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Impact of dermatology consultation on the care of children with chronic graft-versus-host disease of the skin

To the Editor: Skin involvement is common in chronic graft-versus-host disease (cGVHD) and affects patient outcomes.[1] We sought to investigate the role of dermatologists in the management of cutaneous cGVHD by retrospectively analyzing 140 patients with cutaneous cGVHD seen during 2001-2017 at 2 pediatric tertiary care centers. In total, 57.1% (80/140) of patients in this cohort received a dermatology consultation. The mean follow-up time was 6.2 years in the group that received consultations and 5.3 years in the group that did not (no significant difference, $P = .161$).

We found that significantly more patients in the consultation group received myeloablative conditioning and had an unrelated or mismatched donor (Table I), all known risk factors for cGVHD.[2] In addition, suspicion for cutaneous cGVHD occurred significantly later after hematopoietic stem cell transplant (HSCT) in those who received dermatology consultations than in those who did not (0.9 vs 0.5 years, $P = .020$). Although not statistically significant, mortality was higher in the consultation group than in the nonconsultation group (25.0% vs 11.7%, $P = .054$). There was no significant difference in time from HSCT to death between the groups.

Among cutaneous cGVHD patients who received dermatology consultations, the median time from suspected diagnosis to consultation was 121.5 (range 0-2922) days. Most consultations (62.5%, 50/80) were to assist in diagnosis; 82.5% (66/80) of patients were treated before consultation, including 62.5% (50/80) who received systemic therapy with a mean ± standard deviation of 2.1 ± 1.1 systemic therapies. Corticosteroids was the most common systemic agent given (92.0%, 46/50), followed by tacrolimus (48.0%, 24/50) and cyclosporine (20.0%, 10/50).

Dermatology consultation changed 27.5% (22/80) of diagnoses (Table II). Alternative diagnoses included contact dermatitis, lichen nitidus, morbilliform drug eruption, and hypersensitivity reaction. Skin biopsy was performed to aid diagnosis in 20 patients, confirming cutaneous cGVHD in 17 (85.0%) patients. Management changes were recommended in 66 of 80 patients and included changes in both topical and systemic therapies. In 88.8% (71/80) of cases, the referring physician followed all the recommendations provided by the consultant.

Our data suggest that even with pediatric dermatologists available, there are barriers to dermatologic care. Although most patients were referred for diagnostic assistance, the median time from suspected diagnosis to consultation was 121.5 days, with most patients already receiving systemic treatment. Moreover, we identified a longer interval between HSCT and suspected cutaneous cGVHD and trends towards a higher mortality rate in referred patients, suggesting referred patients posed diagnostic challenges with potentially more severe disease.[3] Barriers to dermatology consultation might include diagnostic challenges, inadequate access to dermatology

Table I. Patient demographics and transplant characteristics

Characteristic	Dermatology consultation, N = 80, value	Nondermatology consultation, N = 60, value	*P* value*
Sex, n (%)			.863
Female	33 (41.3)	26 (43.3)	
Male	47 (58.9)	34 (56.7)	
Age at HSCT, y, mean (range)	10.1 (0.3-23.2)	9.8 (0.2-22.8)	.752
Race, n (%)			.856
White	55 (68.8)	40 (66.7)	
Black/African American	13 (16.3)	9 (15.0)	
Asian	6 (7.5)	6 (10.0)	
Other	6 (7.5)	5 (8.3)	
Ethnicity, n (%)			1.000
Hispanic	11 (13.8)	8 (13.3)	
Non-Hispanic	57 (71.3)	46 (76.7)	
Unknown	12 (15.0)	6 (10.0)	
Indication for HSCT, n (%)			1.000
Malignant	49 (61.3)	36 (60.0)	
Nonmalignant	31 (38.7)	24 (40.0)	
Conditioning regimen, n (%)			**.012**
Ablative	66 (82.5)	38 (63.3)	
Nonablative	14 (17.5)	21 (35.0)	
None	0 (0)	1 (1.7)	
Source of stem cells, n (%)			.731
Bone marrow	46 (57.4)	32 (53.3)	
Cord blood	17 (21.3)	12 (20.0)	
Peripheral blood	17 (21.3)	16 (26.7)	
Donor, n (%)			**.046**
Related	14 (17.5)	20 (33.3)	
Unrelated	66 (82.5)	40 (66.7)	
Degree of HLA mismatch, n (%)			**.041**
Fully matched	55 (68.8)	47 (78.3)	
Mismatched	23 (28.9)	6 (10.0)	
Haploidentical	2 (2.5)	2 (3.3)	
Unknown	0 (0)	5 (8.3)	
History of acute GVHD, n (%)			.158
Yes	56 (70.0)	35 (58.3)	
No	24 (30.0)	25 (41.7)	
If yes, acute skin GVHD, n/total (%)			**.021**
Yes	48/56 (85.7)	35/35 (100.0)	
No	8/56 (14.3)	0/35 (0)	
Time from HSCT to cGVHD diagnosis, y, mean (range)	0.9 (0.1-7.9)	0.5 (0-1.9)	**.020**
Type of cGVHD, n (%)			.081
Sclerotic	19 (23.8)	7 (11.7)	
Nonsclerotic	23 (28.8)	0 (0)	
Unknown	38 (47.5)	53 (88.3)	
cGVHD of other organs at time of diagnosis, n (%)			.210
Yes	32 (40.0)	17 (28.3)	
No	48 (60.0)	43 (71.7)	
Other organs involved, n/total (%)			
Mouth	12/32 (37.5)	3/17 (17.6)	
Eyes	2/32 (6.3)	1/17 (5.9)	
Lungs	7/32 (21.9)	0/17 (0)	
Gastrointestinal tract	15/32 (46.9)	6/17 (35.3)	
Liver	11/32 (34.4)	3/17 (17.6)	
Musculoskeletal tissue	1/32 (3.1)	4/17 (23.5)	
Other	0/32 (0)	1/17 (5.9)	

