

研究成果の刊行に関する一覧表(平成25年度)

研究分担者氏名: 岸本暢将

雑誌

	発表者氏名	論文タイトル名	発表誌名	巻号	ページ	出版年
1	Yoshida K, Sung YK, Kavanaugh A, Bae SC, Weinblatt ME, <b>Kishimoto M.</b> et al	Biologic discontinuation studies: a systematic review of methods	Ann Rheum Dis	online first on May 30	online first on May 30	2013(H25)
2	Yoshida K, Radner H, Kavanaugh A, Sung YK, Bae SC, <b>Kishimoto M.</b> et al	Use of data from multiple registries in studying biologic discontinuation: challenges and opportunities.	Clin Exp Rheumatol	In press	In press	2013(H25)
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研究成果の刊行に関する一覧表(平成25年度)

研究分担者氏名:小池隆夫

雑誌

	発表者氏名	論文タイトル名	発表誌名	巻号	ページ	出版年
1	Kamishima T, Kato M, Atsumi T, <u>Koike T</u> , Onodera Y, Terae S.	Contrast-enhanced whole body joint MR Imaging in rheumatoid patients on tumour necrosis factor-alpha agents: a pilot study to evaluate novel scoring system for MR synovitis.	Clin Exp Rheumatol	31(1)	154	2013
2	Ikeda K, Seto Y, Narita A, kawakami A, Kawahito Y, Ito H, Matsushita I, Ohno S, Nishida K, Suzuki T, Kaneko A, Ogasawara M, Fukae J, Henmi M, Sumida T, Kamishima T, <u>Koike T</u> .	Ultrasound assessment of synovial pathologic features in rheumatoid arthritis using comprehensive multi-plane images of the 2nd metacarpophalangeal joint - Identification of the components which are reliable and influential on the global assessment of the whole joint.	Arthritis Rheum		in press	2013
3	<u>Koike T</u> .	IgG4-related disease: why high IgG4 and fibrosis.	Arthritis Res Ther	15(1)	103	2013
4	Fukae J, Isobe M, Kitano A, Henmi M, Sakamoto F, Narita A, Ito T, Mitsuzaki A, Shimizu M, Tanimura K, Matsuhashi M, Kamishima T, Atsumi T, <u>Koike T</u> .	Positive synovial vascularity in patients with low disease activity indicates smouldering inflammation leading to joint damage in rheumatoid arthritis: time-integrated joint inflammation estimated by synovial vascularity in each finger joint.	Rheumatology	52	523-528	2013
5	Fukae J, Tanimura K, Atsumi T, <u>Koike T</u> .	Sonographic synovial vascularity of synovitis in rheumatoid arthritis.	Rheumatology		in press	
6	Ikeda K, Seto Y, Ohno S, Sakamoto F, Henmi M, Fukae J, Narita A, Nakagomi D, Nakajima H, Tanimura K, <u>Koike T</u> .	Analysis of the factors which influence the measurement of synovial power Doppler signals with semi-quantitative and quantitative measures - a pilot multicenter exercise in Japan.	Mod Rheumatol		in press	
7	Ikeda K, <u>Koike T</u> , Wakefield R, Emery P.	Is the glass half full or half empty?	Arthritis Rheum		in press	
8	Takamura A, Hirata S, Nagasawa H, Kameda H, Seto Y, Atsumi T, Dohi M, <u>Koike T</u> , Miyasaka N,	A retrospective study of serum KL-6 levels during treatment with biological disease-modifying antirheumatic drugs in rheumatoid arthritis patients: a report from the Ad Hoc Committee for Safety of Biological DMARDs of the Japan College of Rheumatology.	Mod Rheumatol	23(2)	297-303	2013
9	Harigai M, Takamura A, Atsumi T, Dohi M, Hirata S, Kameda H, Nagasawa H, Seto Y, <u>Koike T</u> , Miyasaka N.	Elevation of KL-6 serum levels in clinical trials of tumor necrosis factor inhibitors in patients with rheumatoid arthritis: a report from the Japan College of Rheumatology Ad Hoc Committee for Safety of Biological DMARDs.	Mod Rheumatol.	23(2)	284-96	2013
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研究分担者氏名:小池隆夫

