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A Needs-Based Rheumatologist Education Program on Treating to Target in Psoriatic Arthritis and Spondyloarthropathy: Insights and Challenges

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Abstract

Objectives: To determine if comparative practice data and education for rheumatologists would change physician behavior for monitoring and treating psoriatic arthritis (PsA) and spondyloarthritis (SpA). Methods: Participating rheumatologists each performed a chart audit on 20 patients with PsA and SpA. Accredited education (determined by a survey and chart audits) and results of chart audits (comparing to other rheumatologists) were provided for each participant (intervention). Eight months later, a repeat chart audit by each participant was conducted on another 20 PsA and SpA patients. Changes in measurements collected, treatment given and patient characteristics pre and post intervention were analyzed. Results: Nine rheumatologists received the intervention. At baseline, most routinely monitored PsA and SpA for clinical and laboratory markers. In PsA, there was no change post-intervention in performing SJC (96%), TJC (≥91%), ESR (≥70%), CRP (≥73%), and CDAI (25%). In SpA, there were increased measurements of inflammatory markers (54% pre vs. 61% post for CRP), more NSAID use and decreased

physical exam measures and HAQ but no significant changes. There were no major treatment differences pre and post intervention including NSAIDs, DMARDs and biologics. Conclusions: The rheumatologists frequently performed measurements of disease activity, did not change significantly with educational intervention so there may have been little room for improvement and many patients were already in a low disease state. Calculation of composite scores did not increase in PsA. The validity of physical exam and BASDAI as a measurement of disease activity were noted as concerns in applying a treat-to-target approach in SpA. Significance and Innovation: This study did not show a significant change in behavior for rheumatologists who had education based on care gaps and needs assessment in psoriatic arthritis and spondyloarthropathy. The rheumatologists identified that disease activity is difficult to determine with usual care in SpA and thought some measures lacked validity.

Keywords

Education, Seronegative Arthritis, Psoriatic Arthritis, Ankylosing Spondylitis, Behavioral Change, Outcome Assessments

1. Introduction

The treat-to-target approach is an evolving paradigm in management of rheumatologic diseases. Since the TICOPA trial, which demonstrated treating to a target improved outcomes in early psoriatic arthritis [1], there has been increasing interest in applying a treat-to-target approach in psoriatic arthritis (PsA) and spondylarthritis (SpA). However, there is active debate about how this approach can be implemented, and what target to use [2] [3].

It has been previously demonstrated that chart audit and needs-based education about treating to target in rheumatoid arthritis (RA) produced measurable improvements in physician behavior, including increased measurements and medication changes if a target was not achieved [4]. We applied a similar framework to investigate whether a needs-based education program on treating to target in PsA and SpA and having comparative practice via a chart audit would also produce a measurable change in how physicians assess and treat patients with PSA and SpA.

2. Methods

Nine rheumatologists volunteered to be part of this accredited program through the University of Western Ontario, Schulich School of Medicine & Dentistry, London, Canada, and approved by University of Western Ontario Institutional Ethics Committee and Canadian Shield Ethics Review Board. Each completed a survey about their usual approach to practice, and performed chart audits serial charts of 10 PsA and 10 SpA patients, answering standardized forms including patient characteristics, the measurements and laboratory markers performed

during the visit, and therapies continued or changed.

Each rheumatologist self-identified issues in their practice of managing seronegative inflammatory arthritis via responses to a survey. Topics for accredited small group learning (continuing medical education; CME) came from the knowledge gaps found in the survey and from results of the chart audit. The CME program began with a review of the chart audit results, and each rheumatologist say his/her results and a comparison of the group mean and range for items of assessment and treatment in PsA and SpA. Presentations on the current evidence in the management of PsA and SpA were given. The group also discussed their own practices, such as whether PsA patients were routinely screened for extra-articular manifestations.

Topics on PsA included the classification of peripheral and axial PsA [5] [6], data on sacroilitis and skin involvement [7], characteristics of the typical PsA patient in Canadian practices [8], EULAR treatment recommendations [9] as compared to GRAPPA recommendations [10], and data from the TICOPA trial [1]. Data for early identification of PsA and SpA were discussed [11], as was predictors of poor outcomes [12] [13], consequences of diagnostic delay [14], the relationship between skin involvement and PsA risk [15] [16], and available and emerging agents within pathways such as PDE4, IL-12, IL-23, and IL-17.

