Conflicts of interest

None declared. None of the contributing authors have any conflict of interest, including specific financial interests of relationships and affiliation relevant to the subject matter or discussed materials in the manuscript.

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Statement of ethics

Informed consent for the study and for the publication of the photographs was obtained from the patients. The study complied with the Declaration of Helsinki.

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Compliance, safety concerns and anxiety in patients treated with biologics for psoriasis during the COVID-19 pandemic national lockdown: a multicenter study in the Czech Republic

Editor

Patient concerns about the possible increased susceptibility to coronavirus disease 19 (COVID-19) infection or a more severe course of the disease when treated with immunosuppressive therapy may lead to lower treatment compliance.[1,2]

For this study, all psoriasis patients with a scheduled visit at two university dermatology departments in Prague, Czech Republic during the national lockdown (16 March to 24 April) due to the COVID-19 were enrolled. At the time of the study, the number of confirmed COVID-19 cases in Prague increased from 116 (8.4 cases per 100 000 inhabitants) to 1668 cases (122 cases per 100 000 inhabitants). Patients completed a standardized Hospital Anxiety and Depression Scale (HADS) questionnaire; only the anxiety subscale was used (HADS-A). The presence of anxiety was defined as a HADS-A score of ≥8.[3] The participants were asked to reply to the following statement: 'I feel an increased risk of infection (complications) from coronavirus (COVID-19) because of the type of treatment for my psoriasis'. Patients were advised to discontinue treatment only if they showed symptoms of COVID-19 or were in high-risk contact with a confirmed case of COVID-19. Statistical analysis was performed using SPSS v24.0 (SPSS Inc., Chicago, IL).

In total, all 210 patients complied with the inclusion criteria and agreed to participate in the study: 117 (55.7%) patients on biologics, 47 (22.4%) on conventional immunosuppressive therapy and 46 (21.9%) on topical therapy. Demographic and clinical characteristics of the patients in the three study groups were similar (Table 1). None patient on biologics and only 4.3% (2/47) on conventional immunosuppressants discontinued therapy because of concerns about their treatment and COVID-19 infection.

The distribution of patients regarding an anxiety score (HADS-A) of ≥8 was 24.8% for patients on biologics, 19.1% on conventional systemic and only 6.5% on topical therapy. The prevalence of anxiety in patients on biologics was similar to patients on conventional systemics (OR = 1.39, 95% CI, 0.60–3.22, $P = 0.54$) but significantly higher than in patients on topical therapy (OR = 4.72, 95% CI, 1.36–16.38, $P < 0.01$). The average anxiety score was slightly higher ($P = 0.61$) in the biologics group (OR = 5.34, 95% CI, 4.59–6.09) than in the conventional systemic group (OR = 4.98, 95% CI, 3.77–6.19) and

Table 1 Demographic and clinical characteristics of the study participants (n = 210)

Characteristics	Biologics (*n* = 117)	Conventional systemic (*n* = 47)	Topical therapy (*n* = 46)
Gender			
Male	76 (65.0%)	29 (61.7%)	24 (52.2%)
Female	41 (35.0%)	18 (38.3%)	22 (47.8%)
Age (years)			
Average (range)	47.2 (19–84)	48.0 (22–82)	47.0 (18–78)
Average PASI (range)	1.3 (0–8)	4.8 (0–30)	4.3 (0–24)
Current therapy			
Anti-TNF-α	43 (36.8%)		
Anti-IL	74 (63.2%)		
Cyclosporine		3 (6.4%)	
Methotrexate (oral)		44 (93.6%)	

PASI, Psoriasis Area and Severity Index.

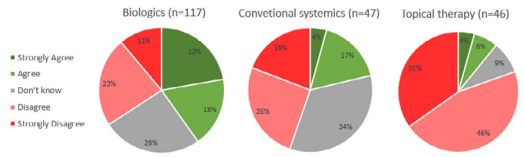

Figure 1 Patients' response to the statement, 'I feel an increased risk of infection (complications) from coronavirus (COVID-19) because of the type of treatment for my psoriasis'.

significantly higher ($P < 0.04$) than in the topical therapy patients (OR = 3.98, 95% CI, 3.27–4.69).

