inflammatory processes of RA and the resulting joint pathology. Etanercept is a dimeric fusion protein consisting of two p75 TNF α receptors linked to the Fc portion of the human IgG1. This protein can bind and inactivate up to two free molecules of TNF α . The safety and efficacy of etanercept has been demonstrated in human clinical trials of early RA and active RA.

Objectives This current study was designed to further evaluate safety and efficacy of etanercept. One of the objectives was also to evaluate quality of life of patients treated with this substance by means of SF-36.

Methods This study was conducted in 55 Austrian outpatients with active RA who have failed at least one disease-modifying anti-rheumatic drug (DMARD). Each patient received twice-weekly subcutaneous injections of etanercept 25 mg administered over a treatment period of 16 weeks. Stable doses of methotrexate (MTX) and steroids were permitted. For SF-36 interpretation the normal ranges of the most recent published Canadian data and SF-36 Manual were used.

Results At baseline, all 8 domains revealed substantially lower score than observed in healthy subjects. Five of them indicated level of disability of 50% or more.

At week 16, all domains improved. Observed improvements ranged from 15 (general health perceptions) to 42,1 points (role function limited by physical problems). All were clinically significant (more than 5 points improvement). Two domains reached almost level characteristic for a healthy population: social functioning (97% of normal) and mental health (92% of normal).

Conclusion

- In general, study patients at baseline demonstrated poor functioning in all domains of SF-36 QoL assessment; in five domains their functioning was at least 50% worse than in healthy subjects.
- The study was conducted in a heavily pretreated population. In spite of that, substantial improvement in the course of the study was observed.
- Improvement in all domains could be observed already after one week of treatment. At week 16, substantial improvement in all 8 domains was recorded, in two of them reaching almost normal ranges.
- The significant improvement in Physical Function and Bodily Pain also suggest that work-difficulty may be delayed or prevented in patients treated with etanercept.

THU0154 ATLANTOAXIAL DISORDERS IN RHEUMATOID ARTHRITIS ASSOCIATE WITH DESTRUCTIONS OF THE PERIPHERAL AND SHOULDER JOINTS, AND DECREASED BONE MINERAL DENSITY

¹MH Neva, ²A Kotaniemi, ²K Kaarela, ³JT Lehtinen, ²P Isomäki, ³EA Belt, ²H Kautiainen, ²M Kauppi. ¹Department of Surgery, Tampere University Hospital, Tampere; ²Department of Rheumatology; ³Department of Orthopaedic Surgery, Rheumatism Foundation Hospital, Heinola, Finland

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Background Anterior atlantoaxial subluxation (aAAS) and atlantoaxial impaction (AAI) are common cervical spine disorders in advanced rheumatoid arthritis (RA;1). Earlier studies have suggested the association of the cervical spine disorders with peripheral joint destruction and osteoporosis of the cervical spine.

Objectives To evaluate whether atlantoaxial disorders (aAAS and AAI) associate with destruction of shoulder- (glenohumeral [GH] or acromioclavicular [AC]) or peripheral joints, and bone mineral density (BMD) in patients who have suffered RA for 20-years.

Methods An inception cohort of 103 patients with rheumatoid factor (RF) positive RA were followed up for 20 years, a total of 68 patients attended the 20-year check-up.¹ The shoulder radiographs were taken at the 15-year examination, and the cervical spine, hand and foot radiographs at the 20-year follow-up. Moreover, the BMD of the lumbar spine and femoral neck were measured at the 20-year check-up. Thereafter, the occurrence and severity of atlantoaxial disorders were compared with the Larsen scores of peripheral and shoulder (GH and AC) joints, and with BMD of the lumbar spine and femoral neck.

Results A positive relationship was detected between the occurrence of atlantoaxial disorders and the destruction of both shoulder ($p < 0.001$) and peripheral ($p = 0.001$) joints. In addition, the extent of aAAS and the severity of AAI correlated positively with the grade of destruction in the evaluated joints. Furthermore, a positive relationship was found between the occurrence of the atlantoaxial disorders and a decrease in BMD of the lumbar spine ($p = 0.13$) and femoral neck ($p = 0.019$).

Conclusion Patients with severe RA have an increased risk for atlantoaxial disorders, and the co-existence of shoulder and cervical spine disorders makes the differential diagnosis of shoulder and neck pain challenging. In addition, osteoporosis may increase the risk for severe complications caused by cervical spine disorders in patients with RA.

