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Funding sources: None.

Conflict of interest: Dr Torres has served as a scientific consultant, speaker, and clinical study investigator for AbbVie, Amgen, Boehringer Ingelheim, Biogen, Celgene, Janssen, LEO-Pharma, Eli-Lilly, MSD, Novartis, Pfizer, Samsung Bioepis, and Sanofi. Dr Conrad has served as a scientific consultant, speaker, and clinical study investigator for AbbVie, Actelion, Amgen, Celgene, Janssen, LEO Pharma, Lilly, MSD, Novartis, and Pfizer. Dr Ferreira served as scientific consultant, speaker, and clinical study investigator for AbbVie, Janssen, LEO-Pharma, Eli-Lilly, Novartis, and Pfizer. Dr Leite served as scientific consultant, speaker, and clinical study investigator for AbbVie, Janssen, Eli-Lilly, and Novartis. Dr Mendes-Bastos has served as a scientific consultant, speaker, and clinical study investigator for AbbVie, Pfizer, Janssen, LEO Pharma, Novartis, Sanofi, Teva, Bayer, and L'Oreal. Dr Piaserico has served as scientific consultant, speaker, and clinical study investigator for AbbVie, Celgene, Galderm, Janssen, LEO Pharma, Lilly, MSD, Novartis, and Pfizer. Dr Chiricozzi has served as scientific consultant, speaker, and clinical study investigator for AbbVie, Biogen, Eli Lilly and Company, Janssen, Leo Pharma, Novartis, UCB Pharma, and Sanofi Genzyme. Dr Balato, Dr Conti, Dr Dapavo, Dr Gaiani, Dr Malagoli, Dr Megna, Ms Valério, Dr Messina, Dr Nidegger, Dr Odorici, Dr Prignano, Dr Ribero, Dr Ricceri, and Dr Tonini have no conflicts of interest to disclose.

Reprints not available from the authors.

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https://doi.org/10.1016/j.jaad.2019.02.031

Tracking changes in nailfold capillaries during dermatomyositis treatment

To the Editor: The clinical features of dermatomyositis are believed to be due in part to small vessel vasculopathy and perivascular inflammation, which leads to a reduction in capillary density with compensatory dilatation of the remaining capillaries.[1] In the skin, a manifestation of this is easily measurable is changes in capillary nailfolds. Indeed, a retrospective study of 92 juvenile dermatomyositis patients showed that nailfold capillary density is a marker of not just skin damage but also muscle damage and, therefore, appears to reflect the degree of systemic blood vessel alterations.[2] Another study of 60 patients with juvenile dermatomyositis showed that low nailfold capillary density is associated with impaired pulmonary function tests.[3] The question remains if these changes in adult dermatomyositis are permanent and represent a persistent measure of overall disease-induced damage, or if on therapy, they are reversible, suggesting they are more a measure of disease activity. Our objective was to assess if these capillary changes reverse with the use of immunosuppressant therapy and if the rate or extent of reversal varies between therapeutic options.

We performed a retrospective chart review of all patients seen in Massachusetts General Hospital's combined Rheumatology-Dermatology clinic during November 2012-June 2018. Nailfold capillaroscopy exam of all fingers was performed by the same dermatologist with the same optical dermatoscope at each visit. The following parameters of periungual capillaries were assessed: dilatation, dropout, and reangiogenesis. The presence of the aforementioned parameters in ≥2 fingers was considered remarkable.

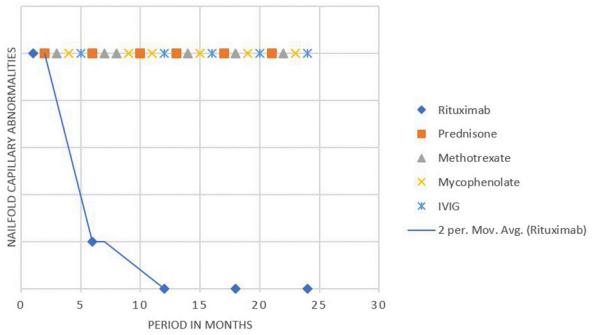

Fig 1. Patients who received rituximab treatment showed a dramatic improvement in their nailfold capillaries over the first 6 months, and the changes in their nailfold capillary patterns completely resolved after 12 months of follow-up. Patients who received other immunosuppressive medications (prednisone, methotrexate, mycophenolate mofetil, IVIG) showed no changes in nailfold capillary patterns. *IVIG*, Intravenous immunoglobulin; *2 per. Mov. Avg (rituximab)*, curve of rituximab over time.

We identified 45 dermatomyositis patients. A review of history, capillaroscopy exam, medications, and timing was performed. We found that before initiation of therapy 10 patients (22%) had normal-appearing nailfold capillaries, and 35 patients (78%) had at least 1 remarkable change in their nailfold capillary pattern. Of those patients with nailfold capillary changes, all had them in multiple digits, and multiple types of capillary changes were seen. Of patients with capillary changes, 10 patients (29%) went on to receive rituximab treatment (2 infusions, 1 month apart), and 71% received ≥1 other immunosuppressive (prednisone, methotrexate, mycophenolate mofetil, intravenous immunoglobulin). Patients who did not receive rituximab treatment, but received other immunosuppressive treatment, showed no alterations in their nailfold capillary patterns on 6 months' follow-up or on 2-year follow-up, regardless of macroscopic clinical response (Fig 1). In contrast, 80% of patients who received rituximab treatment had normal-appearing nailfold capillaries on 6 months' follow-up and 100% at 2 years. Our data suggest that although inflammation might be suppressed by other immunosuppressants rituximab is unique in reversing remarkable nailfold capillaries.

Our data strongly suggest that rituximab targets microvasculature and restores the function of nailfold capillary in dermatomyositis; if rituximab is truly disease modifying, there might be a case for rituximab becoming the primary first-line agent for this disease. To help determine if rituximab is disease modifying and this skin marker also mirrors recovery of microvascular damage in other organs, longitudinal studies examining if differences in long-term outcomes reflect these differences in outcome at the microvascular level should be performed.

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Funding sources: None.

Conflicts of interest: None disclosed.

Reprints not available from the authors.

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https://doi.org/10.1016/j.jaad.2019.02.027

Pharmacy costs of medications for the treatment of onychomycosis in the United States

To the Editor: Onychomycosis affects approximately 5.5% of the world's population, causing significant physical and social impairment.[1] Studies on the economic burden of onychomycosis medications are dated,[2,3] and estimated costs based on manufacturer-reported retail prices may be inaccurate. The National Average Drug Acquisition Cost (NADAC) was developed to increase medication cost transparency and to more accurately represent the prices paid by pharmacies for medications, inclusive of manufacturer-to-pharmacy discounts. The NADAC is used by state Medicaid agencies to set reimbursement for ingredient costs of medications to more accurately reflect the spending burden of outpatient prescription medications.