SpA education included an overview of the new Canadian recommendations [17], ASAS/EULAR updated recommendations [18], new concepts of subtypes of SpA [19], non-radiographic SpA, diagnosis including the use of MRI of SI joints vs. spine, measurements in SpA, use of NSAIDs as a disease modifying treatment [20], use of TNF inhibitors (TNFi), early vs. late treatment, treatment effect on areas beyond the spine (including peripheral joints and enthesitis), and possible future therapies (including apremilast, ustekinemab, and secukinumab). Cardiovascular risk and other comorbidities in PsA and SpA were discussed [21]. A literature review was done to provide new information on the diagnosis and management of seronegative arthritis.

After 8 months, each rheumatologist repeated chart audits on 20 other PsA and SpA patients, evaluating the same parameters as pre-intervention. A final investigators meeting was held where new data were presented for performing outcome measurements and treating to a target. Comparative chart audit results were provided for individual's pre and post educational intervention and also compared to controls without the intervention. A 2-tailed paired student's T test was used to compare physician measurement choices pre- and post-intervention ($\alpha = 0.05$). Unpaired T-test was used to analyze patient characteristics pre- and post-intervention.

Funding included grants from CIORA, AMOSO and AbbVie. The participants were reimbursed for time spent doing their chart audits and at the CME meetings.

3. Results

Nine rheumatologists from Ontario, Canada completed the pre-intervention

survey, chart audit, and self-identified needs assessment, and attended the education seminar, and 140 total cases were analyzed. Treatment was dynamic: at least 1/4 of all patients had a treatment change in both PsA and SpA at the current visit from which the chart audits were performed. Despite long standing disease, most patients did not have active disease and did not have a high burden of damage.

3.1. Baseline PsA Patients

PsA patients had an mean age of 50, 41% males, and mean disease duration of 10.5 years. Most psoriatic patients routinely were assessed for swollen joint count (SJC, 96%), tender joint count (TJC, 91%), patient global visual assessment scale (VAS, 75%), physician global VAS (66%), health assessment questionnaire (HAQ, 75%), CRP (79%), and ESR (74%). One-quarter recorded composite scores including 20% who measured the Clinical Disease Activity Index (CDAI) (**Table 1**). Most of the patients had past evaluations for erosions (85%), subluxations (88%), skin involvement (80%), and dactylitis (89%).

3.2. Baseline SpA Patients

In Spondyloarthropathy (SpA),the most routinely performed measures were TJC (95%), SJC (96%), Schober or modified Schober's test (77%), occiput-to-wall (77%), MD global (84%), BASDAI (70%), HAQ (64%), patient global (59%), CRP (54%), ESR (51%). Fewer physicians routinely measured lateral flexion (46%) and chest expansion (43%). Forty-three percent of patients had a spine MRI in the past, and all patients had been assessed by history for iritis (**Table 2**).

Table 1. Characteristics of psoriatic arthritis patients including investigations and management pre- and post-intervention.

Variables	Pre-intervention	Post-intervention	P
Number of patients	80	80	
Demographics			
% Males	41	46	
Mean disease duration (years)	10.5	9.7	
Past investigations			
Ever investigated for erosions (%)	85	74	0.14
Data on subluxations (%)	88	91	0.65
Skin involvement measured (%)	80	73	0.50
Dactylitis measured (%)	89	75	0.25
Known erosions (%)	40	49	0.34
Known subluxations (%)	9	11	0.89
Known dacytlitis (%)	13	4	0.08

Continued

Frequency of current measures performed			
ESR in last 3 months (%)	74	72	0.73
CRP in last 3 months (%)	79	70	0.36
TJC in last 3 months (%)	91	96	0.68
SJC in last 3 months (%)	96	95	0.50
Patient Global VAS (%)	75	64	0.82
MD Global VAS (%)	66	68	0.49
HAQ done (%)	75	56	0.22
Composite Score Calculated (%)	25	25	0.88
CDAI (0 - 39)	20	26	0.17
Current measurement results (mean and range)			
CRP (0.2 - 57)	8.0 (0.3 - 57)	5.9 (0.2 - 42)	0.17
ESR (0 - 65)	14.4 (0 - 65)	8.9 (2 - 41)	0.05
TJC (0 - 32)	2.9 (0 - 25)	2.2 (0 - 32)	0.92
SJC (0 - 25)	2.9 (0 - 25)	2.2 (0 - 24)	0.47
Patient Global (0 - 10)	3.3	3.0	0.61
HAQ (0 - 3)	0.68	0.75	0.66
MD Global (0 - 10)	2.7	2.3	0.57
CDAI (0 - 39)	8.7 (0 - 33)	5.6 (0 - 21)	0.59
Current treatment			
Methotrexate (%)	47	53	0.52
Sulfasalazine (%)	9	11	0.62
Leflunomide (%)	10	16	0.36
Steroids (%)	9	4	0.32
Biologics (%)	37	26	0.17
Previous drugs not currently taking			
Methotrexate (%)	48	37	0.23
Sulfasalazine (%)	46	23	0.01
Leflunomide (%)	25	16	0.22
Steroids (%)	12	4	0.13
Biologics (%)	21	17	0.55
% with steroids given at current visit (intraarticular or systemic)	17	10	0.24
% with DMARD change at current visit	31	25	0.37
Reasons for no change despite active disease			
Patient refused (N)	9	3	
Not in steady state yet (N)	5	0	
Contraindicated or Comorbidity (N)	3	3	
Other (N)	3	9	