REFERENCE

- 1 Neva MH, Kaarela K, Kauppi M. Prevalence of radiological changes in the cervical spine – a cross-sectional study after 20 years from presentation of rheumatoid arthritis. *J Rheumatol*. 2000;**27**:90–3

THU0155 IMPACT OF RHEUMATOID ARTHRITIS ON THE OUTCOMES OF 1093 PATIENTS, AND THE USE OF DISEASE MODIFYING ANTI RHEUMATIC DRUGS SINCE DIAGNOSIS

T Sokka, P Hannonen. Department of Medicine, Jyväskylä Central Hospital, Jyväskylä, Finland

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Background Severe long-term consequences of rheumatoid arthritis (RA) are well known, while the existing evidence suggests that early and active use of disease modifying anti rheumatic drugs (DMARDs) may improve the outcomes.

Objectives To study the impact of disease on the outcomes of patients with RA, and to describe their use of DMARDs over time.

Methods In August 2000, a questionnaire was sent to 1500 patients with RA who had been seen in Jyväskylä Central Hospital since 1995 and were included in the RA database of the hospital. A total of 1093 (73%) patients replied and were included in the study. The overall impact of RA was assessed by asking "How much does RA impact your life?". Response alternatives were 1)"Not at all", 2)"Some", 3)"Much", and 4)"Very much". The questionnaire also assessed functional capacity by Health Assessment Questionnaire (HAQ, range 0–3), pain and general health by 10 cm visual analogue scale (VAS, range 0–100), and current usage of DMARDs. Data concerning demographics, "diagnostic delay", and previous use of DMARDs were available through the RA database. The intensity of the use of DMARDs was calculated as the percentage of the time on DMARDs from the total time elapsed since the diagnosis to August 2000.

Results A total of 13% of the patients did not experience any impact from RA, while 48% experienced "some", 27% "much", and 12% were impacted "very much". Those experiencing "very much" level of impact by RA were older, had longer disease duration, had less education, were more often rheumatoid factor positive, had worse HAQ and general health scores, had more pain, and also had longer diagnostic delay, and less use of DMARDs over time than those experiencing "no" or "some" impact by the disease (Table 1: mean values for variables are shown except median for DMARD%).

Abstract THU0155 Table 1

	None	Some	Much	Very much
Age	57.6	60.7	64.0	67.2
Duration	7.3	9.7	13.2	18.4
RF+, %	54%	67%	75%	85%
HAQ	0.1	0.5	1.2	2.1
Pain VAS	8	26	45	63
Dx delay (mo)	9	15	20	17
DMARD% (median)	99%	99%	97%	87%

Conclusion In spite of extensive therapy with DMARDs, RA causes considerable impact in the majority of patients in the long term. Shortening of diagnostic delay (improvement in the cooperation between primary and specialist care) and continuous active therapy with available DMARDs should be emphasised to decrease disease impact.

THU0156 DO GLUCOCORTICOIDS AFFECT MUSCLE STRENGTH IN RHEUMATOID ARTHRITIS (RA)?

¹OR Madsen, ²C Egsmose. ¹Department of Rheumatology, Herlev and Amager University Hospitals, Herlev; ²Department of Rheumatology, Bispebjerg and Gentofte University Hospitals, Copenhagen, Denmark

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Background It is common knowledge that treatment with steroids is accompanied by muscle wasting. However, only very limited data on the effect of steroids on muscle strength in RA are available in the literature.

Objectives We examined the effect of cumulative and current prednisolone dose on leg muscle strength in women with RA.

Methods Seventy-five women with RA according to the 1987 ACR criteria were included. Mean age was 62 ± 13 years, median disease duration 11 (1–51) years. Sixty-three were or had been on steroids [median cumulative prednisolone dose (CPD) 2.5 (0.05–66) g]. Maximal voluntary knee extensor strength (KES) and flexor strength (KFS) (Nm) were assessed at 30°/s by an isokinetic dynamometer. Based on the 25th and 75th centiles of the distribution of CPD, the women were stratified into those who had received a) 100 mg prednisolone or less ($n = 21$, median CPD = 0 mg), b) more than 100 mg but less than 6095 mg prednisolone ($n = 35$, median CPD = 2000 mg), and c) 6095 mg or more ($n = 19$, median CPD = 10771 mg). Adjustment for between-group differences in age, height, weight and disease duration was performed using ANOVA with correction for covariates.

Results The following adjusted mean values for KES were found (low, central and high CPD range): 84 Nm, 76 Nm and 80 Nm (ns). The corresponding values for KFS were 44 Nm, 42 Nm and 42 Nm (ns).

In currently treated subjects ($n = 25$) adjusted mean values for KES and KFS were 75 Nm and 39 Nm, respectively, vs. 70 Nm and 33 Nm in never-treated subjects ($n = 12$) (ns).

Conclusion In conclusion, muscle strength was not associated with cumulative or current steroid dose in women with RA.