Treatment safety concerns were significantly more common in the biologics-treated patients, where 40.7% either agreed/strongly agreed of having experienced an increased risk of COVID-19 infection as compared to 21.3% in the conventional systemic group ($P < 0.01$) and 10.9% in the topical therapy group ($P < 0.00001$) (Fig. 1).

Psychological factors, such as depression or anxiety, have an important effect on treatment compliance.[4] Moreover, treatment safety is also a critical factor in a patient's decision to start or continue therapy.[5] Therefore, it can be expected that during the COVID-19 pandemic, there may be a decrease in compliance, especially in psoriasis patients on immunomodulatory therapy. However, the results of our study show that although patients on biologic therapy had more anxiety and treatment safety concerns than patients in the other treatment groups, they did not want to discontinue or interrupt their treatment.

This study has limitations. Patient anxiety is affected by the severity of psoriasis, but in our study, patients on biologics had recently a milder case of the disease than patients in the other groups. It is also possible that the relationship between psoriasis treatment and anxiety could be indirect (e.g. due to unmeasured confounding) and not a direct consequence of the COVID-19 pandemic.

In conclusion, the overall compliance of biologic treatment of patients with psoriasis during the COVID-19 pandemic lockdown was extremely good despite expressing anxiety and more frequent concerns about the safety of their treatment compared to patients on other therapies.

Conflicts of interest

FR has received honoraria as a speaker and/or consultant for AbbVie, Celgene, Eli Lilly, Janssen, MSD, Novartis, Sanofi Genzyme, UCB. JH has received honoraria as a speaker and/or consultant for Novartis, LEO Pharma, Janssen, Eli Lilly, Sandoz, Celgene, Eucerin. ST has no conflict of interest. PB has received honoraria as a speaker and/or consultant for Eli Lilly, Janssen, Novartis, Leo Pharma. SG has received honoraria as a speaker and/or consultant for AbbVie, Celgene, Eli Lilly, Janssen, MSD, Novartis, Sanofi Genzyme, UCB, Leo Pharma. NV has received honoraria as a speaker for Novartis. MA reports fees for Advisory Boards from Abbvie, BMS. JH has received honoraria as a speaker and/or consultant for AbbVie, Celgene, Eli Lilly, Frankl Pharma, Janssen, Leo Pharma, Novartis, Novartis Global, Sanofi Aventis and Sanofi Genzyme.

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[Correction added on 26 August 2020, after first online publication: the affiliations of authors have been corrected in this version.]

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Relapsing symmetric livedo reticularis in a patient with COVID-19 infection

Editor

During the Coronavirus 2019 (COVID-19) pandemic, several associated skin conditions were reported in infected patients, including, urticaria,[1] exanthema,[1] erythema multiforme,[2] chickenpox-like vesicles,[1] pityriasis rosea,[3] erythema nodosum like Sweet's syndrome,[4] symmetrical drug-related intertriginous and flexural exanthema,[5] petechial rash,[6] vasculitic purpura,[7] acro-ischaemia/necrosis,[6] Kawasaki disease[2] and chilblain lesions.[6]

