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Early arthritis clinic is effective for rheumatoid and psoriatic arthritides

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Abstract

Introduction Early arthritis clinics (EACs) have been well established since 1980s. Most of the data for their effectiveness comes from rheumatoid arthritis (RA) management and is largely limited to process outcomes. There is little evidence that such clinics improve clinical outcomes particularly for psoriatic arthritis (PsA). We examined whether EACs provide better outcomes irrespective of final arthritis diagnosis.

Methods A 52-week prospective observational study of all inflammatory arthritis patients presenting to early arthritis service at our secondary care hospital in 2016 was undertaken. A protocolised approach to the early initiation of therapy (within 3 weeks) and 6-weekly review of treatment outcomes was embedded irrespective of the arthritis diagnosis. Statistical analysis was undertaken using Mann–Whitney *U* test for disease activity scores to ascertain the significance of outcomes.

Results Of 1884 patients referred, 482 (25.5%) were triaged into EACs based on set criteria. 159 (64.3%) had RA, 55 (22%) with PsA and 33 had other inflammatory arthritides. Mean DAS28 for RA at first visit was 4.65 (0.6–8.0). Treating to target achieved DAS28 remission for 84 (53.5%) and low disease activity (LDA) for a further 44 (34%). Median time to achieve remission or LDA was 20 weeks (0–52 weeks). Mean tender (TJ) and swollen joint (SJ) counts for PsA at first visit were 8.2 (1–35) and 3.5 (0–14), respectively [$n = 55$]. The patient (PtGA) and physician (PhGA) global assessments mean were 3.0 and 2.9 (1–5). Target [TJ and SJ ≤ 2] was achieved for 38 patients (69%) and good PsARC response for a further four (7%). Median time to achieve the target or good response was 22 weeks (0–48 weeks). Final TJ and SJ mean was significantly better at 1.2 (0–4) and 0.3 (0–2) [$p < 0.0001$] with similar improvement in PtGA [mean 1.8 (1–4)] and PhGA [mean 1.6 (1–3)].

Conclusion Dedicated EACs help achieve good clinical outcomes in majority of patients with RA and PsA. Nearly 80% of our cohort attained the target or good disease response in less than 6 months. This was despite a significant delay in patients presenting to their GPs and moderately high disease activity.

Keywords Early arthritis · Clinic · Psoriatic arthritis · Outcomes

Introduction

Early arthritis is a well-recognised concept in the rheumatology circles [1]. Its premise is the concept of 'window of opportunity', in which the disease is most susceptible to disease-modifying treatment, to help achieve prompt diagnosis and therapeutic goals [2]. The European League against Rheumatism (EULAR) published its first set of recommendations for the management of early arthritis in 2007 [3], which were updated in 2017 [4]. These recommendations highlight the need for prompt referral to specialist rheumatology services aiding early diagnosis and institution of therapy. Most of the data supporting these guidelines comes from rheumatoid arthritis (RA) management. This is also reflected in the UK's National institute for Health and Care excellence (NICE) published quality standards for RA to encourage timely referral and commencement of treatment [5]. However, the question remains whether such guidelines can be extended to the management of psoriatic arthritis (PsA) and do EACs provide the best model of care?

EACs are well established in the rheumatology community since 1980s [6]. Initially, the clinics were set up in research setting, however, as the evidence for prompt diagnosis and early intervention grew, EACs became more mainstream. Still, by no means are such clinics ubiquitous. National early arthritis audit in the UK demonstrated that only 57% of units have dedicated EACs [7]. Furthermore,

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the advantages of these clinics have been variously described mainly emphasising the process benefits, e.g. referral to treatment times or the accuracy of diagnoses. Few studies have focused on disease outcomes and these have been limited to RA [8].