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	著者氏名	論文タイトル名	書籍全体の編集者名	出版社名	出版年
			書籍名	出版地	ページ
1	坊垣 幸、小池隆夫	抗リン脂質抗体症候群	免疫・アレルギー疾患 イラストレイテッド	株)羊土社 東京	2013 141-145
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研究分担者氏名:小嶋俊久

雑誌

	発表者氏名	論文タイトル名	発表誌名	巻号	ページ	出版年
1	Masayo Kojima MD, PhD, Toshihisa Kojima MD, PhD, Sadao Suzuki MD, PhD, Nobunori Takahashi MD, PhD, Koji Funahashi MD, PhD, Daizo Kato MD, Masahiro Hanabayashi MD, Shinya Hirabara MD, PhD, Shuji Asai MD, PhD, and Naoki Ishiguro MD, PhD	Alexithymia, Depression, Inflammation and Pain in Patients with Rheumatoid Arthritis.	Arthritis Care & Research.	in press		2013
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5	Hayashi M, Kuraishi H, Masubuchi T, Furihata K, Aida Y, Kobayakawa T, Deguchi M, Kojima T, Ishiguro N, Kanamono T.	A Fatal Case of Relapsing Pneumonia Caused by Legionella pneumophila in a Patient with Rheumatoid Arthritis After Two Injections of Adalimumab.	Clin Med Insights Case Rep.	12	101-6	2013
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	著者氏名	論文タイトル名	書籍全体の編集者名	出版社名	出版年
			書籍名	出版地	ページ
1	小嶋俊久、石黒直樹	VII ケースから学ぶ上手な薬物療法 3. etanerceptが効果的であったケース[ケース1/ケース2/ケース3]	関節リウマチ治療実践バイブル	南江堂 東京	2013 220-224
2	小嶋俊久、石黒直樹	I 押さえておくべき基本知識 6. 関節の構造と機能	関節リウマチ治療実践バイブル	南江堂 東京	2013 16-18
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研究分担者氏名:小嶋 雅代

雑誌

	発表者氏名	論文タイトル名	発表誌名	巻号	ページ	出版年
1	小嶋 雅代, 小嶋 俊久, 難波 天夫, 茂木 七香, 大谷 尚, 高橋 伸典, 加藤 大三, 舟橋 康治, 松原 浩之, 服部 陽介, 石黒 直樹	関節リウマチ患者は薬物治療の変化をどのように感じているか フォーカスグループによる質的研究	中部リウマチ	43	17-20	2013
2	小嶋 雅代	周術期患者における死亡率と心血管イベントの発現	リウマチ科	49	471-478	2013
3	Kojima M, Kojima T, Suzuki S, Takahashi N, Funahashi K, Kato D, Hanabayashi M, Hirabara S, Asai S, Ishiguro N.	Alexithymia, Depression, Inflammation and Pain in Patients with Rheumatoid Arthritis.	Arthritis Care Res			in Press
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研究分担者氏名:中山健夫

雑誌

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1	中山健夫	臨床研究における利益相反(COI)マネジメントの重要性	臨床栄養	122	408-9	2013
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研究分担者氏名:西田圭一郎

雑誌

	発表者氏名	論文タイトル名	発表誌名	巻号	ページ	出版年
1	那須 義久, 西田 圭一郎	上肢のリウマチ診断と治療, II 治療 生物学的製剤が与えたリウマチ関節外科手術の変化	関節外科	32(4)	382-388	2013
2	Nishida K, Nasu Y, Hashizume K, Nakahara R, Ozawa M, Harada R, Machida T, Ozaki T	Abatacept management during the perioperative period in patients with rheumatoid arthritis: report on eight orthopaedic procedures	Mod Rheumatol			2013
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研究分担者氏名: 針谷正祥

