Disseminated molluscum contagiosum associated with immunomodulatory therapy

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Molluscum contagiosum is a common cutaneous disease caused by an infection with the molluscum contagiosum virus of the Poxviridae family. It is transmitted by direct contact and typically affects children. In immunocompetent patients, infection is self-limited with spontaneous resolution. Risk factors for infection in adult patients include sexual transmission and severe immunosuppression. Lesions in adults are usually distributed on the lower abdomen, thighs, and genital area. Adult patients who are immunosuppressed may develop many lesions in this distribution or have widespread disease.1-4 Although lesions in immunosuppressed patients may present classically as pink or skin-colored umbilicated papules, they may also be large or verrucous.1 Immunosuppressed patients with molluscum contagiosum have a protracted disease course.

CASE REPORT

A 41-year-old woman with a history of multiple sclerosis, psoriasis, and psoriatic arthritis presented with generalized skin lesions. During a 7-month period, they spread from her face to other areas. Her medications included fingolimod 0.5 mg daily, methotrexate 12.5 mg weekly, and abatacept 750 mg monthly. Physical examination revealed numerous pink umbilicated papules on the head, trunk, and groin (Fig 1). Skin biopsy demonstrated an epithelial proliferation of large eosinophilic cells characteristic of molluscum contagiosum. After a poor response to treatment with liquid nitrogen, curettage, and topical imiquimod 5% cream, additional diagnostic evaluation was performed. Laboratory studies revealed a normal total white blood cell count with an absolute lymphocyte count 453 cells/μL (7% total white blood cell count), absolute CD4+ T-cell level 181/μL (40% total T cells), and absolute CD8+ T-cell level 195/μL (43% total T cells). The CD4+ to CD8+ ratio was 0.93 (range 1.19-2.85). Serologic testing result for HIV was negative.

She was transitioned from abatacept and methotrexate to apremilast 30 mg twice daily by rheumatology. Her CD4+ count remained low and there was no reduction in number of molluscum contagiosum lesions. Fingolimod was then stopped by neurology and replaced by teriflunomide 14 mg daily. Two months later, the absolute CD4+ count increased to 917/μL and remained within normal range. At last follow-up, the majority of her lesions had resolved (Fig 2).

DISCUSSION

This case highlights a disseminated molluscum contagiosum infection in a patient with a depressed CD4+ T-cell count caused by coadministration of multiple immunomodulating medications. Similar to patients with HIV, our patient’s extremely low CD4+ T-cell level may explain her extensive infection. Our patient was able to mount an adequate immunoresponse once transitioned to apremilast and teriflunomide, which are less immunosuppressive. The latter may also confer antiviral activity by inhibiting viral replication and promoting apoptosis in infected cells in part because of its effect on de novo pyrimidine synthesis.5

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The severity of immunosuppression may have been due to the particular combination of medications prescribed, given their unique mechanisms of action and effects on the immune system. Abatacept, a CTLA-4 fusion protein, decreases immune reactivity by interfering with antigen cell presentation to T cells. Methotrexate decreases production of antiviral cytokines such as tumor necrosis factor α and interferon γ and has previously been associated with disseminated or atypical molluscum contagiosum lesions.2,3 Fingolimod, a sphingosine-1-phosphate receptor modulator, eventuates in the sequestration of lymphocytes within lymph nodes. Increased rates and severity of viral infections, particularly with varicella zoster and human papilloma virus, as well as 1 other case of disseminated molluscum contagiosum, have been reported in patients receiving fingolimod.4,6,7 Although each medication was likely contributory, the effect of fingolimod seemed particularly deleterious because improvement was noted only after its discontinuation.

In patients with signs of an opportunistic infection such as disseminated molluscum contagiosum, etiologies for immunosuppression, including iatrogenic causes, must be investigated and corrected when possible. Concurrent use of immunosuppressive and immunomodulating medications is not uncommon. Changes to therapy may require a multidisciplinary approach.

REFERENCES
1. Heng YK, Lee JSS, Neoh CY. Verrucous plaques in a pemphigus vulgaris patient on immunosuppressive therapy. Int J Dermatol. 2012;51(9):1044-1046.
2. Bansal S, Relhan V, Roy E, Garg VK, Khurana N. Disseminated molluscum contagiosum in a patient on methotrexate therapy for psoriasis. Indian J Dermatol Venereol Leprol. 2014;80(2):179-180.
3. Lim KS, Foo CC. Disseminated molluscum contagiosum in a patient with chronic plaque psoriasis taking methotrexate. Clin Exp Dermatol. 2007;32(5):591-593.
4. Behle V, Webser M, Goebeler M, Stoevsandt J. Extensive molluscum contagiosum virus infection in a young adult receiving fingolimod. Mult Scler. 2016;22(7):969-971.
5. Bilger A, Plowshay J, Ma S, et al. Leflunomide/teriflunomide inhibit Epstein-Barr virus (EBV)-induced lymphoproliferative disease and lytic viral replication. Oncotarget. 2017;8(27):44266-44280.
6. Aramideh Khouy R, Karampoor S, Keyvani H, et al. The frequency of varicella-zoster virus infection in patients with multiple sclerosis receiving fingolimod. J Neuroimmunol. 2019;328:94-97.
7. Triplett J, Kermode AG, Corbett A, Reddel SW. Warts and all: fingolimod and unusual HPV-associated lesions. Mult Scler. 2019;25(11):1547-1550.