The natural history of pediatric-onset discoid lupus erythematosus

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Background: Pediatric discoid lupus erythematosus (DLE) is rare. The risk of progression to systemic lupus erythematosus (SLE) is uncertain.

Objective: We sought to determine the risk of progression of pediatric DLE to SLE and to characterize its phenotype.

Methods: This was a retrospective review of 40 patients with DLE.

Results: Six (15%) of 40 patients presented with DLE as a manifestation of concurrent SLE. Of the remaining 34, 9 (26%) eventually met SLE criteria and 15 (44%) developed laboratory abnormalities without meeting SLE criteria. Only 10 (29%) maintained skin-limited disease. The average age at progression to SLE was 11 years, with greatest risk in the first year after DLE diagnosis. Most (89%) patients with SLE met diagnostic criteria with mucocutaneous disease (discoid lesions, malar rash, oral and nasal ulcers, photosensitivity), positive antibodies, and/or cytopenia without developing end-organ damage over 5 years of median follow-up.

Limitations: The study was retrospective.

Conclusions: In pediatric patients, DLE carries a significant risk of progression to SLE but may predict a milder phenotype of systemic disease. All patients require careful monitoring for SLE, particularly within the first year of diagnosis. (J Am Acad Dermatol 2015;72:628-33.)

Key words: autoimmune disease; discoid lupus; pediatric dermatology; systemic lupus erythematosus.

Overall, 20% of systemic lupus erythematosus (SLE) cases present during the first 2 decades of life.[1,2] Pediatric SLE tends to be more severe than adult SLE, with an aggressive clinical course, a higher frequency of end-organ involvement at onset, a requirement for sustained immunosuppression, and increased mortality. Renal, neurologic, cardiac, and pulmonary involvement occurs more frequently in children.[1,3-6] Prognosis in pediatric SLE is related to disease severity at presentation. Delay in diagnosis and treatment initiation may increase morbidity and mortality.

Abbreviations used:

ACR:	American College of Rheumatology
CLE:	cutaneous lupus erythematosus
DLE:	discoid lupus erythematosus
SLE:	systemic lupus erythematosus

Specific subtypes of cutaneous lupus erythematosus (CLE) include acute CLE, subacute CLE, and chronic CLE.[7,8] Chronic CLE, the most common subtype described in adults, includes discoid lupus erythematosus (DLE), lupus panniculitis, chilblain

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lupus, hypertrophic lupus, and possibly tumid lupus. DLE is most prevalent and is characterized by atrophy, follicular plugging, telangiectasia, dyspigmentation, and discoid scarring.[7-10]

In adults, the frequency of progression of DLE to SLE is reported to range from 0% to 28%, with an interval between onset of DLE and SLE ranging from months to decades.[10-14] Lesions are further classified as localized (confined to the head and neck) or generalized (involving the entire body); this distinction may be clinically significant, as some studies in both adults and children have demonstrated a higher risk of SLE with generalized DLE.[15-18] Nephropathy, arthralgias, and elevated antinuclear antibody titers may also predict transformation to SLE in adults.[18] However, adults with DLE who develop SLE often have mild clinical disease with infrequent neurologic and renal involvement.[14,19,20] Wieczorek et al[11] found that most patients with DLE were given the diagnosis of SLE by meeting mucocutaneous and laboratory criteria without development of end-organ damage.

CAPSULE SUMMARY

- Pediatric discoid lupus erythematosus may be associated with systemic disease.
- Almost 40% of children with discoid lupus erythematosus in our study were given the diagnosis of systemic lupus erythematosus (15% concurrently and 26% eventually met diagnostic criteria), with greatest risk of progression in the first year.
- Children with discoid lupus erythematosus require monitoring for systemic disease.

Fewer than 3% of patients develop DLE before 10 years of age.[15,21] The natural history in children remains poorly understood. Small studies have demonstrated a significantly higher early rate of progression to SLE (up to 25%) during a variable follow-up duration of months to years,[15,21-23] suggesting that age of onset may modify the disease severity, pattern of organ involvement, and serologic findings. The interval from diagnosis of DLE to SLE has not been well studied because of the small number of studies and limited follow-up. The primary objective of this investigation was to describe the clinical and serologic characteristics of pediatric DLE and to determine the inherent risk for SLE. Secondary analyses aimed to investigate the clinical phenotype in affected patients who met diagnostic criteria for SLE.

METHODS

Hospital admissions, outpatient clinic visits, and laboratory studies were reviewed after approval by the Northwestern University Feinberg School of Medicine Investigation Review Board for all patients given the diagnosis of DLE before the age of 16 years and seen between 1995 and 2012 by faculty of the Divisions of Rheumatology and/or Dermatology at the Ann and Robert H. Lurie Children's Hospital of Chicago, IL. At least 2 health encounters were required. Patients with neonatal lupus, subacute CLE, acute CLE, tumid lupus, and lupus panniculitis were excluded.

Data were analyzed for concurrence of or progression to SLE. Diagnosis was based on fulfillment of 4 or more of the 1982 SLE American College of Rheumatology (ACR) criteria.[24] Criteria for confirmation of DLE included a specific diagnosis from a board-certified pediatric dermatologist or rheumatologist and support from 1 of the following: (1) a clinical description consistent with DLE; or (2) histopathologic confirmation of DLE.

The following data were collected for all patients when available: age at diagnosis of DLE, age at diagnosis of SLE if relevant, race/ethnicity, follow-up duration, distribution of lesions, and family history of autoimmune disease. Clinical data reported by the clinician included all ACR classification criteria for SLE.[24,25] Patients were subsequently stratified into 4 subgroups: (1) DLE with concurrent diagnosis of SLE; (2) DLE with progression to SLE; (3) DLE with laboratory abnormalities but not satisfying 1982 ACR criteria for SLE; and (4) DLE with skin-limited disease through follow-up. Patients with both DLE and SLE were also stratified to evaluate for phenotypic differences between those with SLE at onset and those who subsequently progressed to meet criteria for SLE.

Finally, to investigate associations between DLE and other SLE manifestations, a retrospective chart review was performed for all patients with SLE but not DLE followed up through 2012. The same clinical and serologic data noted above were collected for this cohort within 6 months of diagnosis.

Statistical analysis

Progression to SLE was measured as a dichotomous variable on the basis of fulfillment of the ACR criteria. Groups 1, 2, 3, and 4 were evaluated for differences in age at presentation, gender, race/ethnicity, family history of SLE and other autoimmune diseases, histopathologic confirmation, lesion distribution, and follow-up duration. Duration of follow-up was calculated from the date of the