雑誌

	発表者氏名	論文タイトル名	発表誌名	巻号	ページ	出版年
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2	<u>Harigai M.</u> , Takamura A, Atsumi T, Dohi M, Hirata S, Kameda H, Nagasawa H, Seto Y, Koike T, Miyasaka N.	Elevation of KL-6 serum levels in clinical trials of tumor necrosis factor inhibitors in patients with rheumatoid arthritis: a report from the Japan College of Rheumatology Ad Hoc Committee for Safety of Biological DMARDs.	Mod Rheumatol.	23(2)	284-96	2013
3	Takeuchi T, <u>Harigai M.</u> , Tanaka Y, Yamanaka H, Ishiguro N, Yamamoto K, Miyasaka N, Koike T, Kanazawa M, Oba T, Yoshinari T, Baker D, the GO-MONO study group.	Golimumab monotherapy in Japanese patients with active rheumatoid arthritis despite prior treatment with disease-modifying antirheumatic drugs: results of the phase 2/3, multicentre, randomised, double-blind, placebo-controlled GO-MONO study through 24 weeks.	Ann Rheum Dis.	72(9)	1488-95	2013
4	Takamura A, Hirata S, Nagasawa H, Kameda H, Seto Y, Atsumi T, Dohi M, Koike T, Miyasaka N, <u>Harigai M.</u>	A retrospective study of serum KL-6 levels during treatment with biological disease-modifying antirheumatic drugs in rheumatoid arthritis patients: a report from the Ad Hoc Committee for Safety of Biological DMARDs of the Japan College of Rheumatology.	Mod Rheumatol.	23(2)	297-303	2013
5	Takeuchi T, <u>Harigai M.</u> , Tanaka Y, Yamanaka H, Ishiguro N, Yamamoto K, Miyasaka N, Koike T, Kanazawa M, Oba T, Yoshinari T, Baker D	Golimumab monotherapy in Japanese patients with active rheumatoid arthritis despite prior treatment with disease-modifying antirheumatic drugs: results of the phase 2/3, multicentre, randomised, double-blind, placebo-controlled GO-MONO study through 24 weeks	Ann Rheum Dis.	72(9)	1488-95	2013
6	Kawasaki A, Inoue N, Ajimi C, Sada K, Kobayashi, Yamada H, Furukawa H, Sumida T, Tohma S, Miyasaka N, Matsuo S, Ozaki S, Hashimoto H, Makino H, <u>Harigai M.</u> , Tsuchiya N	Association of IRF5 polymorphism with MPO-ANCA positive vasculitis in a Japanese population	Genes Immun	advance online publication	advance online publication	2013
7	針谷正祥	結節性多発動脈炎(特集 血管炎の診断と治療-新分類CHCC2012に沿って)	医学のあゆみ	246(1)	21-26	2013
8	Dougados M, Soubrier M, Antunez A, Balint P, Balsa A, Buch MH, Casado G, Detert J, El-Zorkany B, Emery P, Hajjaj-Hassouni N, <u>Harigai M.</u> , Luo SF, Kurucz R, Maciel G, Mola EM, Montecucco CM, McInnes I, Radner H, Smolen JS, Song YW, Vonkeman HE, Winthrop K, Kay J.	Prevalence of comorbidities in rheumatoid arthritis and evaluation of their monitoring: results of an international, cross-sectional study (COMORA).	Ann Rheum Dis.	73 (1)	Aug-66	2014
9	Cho SK, Sakai R, Nanki T, Koike R, Watanabe K, Yamazaki H, Nagasawa H, Tanaka Y, Nakajima A, Yasuda S, Ihata A, Ezawa K, Won S, Choi CB, Sung YK, Kim TH, Jun JB, Yoo DH, Miyasaka N, Bae SC, <u>Harigai M.</u> for the RESEARCH investigators and the REAL Study Group.	A comparison of incidence and risk factors for serious adverse events in rheumatoid arthritis patients with etanercept or adalimumab in Korea and Japan.	Mod Rheumatol.		2013 [Epub ahead of print]	
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研究成果の刊行に関する一覧表(平成25年度)