Table 2. Characteristics of spondyloarthropathy patients including investigations and management pre- and post-intervention.

Variables	Pre-intervention	Post-intervention	P
Number of patients	80	70	
Demographics			
Males (%)	60	61	
Mean Disease Duration (0 - 55) (years)	12.5 (0 - 55)	10.9 (0.5 - 40)	
Ankylosing spondylitis (%)	66	66	
Past investigations			
Hip involvement ever (%)	22	26	0.64
Iritis ever (%)	29	22	0.38
Assessed for Iritis by history (%)	100	100	1.00
SI joint diagnosis by imaging			
X-ray (%)	33	32	0.91
MRI (%)	70	70	0.54
CT scan (%)	6	3	0.17
Bone scan(%)	1	1	0.36
Other (%)	0	0	1.00
Spine MRI ever done (%)	43	44	0.71
Frequency of current measures performed			
TJC in last 3 months (%)	95	99	0.20
SJC in last 3 months (%)	96	99	0.46
Schober or modified Schober (%)	77	73	0.57
Wall to occiput measured (%)	77	64	0.11
Lateral flexion (%)	43	33	0.25
Chest wall expansion (%)	36	24	0.34
CRP in last 3 months (%)	54	61	0.38
ESR in last 3 months (%)	51	62	0.17
Patient Global VAS (%)	56	59	0.82
MD Global VAS (%)	84	94	0.49
HAQ (%)	64	41	0.06
BASDAI (%)	79	79	1.00

Continued

Current measurement results (mean and range)			
Schober or modified Schober (0.5 - 21)	8.2 (0.5 - 21)	7.0 (1 - 18)	0.33
Wall to occiput (0 - 37)	2.8 (0 - 37)	2.7 (0 - 31)	0.90
Lateral flexion (0 - 61)	13.7 (0 - 61)	11.7 (5 - 22)	0.54
Chest wall expansion (0 - 7)	3.8 (0.5 - 7)	3.7 (0 - 7)	0.86
CRP (0.1 - 107)	4.3 (0.2 - 23.5)	4.0(0.2 - 20)	0.81
ESR (1 - 63)	15.9 (1 - 63)	12.6 (1 - 45)	0.36
TJC (0 - 28)	0.79 (0 - 10)	1.02 (0 - 28)	0.81
SJC (0 - 17)	0.91 (0 - 17)	0.42 (0 - 7)	0.31
HAQ (0 - 3)	0.8 (0 - 2.4)	0.5 (0 - 2)	0.06
Patient Global VAS (0 - 10)	3.8 (0 - 9)	4.0 (0 - 10)	0.64
MD Global VAS (0 - 10)	3.05 (0 - 8)	3.2 (0 - 9)	0.80
BASDAI (0 - 9.6)	4.1 (0 - 9.6)	3.9 (0 - 9.3)	0.53
Current treatment			
Nonsteroidal anti-inflammatory drug (NSAID) (%)	43	53	0.26
Methotrexate (%)	4	9	0.33
Sulfasalazine (%)	3	6	0.43
Steroids (%)	0	3	0.18
Biologics (%)	47	41	0.52
Previous drugs not currently taking			
NSAID (%)	47	39	0.33
Methotrexate(%)	16	9	0.22
Sulfasalazine (%)	19	10	0.17
Steroids (%)	11	9	0.60
Biologics (%)	10	17	0.24
% with treatment change at current visit	29	29	0.72
Reasons for no change despite active disease			
Patient refused (N)	6	6	
Not in steady state yet (N)	6	3	
Contraindicated or comorbidity (N)	8	4	
Other (N)	6	3	

3.3. Post Intervention Chart Audit

In PsA, there were no significant differences in the measurements for monitoring disease. However, a significantly smaller proportion of post-intervention patients had stopped sulfasalazine but that would likely have been done at a previous visit. There was also slightly lower disease activity in the post-intervention group, (with lower ESR, CRP, global scores, and total joint counts but only ESR was statistically significant. This may have been also from the cross sectional nature of sampling patients at one point in time and other patients at a different time. Calculating composite scores did not increase.

