Remission of psoriasis after allogeneic, but not autologous, hematopoietic stem-cell transplantation

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Hematopoietic stem-cell transplantation (HSCT) has emerged as an effective immunotherapy for several severe autoimmune diseases. A comprehensive search of the existing literature was performed for patients with psoriasis and HSCT. Nineteen patients have been reported to have psoriasis resolution after allogeneic or autologous HSCT. In the allogeneic setting, 10 of 13 were noted to have durable remission of their psoriasis with a mean follow-up of 49 months. Two cases that did reoccur were only transient. Six patients underwent autologous transplantation. Of these, 5 of 6 developed a recurrence of their psoriasis within 2 years. Based on a limited number of patients, psoriasis is likely to remit after allogeneic HSCT, but it is likely to recur after autologous HSCT. (J Am Acad Dermatol 2013;68:489-92.)

Key words: allogeneic; autologous; bone-marrow transplant; cancer; hematopoietic stem-cell transplantation; immunotherapy; medical dermatology; psoriasis vulgaris.

Hematopoietic stem-cell transplantation (HSCT) is a form of immunotherapy that is performed for the treatment of aplastic anemia, congenital immune deficiencies, multiple myeloma, high-risk leukemias, and relapsed lymphomas. This procedure has become safer, allowing for an expanded candidacy pool. Increasingly, it is being studied as a treatment for refractory autoimmune diseases. We observed the complete resolution of severe psoriasis in a patient undergoing reduced-intensity conditioning allogeneic HSCT from a matched, related donor for treatment of relapsed lymphoma. We then searched the literature to catalog all reported cases of psoriasis and HSCT.

CASES OF PSORIASIS RESOLUTION

A comprehensive search using the PubMed search engine was conducted in the English language to identify all previously reported cases of psoriasis that resolved after HSCT. The terms "psoriasis," "hematopoietic stem cell transplantation," and "bone marrow transplant," or different combinations of these words, were used. Seventeen cases were initially found. The bibliographies of previously reported cases were cross-checked, allowing for the addition of 1 case report published in the Japanese language.

Table I reviews the 13 cases of allogeneic transplantation,[1-13] and Table II provides a succinct review of 6 autologous cases.[13-16] The cases were distributed from 4 continents and were 89% male with a mean age of 42 years. The patients had experienced psoriasis skin or joint symptoms on average for 17 years at the time of transplantation. The most common reasons for performing the HSCT were chronic lymphocytic leukemia, acute myelogenous leukemia, and aplastic anemia. No cases were performed for refractory psoriasis. One case of aplastic anemia was secondary to gold therapy for psoriasis.[12] No reported patients died in the immediate posttransplantation period, although 1 patient was noted to have severe impairment of quality of life secondary to graft-versus-host disease (GVHD) and died 2 years posttransplantation.[7]

In the allogeneic cohort, including the reduced-intensity conditioning regimens, acute GVHD was documented in 3 patients.[7,8,12] Chronic GVHD was documented in 7 cases, including ours.[5,7,8,10,11,17] No patients manifested GVHD and psoriasis at the same time. In our patient, subjective improvement occurred within 2 days of starting induction therapy, and all skin signs of active psoriasis had resolved 15 days after the transplantation. Patients who

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received reduced-intensity conditioning had a shorter time to complete resolution of skin findings, occurring between 8 to 21 days[8,11] as compared with 7 days to 6 months after HSCT with myeloablative conditioning. However, this finding was inconsistently reported.

Psoriasis resolution was persistent for most patients who received allogeneic HSCT, during a mean follow-up of 49 months. In the myeloablative cohort, 9 of 10 cases demonstrated complete resolution until the end of follow-up. The 1 case in which the psoriasis recurred was noted to be limited to the scalp and was more easily controlled.[12] Of the reduced-intensity HSCT cases, 2 patients developed a transient recurrence. One case resolved at the time of development of GVHD, whereas the other resolved with steroid administration and did not recur.[8,11] Both of these recurrences were within the first 1.5 months. Our patient has experienced continued complete resolution 24 months after his reduced-intensity conditioning allogeneic HSCT.

In the autologous HSCT cohort, all 6 patients demonstrated initial complete remission, with 1 patient experiencing complete resolution 3 days after initiation of conditioning chemotherapy.[15] Five of the 6 patients ultimately developed recurrent psoriasis within 2 years,[14-16] albeit with more benign disease.[14-16] One patient's disease recurred as a solitary arthropathy with no recurrent skin lesions,[15] and 1 recurred at 8 months during interferon alfa immunotherapy for relapsed leukemia.[14]

CAPSULE SUMMARY

- Psoriasis is a T-cell-mediated chronic inflammatory disease.
- We report 1 case of psoriasis resolution after hematopoietic stem-cell transplantation and review 18 previously reported cases.
- Dermatologists can counsel patients with psoriasis who undergo allogeneic hematopoietic stem-cell transplantation that their disease may remit. However, psoriasis in patients undergoing autologous transplantation will frequently recur.

DISCUSSION

Allogeneic HSCT is potentially curative for autoimmune diseases, but is associated with higher rates of transplantation-related mortality than autologous HSCT. Consequently, autologous HSCT is the investigational treatment for refractory autoimmune diseases. In large studies of autologous HSCT for autoimmune disease, the transplantation-related mortality rate ranged from 5% to 12%.[17-19] In these cases, the genetic background was unchanged and the same potential T-cell receptor diversity was present so the risk of recurrence may remain high. With limited long-term follow-up, studies from other diseases have demonstrated promising results. A prospective trial of 50 patients with severe systemic lupus demonstrated a 50% disease-free survival and an overall survival of 84% at 5 years.[20] Several prospective studies of systemic sclerosis demonstrated greater than 50% improvement in patient disability, symptoms, and disease progression.[21-23] Although limited by numbers, this review does not support autologous HSCT as an effective treatment for psoriasis. Although allogeneic HSCT appears effective, because of the significant potential morbidity and mortality associated with this procedure, it should not be recommended outside the context of either a clinical trial or a concurrent high-risk hematologic malignancy.

Psoriasis has also developed in recipients of allogeneic,[24-26] cord blood,[27] and even in autologous[28] transplantation. In all 3 of the allogeneic recipients who developed psoriasis, there was a history of psoriasis in the donor. If possible, individuals with psoriasis and other immunologic skin diseases should be excluded from donating peripheral blood or bone-marrow progenitor cells to prevent the transfer of disease to recipients.

Dermatologists should be ready to provide counseling for patients with psoriasis who will undergo HSCT. Patients with psoriasis undergoing allogeneic transplantation are likely to undergo remission of their psoriasis. The presence of GVHD may be an indicator that the patient will not redevelop psoriasis. Although inconsistently reported, patients undergoing HSCT will most likely have resolution of their psoriasis within a few days to weeks after initiating conditioning chemotherapy. In contrast, patients with psoriasis undergoing autologous HSCT may be expected to have a recurrence of their psoriasis within 2 years of the transplantation, but the intensity of the disease may be mitigated.

These 19 cases of autologous and allogeneic HSCT support the concept that psoriasis is a leukocyte-mediated disease. With leukocyte and progenitor ablation, psoriasis resolved in most patients who received non-self progenitor cells despite unaltered keratinocytes. This indicates that the contribution of any primary intrinsic defect in keratinocytes, if any, is minimal in the overall pathogenesis of psoriasis. The handful of new