研究分担者氏名: 針谷正祥

書籍

	著者氏名	論文タイトル名	書籍全体の編集者名	出版社名	出版年
			書籍名	出版地	ページ
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			ポケットサイズのステロイド診療マニュアル	東京	27-32
2	針谷正祥	治療につながる診断力	竹内勤	南江堂	2013
			関節リウマチ治療【実践バイブル】	東京	23-27
3	針谷正祥	既往感染例におけるHBV再活性化の実態と対策④リウマチ性疾患・自己免疫疾患	持田智	医薬ジャーナル社	2013
			de novo B型肝炎(HBV再活性化予防のための基礎知識)	大阪	146-153
4	針谷正祥	サイトカイン(基礎編 免疫のしくみ)	田中良哉	羊土社	2013
			免疫・アレルギー疾患イラストレイテッド	東京	77-86
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研究分担者氏名: 平田 信太郎

雑誌

	発表者氏名	論文タイトル名	発表誌名	巻号	ページ	出版年
1	Takamura A, Hirata S, Nagasawa H, Kameda H, Seto Y, Atsumi T, Dohi M, Koike T, Miyasaka N, Harigai M.	A retrospective study of serum KL-6 levels during treatment with biological disease-modifying antirheumatic drugs in rheumatoid arthritis patients: a report from the Ad Hoc Committee for Safety of Biological DMARDs of the Japan College of Rheumatology.	Mod Rheumatol.	23	297-303.	2013
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3	Yamamoto S, Okada Y, Mori H, Hirata S, Saito K, Inokuchi N, Tanaka Y.	Successful treatment of osteomalacia caused by renal tubular acidosis associated with Sjögren's syndrome.	Mod Rheumatol.	23	401-5.	2013
4	Tsuboi H, Hagiwara S, Asashima H, Umehara H, Kawakami A, Nakamura H, Sano H, Tsubota K, Ogawa Y, Takamura E, Saito I, Inoue H, Nakamura S, Moriyama M, Takeuchi T, Tanaka Y, Hirata S, Mimori T, Matsumoto I, Sumida T.	Validation of different sets of criteria for the diagnosis of Sjögren's syndrome in Japanese patients.	Mod Rheumatol.	23	219-25.	2013
5	Hirata S, Dirven L, Shen Y, Centola M, Cavet G, Lems WF, Tanaka Y, Huizinga TW, Allaart CF.	A multi-biomarker score measures rheumatoid arthritis disease activity in the BeSt study.	Rheumatology (Oxford).	52	1202-7.	2013
6	Kubo S, Saito K, Hirata S, Fukuyo S, Yamaoka K, Sawamukai N, Nawata M, Iwata S, Mizuno Y, Tanaka Y.	Abatacept inhibits radiographic progression in patients with rheumatoid arthritis: a retrospective analysis of 6 months of abatacept treatment in routine clinical practice. The ALTAIR study.	Mod Rheumatol.	24	42-51	2013
7	Tanaka Y, Hirata S, Saleem B, Emery P.	Discontinuation of biologics in patients with rheumatoid arthritis.	Clin Exp Rheumatol.	31	S22-27	2013
8	Hirata S, Saito K, Kubo S, Fukuyo S, Mizuno Y, Iwata S, Nawata M, Sawamukai N, Nakano K, Yamaoka K, Tanaka Y.	Discontinuation of adalimumab after attaining disease activity score 28-erythrocyte sedimentation rate remission in patients with rheumatoid arthritis (HONOR study): an observational study.	Arthritis Res Ther.	15	R135.	2013
9	Tanaka Y, Hirata S.	Is It Possible to Withdraw Biologics From Therapy in Rheumatoid Arthritis?	Clin Ther.	35	2028-35	2013
10	平田 信太郎, 田中 良哉	【TNF阻害薬を見極める】アダリムマブ	Rheumatology Clinical Research	2	15-20	2013
11	平田 信太郎, 田中 良哉	【関節リウマチ治療における生物学的製剤に関する新知見】セルドロリズマブ:最近の新知見	リウマチ科	50	80-85	2013
12	平田 信太郎, 田中 良哉	【話題】MBDAスコアによるRA活動性評価	リウマチ科	50	618-622	2013
13	Tanaka Y, Hirata S, Kubo S, Fukuyo S, Hanami K, Sawamukai N, Nakano K, Nakayamada S, Yamaoka K, Sawamura F, Saito K.	Discontinuation of adalimumab after achieving remission in patients with established rheumatoid arthritis: 1-year outcome of the HONOR study.	Ann Rheum Dis.		in press	
14	Tsuboi H, Asashima H, Takai C, Hagiwara S, Hagiya C, Yokosawa M, Hirota T, Umehara H, Kawakami A, Nakamura H, Sano H, Tsubota K, Ogawa Y, Takamura E, Saito I, Inoue H, Nakamura S, Moriyama M, Takeuchi T, Tanaka Y, Hirata S, Mimori T, Yoshifuji H, Ohta A, Matsumoto I, Sumida T.	Primary and secondary surveys on epidemiology of Sjögren's syndrome in Japan.	Mod Rheumatol.		in press	
15	Sonomoto K, Yamaoka K, Kubo S, Hirata S, Fukuyo S, Maeshima K, Suzuki K, Saito K, Tanaka Y.	Effects of tofacitinib on lymphocytes in rheumatoid arthritis: Relation to efficacy and infectious adverse events.	Rheumatology (Oxford).		in press	
16	Fukuyo S, Saito K, Yamaoka K, Sawamukai N, Hirata S, Nawata M, Iwata S, Tanaka Y.	Efficacy and safety of reducing duration of infliximab infusion.	Mod Rheumatol.		in press	