In SpA, there were no significant differences in measurements performed. More ESR and CRP were done, but the frequency of performing HAQ, chest expansion, lateral flexion, occiput-to-wall, and Schober measurements decreased; the decrease in HAQ measurement approached significance ($P = 0.06$). There were no significant differences in treatment choices although numerically fewer patients were on biologics in the follow up chart audit and more were using NSAIDs.

Across all groups, the most common reason for not changing management despite active disease was patient refusal, followed by comorbidities or contraindications, and the current drugs not being in a steady state.

Qualitatively, the program was reported to be very informative and valuable to clinical practice. Points raised in discussion included concerns with the choice of physical exam measures to rely upon to make decisions about therapy, the validity of physical exam maneuvers in SpA, and the difficulty in interpreting the BASDAI, since cumulative damage and pain (rather than current inflammation) can result in a high score.

4. Discussion

The chart audit and physician survey results show that most rheumatologists are in favour of treating to target in PsA and SpA, and most of the rheumatologists who participated are routinely performing measurements necessary for determining disease activity. The percentage of certain measures performed was higher than found in previous studies [3].

Overall no relevant differences were found as there was no effect on the physical exam components, investigations done to determine disease activity and changes in treatment in PsA and composite scores did not increase. They were only performed in a quarter of patients. This is different than our previous RA randomized trial where slightly more components for composite scores of disease activity and more treatment for patients who were not in remission occurred after the bench marking from comparative chart audits and educational intervention compared to the control group who did not receive results from their chart audit and had no needs' based intervention where their behavior was unchanged over the study period [4]. In RA there may be more convincing data for treating to a target whereas in seronegative arthritis validated composite indices are not routinely performed in usual care.

In SpA inflammatory measures and MD global increased, physical examination measures and HAQ decreased which were discussed in the educational sessions about their lack of specificity for disease activity and NSAID use was higher and data had been discussed about the potential to reduce radiographic progression. However, in SpA there were no statistically significant differences comparing pre and post intervention results. It is not feasible to perform repeat MRIs in Canadian clinical practice routinely to monitor disease activity despite guidelines [17].

The participants in the study voiced that in SpA, there is a problem translating the measurements performed on patients into management decisions. The question of which measurements are valid and actionable was frequently discussed at the education sessions. Many felt that the current physical exams and BASDAI do not necessarily translate into inflammatory activity, and are confounded by irreversible structural damage or other reasons such as mechanical back pain. In particular, in the absence of elevated inflammatory markers, they find it difficult at a follow up visit to know if there is axial disease activity. They expressed low confidence in changing management based on these measures. This may explain the finding that some physical exam measurements in SpA actually numerically decreased after data presentation and interactive discussion. Due to the relative paucity of data on treating to target in SpA, it is also difficult to judge whether an increase or decrease in the performance of the lateral flexion test, for example, is clinically significant or desirable.

The generalizability of the findings is uncertain. This program did not affect physician behavior for assessing and treating their seronegative patients where participants frequently measured many physical exam, lab and questionnaires on each patient, many of whom were in a low disease state. Perhaps the intervention may have been successful if other practices were studied such as targeting rheumatologists who don't do as many measurements, or if a larger sample of patient data were collected or if only patients with active disease were sampled to improve the power of the study. The rheumatologists may already have been treating to a target.

Disease activity assessments in PsA and SpA can be multi-dimensional. Heterogeneous extra-articular manifestations involvement may be as clinically and functionally significant as swollen and tender joints (such as dactylitis, psoriasis, axial involvement, iritis, and enthesitis). The development and dissemination of practical tools to distill this complex, multi-dimensional information into an actionable valid composite measurement will be crucial to the effective implementation of treat-to-target approach in PsA and SpA. Several promising composite measures have been recently developed [22] [23] [24] [25], although they not implemented in the clinical setting.

5. Conclusion

The rheumatologists in this intervention performed measurements frequently in seronegative arthritis but did not change behavior with education and chart au-

dits.

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University of Western Ontario (#18571E) and Canadian Shield Ethics Review Board (#12-10-001) approvals were obtained. The program was accredited by the University of Western Ontario. The participants were paid for their chart audits and participation in the investigators meetings.

There are no conflicts of interest.

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