Beyond RA, there is no good evidence that management of other inflammatory arthritides, e.g. PsA benefits from EACs despite the observation that PsA accounts for 20% of EAC referrals [9]. Most of the studies have focused on the challenges posed by diagnostic uncertainty of differentiating PsA from RA. Despite literature supporting early aggressive therapy for PsA, e.g. TICOPA trial [10], there is little data supporting the employment of EACs in achieving therapeutic aims for PsA. Same is the case for inflammatory back pain pathways, where despite evidence for their utility, no clear data for their efficacy in dedicated clinics has emerged [11].

Our rheumatology department provides a comprehensive general and specialist rheumatology service to the local population of nearly 350,000 with 40% ethnic minorities. In 2016, a centralised, patient-focused and multidisciplinary EAC was established to help improve clinical outcomes. The MDT consisted of consultants, rheumatology nurse specialists, data manager, pathway coordinator and departmental secretaries. An algorithm-based protocol was implemented with the key provision that all inflammatory arthritides will be treated the same irrespective of the diagnosis. The aim of this study was to examine whether EACs provide better outcomes for both RA and PsA.

Methods

A prospective study of all patients triaged to EACs at our secondary care district general teaching hospital during Jan–Dec 2016 was undertaken. They were followed up for 52 weeks until annual review clinic appointment. Early arthritis was defined for the purpose of GP referral as patients having two or more of the following:

- Early morning joint stiffness of 30 min or more
- Two or more swollen joints
- Metacarpal or metatarsal squeeze test positive.

Following service specification was designed to help achieve the above objectives:

- The introduction of six EACs each week, staffed by a team of six consultants.
- A dedicated referral proforma was established that was advertised locally and communicated to GPs. They were advised to follow National Institute for Health and Care Excellence (NICE) quality standards for referral (within 3 days of patient review) [5]. All patients were reviewed within 3 weeks of referral.
- A specific consultant rota for the daily triage of referrals to avoid transit delays.
- An educational programme to ensure GPs refer suspected early arthritis patients through the dedicated pathway instead of through routine review requests.
- The decision to start therapy was based on the direction given by consultant rheumatologist, if in their opinion, a patient had early arthritis. Final diagnosis was coded at week 52 annual review clinic appointment.
- A standardised approach to early initiation of treatment (within 3 weeks of initial appointment), drug education and 6-weekly review of disease activity scores was undertaken (Fig. 1)—corticosteroids and hydroxychloroquine initiated during the first clinic visit followed by a rapidly escalating methotrexate regimen 2 weeks later in line with NICE guidelines [5]. All patients stayed in EACs for 52 weeks with 6 weekly appointments alternating between consultant rheumatologist and clinical nurse specialist. Only variation to the pathway was for PsA patients with active psoriasis where rheumatologists could choose sulfasalazine instead of hydroxychloroquine.
- The lead Clinical Nurse Specialist achieved prescriber status to avoid any delay in issuing disease-modifying anti-rheumatic drug (DMARD) prescriptions.
- Ultrasound was incorporated into first appointments for all EACs to improve diagnostic accuracy and help reassure clinicians in cases of subclinical synovitis.
- A pathway coordinator was recruited to track and monitor adherence to the pathway and performed regular troubleshooting. The project coordinator organised all appointments and maintained all data on EAC activity.

Statistical analysis

Two cohorts were evaluated including RA and PsA. Patients with RA had DAS28, whereas PsA patients had psoriatic arthritis response criteria (PsARC) assessments. Full-year data were gathered with each patient's disease activity score at initial assessment and at achievement of pre-defined target or week 52 (whichever came first). Disease activity scores were compared using paired *t* test or Mann–Whitney *U* test depending on criteria for parametric distribution of data. The author conducted the statistical analysis using IBM SPSS Statistics 23 software and Epi Info version 7.0 (CDC Atlanta USA). A p value of < 0.05 was taken to indicate statistically significant differences.