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研究分担者氏名: 平田 信太郎

書籍

	著者氏名	論文タイトル名	書籍全体の編集者名	出版社名	出版年
			書籍名	出版地	ページ
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2	平田信太郎, 田中良哉	VII.ケースから学ぶ上手な薬物療法 4. adalimumabが効果的であったケース	竹内勤 編	南江堂	2013
			関節リウマチ治療 実践バイブル	東京	225-227
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研究分担者氏名: 松井利浩

雑誌

	発表者氏名	論文タイトル名	発表誌名	巻号	ページ	出版年
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研究分担者氏名:松下 功

雑誌

	発表者氏名	論文タイトル名	発表誌名	巻号	ページ	出版年
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研究成果の刊行に関する一覧表(平成25年度)

研究分担者氏名:松下 功

書籍

著者氏名	論文タイトル名	書籍全体の編集者名	出版社名	出版年
		書籍名	出版地	ページ
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研究成果の刊行に関する一覧表(平成25年度)

研究分担者氏名:山中 寿

雑誌

	発表者氏名	論文タイトル名	発表誌名	巻号	ページ	出版年
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# V. 論 文 別 刷

(研究分担者 名簿順)

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# The Journal of Rheumatology

## The Journal of Rheumatology

American College of Rheumatology/European League Against Rheumatism  
Remission Criteria for Rheumatoid Arthritis Maintain Reliable Performance  
When Evaluated in 44 Joints

Yuko Kaneko, Harumi Kondo and Tsutomu Takeuchi

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# American College of Rheumatology/European League Against Rheumatism Remission Criteria for Rheumatoid Arthritis Maintain Reliable Performance When Evaluated in 44 Joints

Yuko Kaneko, Harumi Kondo, and Tsutomu Takeuchi

**ABSTRACT. Objective.** To investigate the performance of the new remission criteria for rheumatoid arthritis (RA) in daily clinical practice and the effect of possible misclassification of remission when 44 joints are assessed.

**Methods.** Disease activity and remission rate were calculated according to the Disease Activity Score (DAS28), Simplified Disease Activity Index (SDAI), Clinical Disease Activity Index (CDAI), and a Boolean-based definition for 1402 patients with RA in Keio University Hospital. Characteristics of patients in remission were investigated, and the number of misclassified patients was determined — those classified as being in remission based on 28-joint count but as nonremission based on a 44-joint count for each definition criterion.