We present a 57-year-old man with cough, dyspnoea, headache, myalgia arthralgia, fever up to 38.7 °C and abdominal pain worsening over 8 days. Extensive, symmetric livedo reticularis (LR) was present on trunk and thighs (Figs 1,2). Laboratory testing showed elevated C-reactive protein, ferritin, D-dimers and lymphopenia. Nasopharyngeal PCR detected SARS-CoV-2, and chest CT showed multifocal ground glass opacities, suggestive for COVID-19. Because of the unusual sudden onset of symmetric LR in a middle-aged man, an additional workup for underlying conditions was performed. While antineutrophilic cytoplasmic antibodies, platelets, INR/APTT, rheumatoid factor, cryoglobulins and antiphospholipid antibodies were negative, antinuclear factor (ANA) was positive with nuclear pattern (titre 1/320, but without ENA-blot specificity). The patient's previous ANA titre was unknown, and so far, it has not been investigated whether COVID-19 can induce such antibodies (as described in other viral disease[8]). Infectious causes of livedo including HIV, mycoplasma pneumonia, syphilis, Legionella pneumophila, influenza A/B, RSV and hepatitis B/C were negative. During 8 days, oxygen, acetaminophen, hydroxychloroquine and low-molecular weight heparin in preventive dosing were administered. After discharge, livedo fluctuated, but progressively weaned. At 3 weeks follow-up, inflammatory parameters were normal (besides insignificantly elevated ferritin), while the patient still experienced slight dyspnoea on exertion.

Livedo reticularis describes a regular, lace-like network of non-fixed, dusky patches forming complete rings surrounding a pale centre.[9] This clinical picture is caused by constriction of central arterioles and subsequent peripheral venodilation.[9] LR is rarely associated with underlying diseases. It is mostly seen in healthy young woman as a physiological reaction triggered by cold-induced vasospasms and is then named cutis marmorata.[9] When LR is not influenced by cold exposure, it is called primary LR.[9] A congenital form is referred to as cutis marmorata telangiectatica congenita.[9] When livedo presents as a non-symmetric, localized, mostly unilateral and irregular network with broken rings, it is named livedo racemosa (LRC).[9] LRC is associated with more significant reduction in blood flow caused by protracted arteriolar vasospasm, thrombosis and/or hyperviscosity.

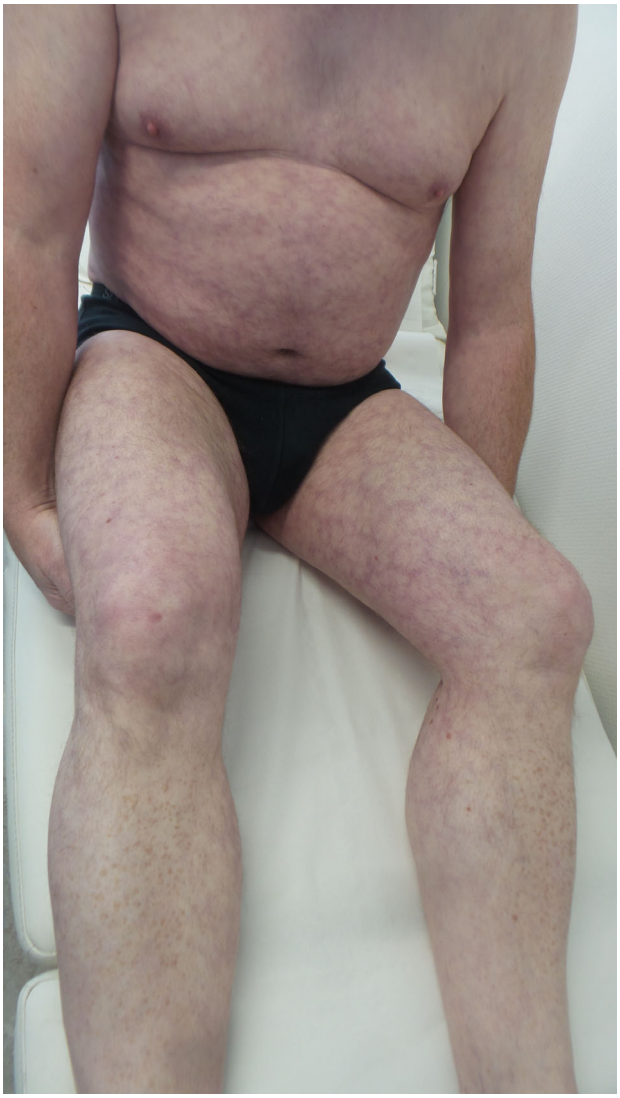

Figure 1 Symmetric regular lace-like network on the legs and trunk.