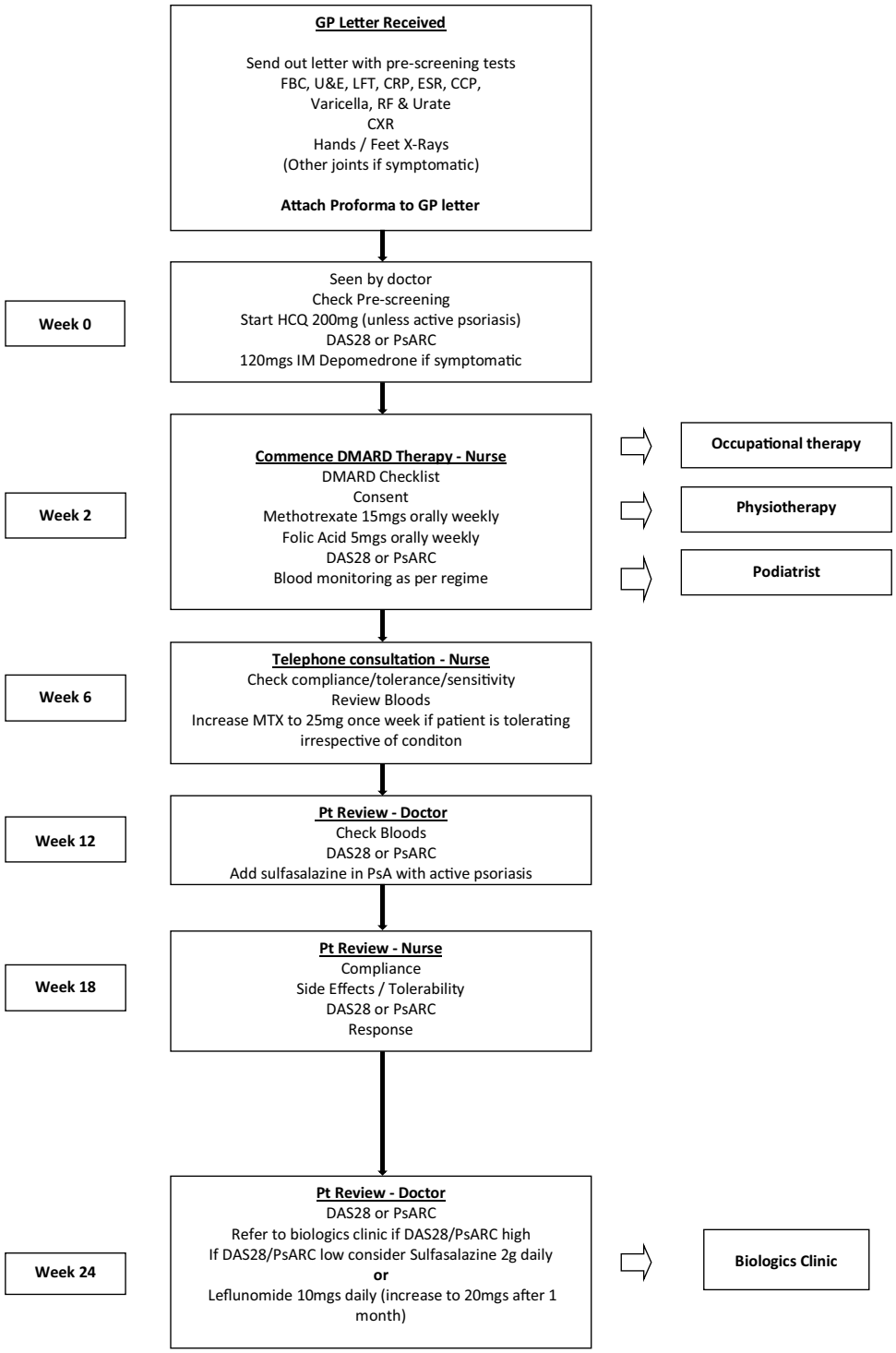

Fig. 1 Early arthritis clinic pathway

Results

Demographics

Of 1884 patients referred to the unit, 482 (25.5%) were triaged into EACs based on set criteria. All were reviewed within 3 weeks. 247 (51%) were confirmed to have early arthritis. Mean age was 52.4 years (17–86 years). 157 (63.5%) were women. 177 (71.6%) were White, 58 (23.5%) of Asian and 12 (4.9%) of other background. There was median 26 weeks delay (0.4–1043 weeks) from symptom onset to GP presentation. Median time for GP referral to the department was 4.0 days (0–84 days). Final diagnosis at the end of 52 weeks was as follows: 159