**Results.** Of all patients analyzed, 46.6%, 45.9%, 41.0%, and 31.5% were classified as in remission in the DAS28, SDAI, CDAI, and Boolean definitions, respectively. Patients classified into remission based only on the DAS28 showed relatively low erythrocyte sedimentation rates but greater swollen joint counts than those classified into remission based on the other definitions. In patients classified into remission based only on the Boolean criteria, the mean physician global assessment was greater than the mean patient global assessment. Although 119 patients had  $\leq 1$  involved joint in the 28-joint count but  $> 1$  in the 44-joint count, only 34 of these 119 (2.4% of all subjects) were found to have been misclassified into remission.

**Conclusion.** In practice, about half of patients with RA can achieve clinical remission within the DAS28, SDAI, and CDAI; and one-third according to the Boolean-based definition. Patients classified in remission based on a 28-joint count may have pain and swelling in the feet, but misclassification of remission was relatively rare and was seen in only 2.4% of patients under a Boolean definition. The 28-joint count can be sufficient for assessing clinical remission based on the new remission criteria. (J Rheumatol First Release June 15 2013; doi:10.3899/jrheum.130166)

*Key Indexing Terms:*

RHEUMATOID ARTHRITIS      REMISSION CRITERIA      44 JOINTS      VERIFICATION

Therapeutic developments over the past several decades in the treatment of rheumatoid arthritis (RA) have made remission an achievable goal. While different remission criteria had been used, new criteria have recently been presented by the American College of Rheumatology (ACR) and the European League Against Rheumatism (EULAR)<sup>1</sup>: the index-based criteria defined as a Simplified Disease Activity Index (SDAI) of  $\leq 3.3$  and a Boolean-based definition requiring 4 criteria to be  $\leq 1$  [patient global assessment (PGA; in cm), swollen and tender joint counts

(SJC, TJC), and C-reactive protein (CRP; in mg/dl)]. Definitions for clinical practice were also proposed: a Clinical Disease Activity Index (CDAI) level of  $\leq 2.8$  and a Boolean-based definition requiring 3 criteria to be  $\leq 1$ , eliminating the CRP. In the past, the most widely used criteria were the Disease Activity Score (DAS) and DAS28, with 44 and 28 joints assessed, respectively. While the 44-joint count is more comprehensive, the 28-joint count correlates well with the full joint count<sup>2,3,4</sup> and is easier to assess and more convenient in daily practice; the newly suggested criteria are also based on a 28-joint count. However, the 28-joint count excludes evaluation of ankle and foot joints, potentially leading to misclassification of patients to remission status, particularly if the patient has disease activity only in the ankles and feet.

While van Tuyl, *et al*<sup>5</sup> did report that residual disease activity in the forefeet had a limited effect on outcome using a 38-joint count, it remains unclear whether using only a

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28-joint count is sufficiently accurate in evaluating remission, because the van Tuyl team did not assess activity in the ankles. We assessed the performance of the new remission criteria in daily clinical practice and evaluated the effects of possible misclassification of remission on their performance when 44 joints are assessed instead of 28.

## MATERIALS AND METHODS

All patients with RA in Keio University Hospital were evaluated cross-sectionally in the period December 2011 to February 2012. Joint counts were assessed by 6 rheumatologists, all of whom had at least 10 years' experience. The 44-joint count includes ankle ( $n = 2$ ), metatarsophalangeal ( $n = 10$ ), sternoclavicular ( $n = 2$ ), and acromioclavicular ( $n = 2$ ) joints, as well as the usual 28-joint count.

Findings for laboratory data included CRP, erythrocyte sedimentation rate (ESR), and matrix metalloproteinase-3 (MMP-3). Patient pain, patient global assessment (PGA), and physician global assessment (PhGA) were measured on a visual analog scale ranging from 0 to 100 mm. A Health Assessment Questionnaire (HAQ) was filled out by each patient.

