RHEUMATOLOGY

Letter to the Editor (Other)

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An unfavourable outcome following switching intravenous abatacept and tocilizumab to subcutaneous forms during the COVID-19 pandemic

Rheumatology key message

- Unfavourable outcomes in RA following switching from i.v. to s.c. biologics during the COVID-19 pandemic.

Dear Editor, The coronavirus disease 2019 (COVID-19) pandemic has seen profound adaptations made to rheumatology practice. The National Institute for Health and Care Excellence published COVID-19 rapid guidelines proposing that clinicians should consider switching i.v. biologic DMARDs to s.c. forms to minimize face-to-face contact in the hospital setting.

We identified 250 patients on i.v. abatacept or tocilizumab with RA at our hospital. Patients were considered for switching to s.c. injection if they had stable disease, receiving a standard dose, had not had the equivalent drug administered s.c. previously and had no changes to their DMARD in the last 3 months. Some patients did not agree to switch; reasons included not wanting to self-administer injections and not being able to have blood monitoring locally. Adopting a joint decision-making approach between doctor and patient, only 32 patients were switched to the s.c. formulation.

In line with the British Society of Rheumatology's published guidance, 24 of the 32 patients who switched were shielding because of their comorbidities or concurrent immunosuppressant use and the other 8 patients were self-isolating at their discretion. None of our patients had COVID-19 symptoms at the time of data collection. Between February and March 2020, 14 patients on abatacept were switched from 4-weekly i.v. infusion to weekly s.c. injection, whilst 18 patients on tocilizumab were switched from 4-weekly i.v. infusion to weekly s.c. injection. Patient-reported outcome measures were recorded directly before, and 3 months after the switch using Multi-Dimensional HAQ. These responses were used to calculate Routine Assessment of Patient Index Data 3 (RAPID3) scores [1], a quantitative measure accounting for patients' functional ability, pain and global wellbeing. We also explored whether patients wanted to revert to the i.v. form and their reasoning behind this decision.

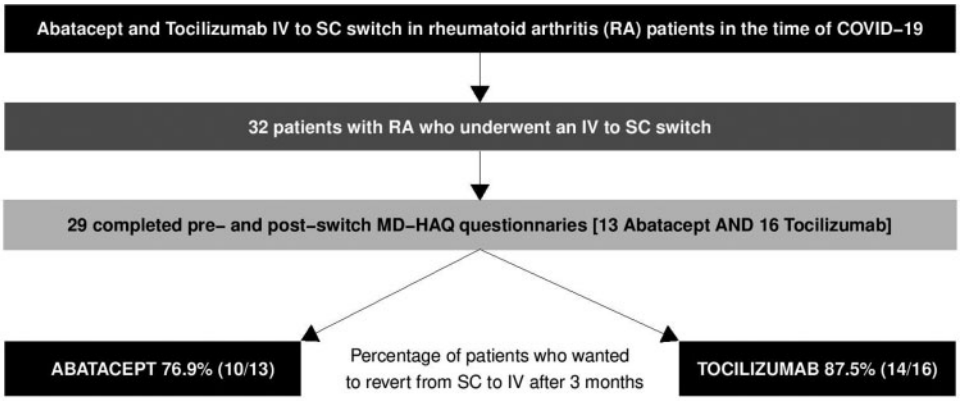
Twenty-nine of the 32 patients (90.6%) who switched completed our questionnaire. Eighty-five percent (11/13) of abatacept patients and 88% (14/16) of tocilizumab patients were in clinical remission or experiencing low disease activity as assessed by DAS28-ESR prior to switching from i.v. to s.c. Overall, 77% (10/13) of abatacept and 88% (14/16) of tocilizumab patients indicated a desire to revert to i.v. administration 3 months after switching to s.c. injections (Fig. 1). Sixty percent (6/10) of abatacept patients who wanted to return to the i.v. formulation described worsening joint pain, stiffness and swelling since the switch to s.c., particularly in the days immediately prior to their weekly injection. These worsening symptoms were demonstrated by the increasing total scores of RAPID3 (11.08 to 15.43, $P = 0.01$), along with functional ability (3.63 to 4.63, $P = 0.04$), pain (4.55 to 6.05, $P = 0.04$) and global wellbeing (0.90 to 4.75, $P = 0.01$), where higher values indicate worsening patient function (supplementary Fig. S1, available at *Rheumatology* online). Similarly, half of the patients (7/14) who desired to revert to i.v. tocilizumab cited worsening of symptoms, evidenced by the increase in total RAPID3 scores (8.66 to 11.8, $P = 0.01$), functional ability (2.99 to 3.51, $P = 0.02$) and global wellbeing (2.61 to 3.71, $P = 0.02$).

The effectiveness of s.c. compared with i.v. biologic DMARDs has been investigated previously. A 2018 study of 3448 RA patients from eight European registries involving i.v. to s.c. switches concluded that s.c. tocilizumab is an acceptable alternative to i.v. tocilizumab. No details about the cause of switching were provided [2]. A 2011 double-blind study of 1457 RA patients demonstrated equivalent efficacy between i.v. and s.c. abatacept for RA [3]. However, a small real-world study of abatacept i.v. to s.c. switchers reported that 22.9% switched back to i.v. over a 6-month period due to worsening of symptoms [4].

In our study, 29.2% (7/24) who wanted to revert to i.v. medication did so because they preferred the 4-weekly face-to-face visits with a healthcare provider, reinforcing the role of the therapeutic relationship in determining patient satisfaction. A 2017 study of 405 patients on i.v. biologic DMARDs outlined the patient-reported advantages of IV administration; including the visit acting as an additional physical assessment and staff being able to monitor for side-effects and provide emotional support [5]. Only half of patients considered their administration method to have resulted from joint decision-making between patient and doctor, with 35.3% stating this decision was made solely by their doctor [5].

The majority of patients in our small study who went through i.v. to s.c. switch preferred to return to the i.v. formulation. Those who preferred to return to i.v. administration did so because of worsening of their symptoms (reflected by total, and all components of RAPID3). It is tempting to speculate that a reduction in face-to-face interactions with healthcare professionals may have

Fig. 1 Details of patients who wanted to revert to i.v. from s.c. administration



Reason for wanting to switch back from SC to IV	Abatacept (N = 10) n (%)	Tocilizumab (N = 14) n (%)	p–value
Worsening symptoms	6 (60%)*	7 (50%)*	0.69
Preferred monthly administration over weekly	1 (10%)	2 (14%)	1.00
Preferred seeing healthcare professional in hospital	2 (20%)	5 (36%)	0.65
Preferred not to self–administer own medication	1 (10%)	0 (0%)	0.41

*associated with worsening on RAPID3 score

influenced the worsening disease activity as assessed by patient-reported outcome measures. Taken together, our results suggest switching from i.v. to s.c. abatacept or tocilizumab should not be mandatory and perhaps not even advisable for future pandemics, and may only have a limited impact if adopting a joint decision-based approach due a low percentage of patients agreeing to switch formulation.

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Data availability statement

The data underlying this article cannot be shared publicly due to for the privacy of individuals that participated in the study. The data will be shared on reasonable request to the corresponding author.

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