(64.3%) had RA, 55 (22%) with PsA and 33 (13.7%) had other inflammatory arthritides. 25 (10%) had erosions at presentation. 95% commenced their DMARDs within 3 weeks of initial review.

Other inflammatory arthritides included the following: two had ankylosing spondylitis, five with enteropathic arthritis, six had axial spondyloarthropathy, eight with connective tissue disease, two had sarcoid, one had ANCA vasculitis, four had gout and remaining five's diagnosis was unestablished as they lost to follow-up prior to investigations. As no objective measures were used in their assessment and treatment was subject to individual clinician's choice, hence no objective analysis could be conducted.

RA cohort

All RA patients ($n = 159$) had DAS28 assessment every 6 weeks. Distribution by antibodies revealed 50 participants were double positive (both rheumatoid factor (RF) and ACPA), 31 were single positive (ten were ACPA + ve and 21 RF + ve) and 78 patients were double negative. Mean DAS28 at first visit was 4.65 (0.6–8.0). Treating to target achieved DAS28 remission for 84 (52.8%) and low disease activity for a further 44 (27.6%). Median time to achieve remission or LDA was 20 weeks (0–52 weeks). Final mean DAS28 of the cohort was 2.6 (0.2–6.1) which was statistically significant ($p < 0.001$). Of 159, only 10 (6.2%) patients required escalation to biologic therapy.

PsA cohort

All PsA patients had regular PsARC assessment utilising 68 tender and 66 swollen joints. Mean tender (TJ) and swollen joint (SJ) counts at first visit were 8.2 (1–35) and 3.5 (0–14), respectively [$n = 55$]. The patient (PtGA) and physician (PhGA) global assessments mean were 3.0 and 2.9 (1–5). Target [TJ and SJ ≤ 2] was achieved for 38 patients (69%) and good PsARC response for a further four (7%). Median time to achieve the target or good response was 22 weeks (0–48 weeks). Of 55, only 4 (7%) patients required escalation to biologic therapy. Final TJ and SJ mean was significantly better at 1.2 (0–4) and 0.3 (0–2) [$p < 0.0001$] with similar improvement in PtGA [mean 1.8 (1–4)] and PhGA [mean 1.6 (1–3)] ($p < 0.05$). Only six (11%) patients were true non-responders as the remaining seven declined therapy (Table 1).

Discussion

Dedicated EACs help achieve good clinical outcomes in a majority of patients irrespective of the type of inflammatory arthritis. Nearly 76% of our PsA cohort and 80% of RA patients attained the remission target or good clinical response in less than 6 months. This was despite a significant delay in patients presenting to their GPs and moderately high disease activity. 100% of our patients were treated to target facilitated by protocol-driven escalation of therapy in these clinics. To our knowledge, this is the first report to confirm clinical outcome benefits of EACs in RA and PsA

Table 1 Early arthritis clinic outcomes

Rheumatoid arthritis	$N = 159$
Mean DAS28 at first visit	4.65 (0.6–8.0)
Mean DAS28 at week 52	2.6 (0.2–6.1)
% DAS28 remission (*n*)	52.8 (84)
% DAS28 low disease activity	27.6 (44)
Median time to achieve target (weeks)	20 (0–52)
% patients requiring biologic	6.2 (10)
Psoriatic arthritis	$N = 55$
Mean tender joints at first visit	8.2 (1–35)
Mean tender joints at week 52	1.2 (0–4)
Mean swollen joints at first visit	3.5 (0–14)
Mean swollen joints at week 52	0.3 (0–2)
Mean patient global assessment at first visit	3.0 (1–5)
Mean patient global assessment at week 52	1.8 (1–4)
Mean physician global assessment at first visit	2.9 (1–5)
Mean physician global assessment at week 52	1.6 (1–3)
% requiring biologic therapy (*n*)	7 (4)