cGVHD, Chronic graft-versus-host disease; *GVHD*, graft-versus-host disease; *HLA*, human leukocyte antigen; *HSCT*, hematopoietic stem cell transplant.

*Comparisons made between dermatology and nondermatology consultation groups. Bolded values are statistically significant.

Table II. Changes in the dermatologic diagnosis and management of 80 ccGVHD cases after consultation

Characteristic	Value, n (%)
Diagnosis by dermatology	
Same	58 (72.5)
Different	22 (27.5)
Subtype of ccGVHD	
Eczematous or ichthyosiform	23 (28.8)
Sclerotic	21 (26.3)
Lichen planus-like	6 (7.5)
Not specified or other	30 (37.5)
Skin biopsy performed to diagnose ccGVHD	
Yes	20 (25.0)
No	60 (75.0)
Change in management	
Yes	66 (82.5)
No	14 (17.5)
Type of change in management, N = 66	
Addition of topical medication	65/66 (98.5)
Initiation of topical steroid	28/65 (43.1)
Up-titration of existing topical steroid	17/65 (26.2)
Down-titration of existing topical steroid	3/65 (4.6)
Change to topical steroid of same class	4/65 (6.2)
Topical calcineurin inhibitor	16/65 (24.6)
Topical antibiotic	9/65 (13.8)
Emollient only	1/65 (1.5)
Other	8/65 (12.3)
Withdrawal of topical medication	9/66 (13.6)
Topical steroid	6/9 (66.7)
Topical calcineurin inhibitor	2/9 (22.2)
Emollient	1/9 (11.1)
Addition of systemic medication	6/66 (9.1)
Withdrawal of systemic medication	2/66 (3.0)
Addition of other procedure (phototherapy, extracorporeal photopheresis)	13/66 (19.7)
Management after consultation	
Followed all dermatology recommendations	71 (88.8)
Followed some dermatology recommendations	6 (7.5)
No change in management	1 (1.2)
Unknown	2 (2.5)

ccGVHD, Cutaneous chronic graft-versus-host disease.

services, and lack of awareness of dermatology's utility and should be further explored.

Dermatology consultation changed diagnosis and management in a substantial number of cutaneous cGVHD patients. The initiation or up-titration of a topical corticosteroid was common, suggesting a point of education for oncology providers. Recommendations of phototherapy and extracorporeal photopheresis suggest dermatologists provide diagnostic expertise and enrich treatment modalities accessed. Our study found that skin biopsy helped with diagnosis. Because most of our cohort did not fall into established diagnostic cutaneous cGVHD subtypes,[4] skin biopsy might be of value in pediatric cutaneous cGVHD patients.

In summary, our study demonstrates that dermatology consultation plays an important role in pediatric cutaneous cGVHD care. Further studies are needed to understand the barriers to dermatology referral as well as the impact of dermatology consultation on patient outcome.

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