We first classified patient disease activity into states of remission and low, moderate, and high activity, based on DAS28, SDAI, and CDAI values, and then examined the number of criteria that were satisfied under a Boolean-based definition. We also assessed the characteristics of patients in remission according to each definition and then evaluated the number of misclassified patients — those classified into remission based on a 28-joint count but as nonremission based on a 44-joint count for each definition criterion. In addition, for patients with an involved joint count  $\leq 1$  in the 28-joint count but  $> 1$  in the 44-joint count (meaning they could have been misclassified into remission under the Boolean definition) who were not classified into remission, variables that prevented them from being misclassified were also investigated.

Comparisons of mean values were performed using Student's *t* test with IBM SPSS version 20.0 (IBM Corp.).

## RESULTS

*Characteristics of all study patients and those in remission for each definition.* Of the 1449 patients with RA in our hospital, 47 were excluded because of insufficient data, resulting in a total of 1402 patients (83% female) included in study analysis. Mean patient age was 60.1 years, mean disease duration 10.9 years, and mean DAS28 was 2.8. About half the patients were treated with a biologic agent (Table 1).

Characteristics of patients in remission according to DAS28, SDAI, and CDAI values as well as Boolean-based criteria are shown in Table 1. The remission rates were 46.6% in DAS28, 45.9% in SDAI, 41.0% in CDAI, and 31.5% under a Boolean definition. The mean value of HAQ score was significantly better in patients in remission under the Boolean definition than in those deemed to be in remission based on the other definitions.

*Comparison of characteristics of patients in various remission states by definition.* We compared the characteristics of patients whose remission status varied among the 4 sets of remission criteria (Table 2). Patients classified into remission based only on the DAS28 showed relatively low ESR but higher PGA values and SJC than those classified into remission based on the other definitions, while those

classified into nonremission using only DAS28 showed relatively high ESR. Although few patients were classified into remission only by the Boolean definition, their mean PhGA was greater than their mean PGA score.

*Possible misclassification with assessment of 44 joints instead of 28 joints.* We then investigated the effect of possible misclassification into remission on the performance of each remission definition when 44 joints were assessed instead of the 28-joint count. The numbers of patients classified into remission using the 28-joint count but as nonremission with the 44-joint count were 38, 40, 36, and 34 under the DAS28, SDAI, CDAI, and Boolean definitions, respectively, which means the possible remission rate would be 43.9%, 43.1%, 38.4%, and 29.0% according to the 44-joint count. Although the effect of possible misclassifications on performance was smallest using the Boolean definition, the difference was modest (Figure 1A).

A total of 119 patients (8.5% of all subjects) had  $\leq 1$  involved joint in the 28-joint count but  $> 1$  in the 44-joint count, indicating the potential for misclassification into remission using the Boolean definition. However, only 34 of these 119 patients (2.4% of all subjects) were actually misclassified into remission; which was averted largely due to the presence of high PGA (45%), high SJC (1%), high TIC (1%), high CRP (1%), or a combination of several findings (24%) (Figure 1B). Given these findings, the remission rate could have potentially decreased from 31.5% to 29.0% using a Boolean definition when 44 joints were assessed.

## DISCUSSION

Our study investigated effects of possible misclassification of remission on the performance of new ACR/EULAR remission criteria when 44 joints are assessed instead of 28, and we found that misclassification was relatively rare and was seen only in 2.4% of patients under a Boolean definition.

Although assessment of all joints is clearly required in a patient assessment, a 28-joint count has frequently been used because it has been recognized to provide as much information as a full joint count with considerably greater feasibility. However, there should be a compromise between comprehensiveness and feasibility<sup>6</sup>, and several groups have studied the residual disease activity in feet and ankles of patients in remission using a reduced joint count. Landewé, *et al* showed that remission defined by DAS28, which excludes ankles and feet, is inferior to the original DAS definition because of residual swelling and tenderness in the ankles and feet<sup>7</sup>. Kapral, *et al* compared the extended joint count with the limited joint count in DAS28 and SDAI, noting a negligible difference in findings, because other components of remission criteria would be higher in patients with foot joint involvement, helping to avoid misclassification<sup>8</sup>. In our study, we noted only a modest effect of