using a standard treatment algorithm. This study adds to the evidence that instead of focusing on final diagnosis in EACs, where up to 40% of case load could be undifferentiated arthritis [12], providing a standardised protocol-driven treatment escalation for both RA and PsA achieves good clinical outcomes.

EACs are not ubiquitous and core standards of service are yet to be defined. Where EACs are functional, the operational model is usually determined by availability of resources and local healthcare system needs. Nevertheless, the aims remain early recognition and treatment of inflammatory arthritis. Our study is distinctive, as the focus was not on process delivery, but on achieving improvements in clinical outcomes using a centralised, patient-focused and multidisciplinary service.

Once a patient is successfully triaged and reviewed in EACs, from the rheumatologist's perspective, the differential diagnosis for patients presenting to these clinics is wide. A thorough assessment to delineate the extent of disease and its manifestations is considered good practice. It can be particularly challenging in EACs as the information is usually limited, disease might yet to be evolved whilst management needs are immediate [13]. Hence, delay to treatment can be inherent to the nature of the service. Our study reassures clinicians that once inflammatory arthritis is suspected, instead of focusing too much on the nature of arthritis, one can commence an early aggressive therapy based protocol, whilst gathering further diagnostic clues. This is particularly relevant in the clinical setting where median delay to comprehensive evaluation is over 6 months.

Early diagnosis is important to prevent long-term functional disability and to ensure optimal management of arthritis and key comorbidities. Similar to RA, delay in PsA diagnoses of 6 and 12 months have been shown to impact on long-term joint damage and functional disability [14]. Several reports highlight the inefficiencies in the system delaying diagnosis and appropriate treatment. The UK national early arthritis audit, the largest of its kind with over 6000 participants, showed that despite a median delay of 2 months in a rheumatology review, only 53% of patients commence disease-modifying therapy within 6 weeks [7]. There is good evidence that EACs help achieve the time-critical goals of early assessment and treatment [15]. 95% of our cohort were seen and commenced treatment within 6 weeks of referral thanks to this clinical model.

Whilst there is a reasonable consensus on ideal management of early RA, therapy standards for PsA remain challenging [16]. There are several reasons for this ambiguity including the heterogeneous nature of the disease, significant comorbidity burden and relative lack of data for traditional disease-modifying anti-rheumatic drugs. TICOPA trial confirmed a significant benefit with tight control of PsA [10]. This was reflected in EULAR recommendations for the management of PsA stating that 'treatment should be aimed at reaching the target of remission or, alternatively, minimal/low disease activity, by regular monitoring and appropriate adjustment of therapy' [17]. By extrapolating the RA early therapy model with treatment to target, we demonstrate that it can be successfully applied to PsA with similar improvements in outcomes as expected for RA.

There are several strengths to our study including its prospective nature, a comprehensive set of data with enough power to derive statistical significance and focus on clinical rather than process outcomes. However, we acknowledge the caveats namely monocentric study and a relatively high proportion of other ethnicities which may not allow generalisability of the findings.

Conclusion

Dedicated EACs help achieve good clinical outcomes in majority of patients with RA and PsA. Nearly 80% of our cohort attained the target or good disease response in less than 6 months. This was despite a significant delay in patients presenting to their GPs and moderately high disease activity. This study shows that the establishment of dedicated EACs with an algorithm-based escalation of therapy and treatment to target works for both RA and PsA.

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Compliance with ethical standards

Conflict of interest No author has any conflict of interest.

Ethical approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Approved on 30 Aug 2016 by Luton and Dunstable University Hospital (approval number 8/2015-16/Medicine/Rheumatology).

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