Lymphomatoid Papulosis in a 10-year-old Boy

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Lymphomatoid papulosis (LyP), first described by Macaulay in 1968, is a paradoxical skin disease characterized by a generally clinical benign course, in contrast to malignant histological features. LyP is rarely seen in children.

We herein report a case of LyP in a 10-year-old boy who had a 4-week history of multiple, scattered erythematous papules, crusted papules or ulcerated papules on the trunk, arms and thighs. Histopathologically, there was a superficial and middermal perivascular and interstitial infiltrate composed primarily of lymphocytes, which were admixed with large, atypical, mononuclear cells with pleomorphic nucleus. These atypical cells expressed CD30(Ki-1) antigen. This is the first reported case in Korea of LyP present in a child.

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Key Words : Lymphomatoid papulosis, Child

The term lymphomatoid papulosis (LyP) was first used by Macaulay[1] in 1968 to describe an uncommon dermatosis that was clinically benign but histologically malignant. It manifests as crops of recurrent, erythematous papules or nodules that may develop ulcers or crusts. The condition usually resolves spontaneously after variable courses, often leaving atrophic scars[1-5]. However, in some patients skin lesions persist for a prolonged duration, malignant lymphoma can supervene[2,6]. Of the reported patients with LyP, 10% to 20% have had a malignant lymphoma, in some before the onset of LyP[2-4,7]. The atypical lymphocytes showed in LyP are activated T cells of two types[3,4,8] and this distinction is responsible for the histologic subdivision of Lyp into type A and type B lesions[2,3,8-10].

LyP is observed mostly during the third to fifth decades of life, but in rare cases, the disorder may occur in young adults or children[2,3,11-13]. In the Korean literature, at least 25 cases of LyP have been reported, but no case was described in a pediatric patient[5,14-21]. We herein report a case of CD30 (Ki-1) positive type A LyP present in a child.

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CASE REPORT

A 10-year-old boy had a 4-week history of a widespread papular eruption. The lesions were slightly pruritic and some had healed with hyperpigmentation but without scarring. He had experienced a febrile sense, rhinorrhea and had been diagnosed as varicella at another clinic. A clinical examination revealed multiple, scattered 0.5 to 1 cm sized erythematous to brown colored papules on the trunk, arms and thighs(Fig. 1A). A few crusted papules or ulcerated papules were also seen(Fig. 1B). General physical examination disclosed no evidence of hepatosplenomegaly or lymphadenopathy. He had no history of other skin problems or lymphoproliferative diseases, and was otherwise in good health.

On laboratory investigations, a complete blood count, urinalysis, liver function test, renal function test, and a chest roentgenogram were all within normal limits or negative.

A biopsy was performed on skin from a papule on

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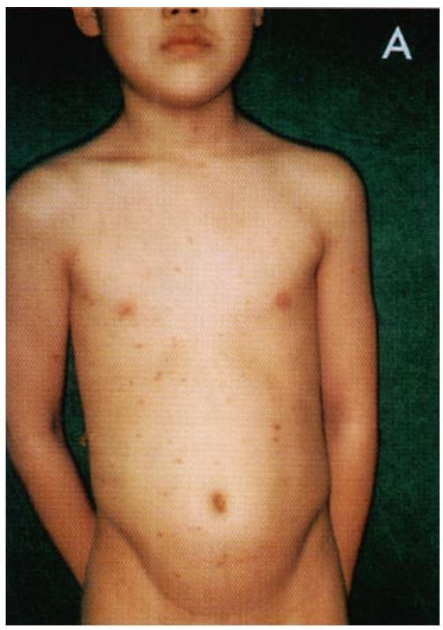

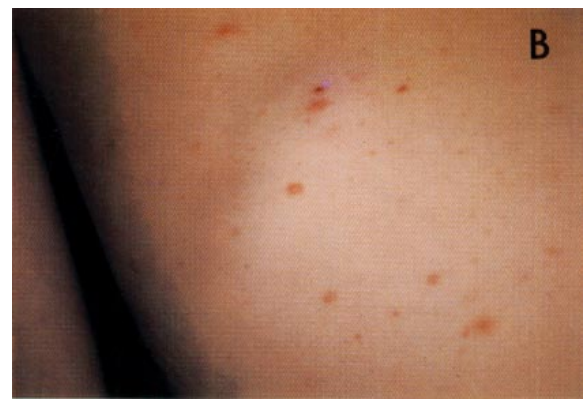

Fig. 1. Multiple, scattered 0.5 to 1 cm sized erythematous to brown colored papules, a few crusted papules and hyperpigmented macules on the trunk, arms and thighs.

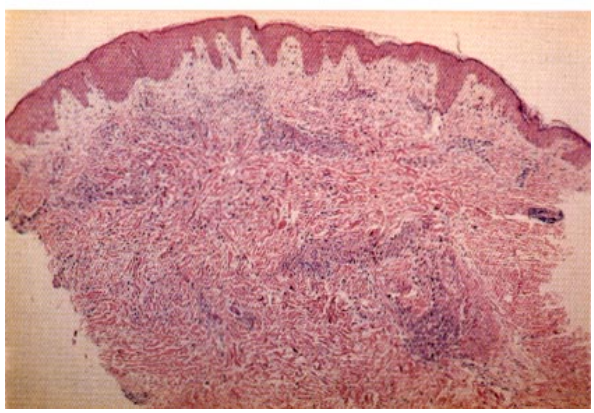

Fig. 2. Biopsy specimen showing hyperkeratosis, acanthosis, and epidermotropism in the epidermis and perivascular cellular infiltration in the superficial and middermis(H & E, ×40).

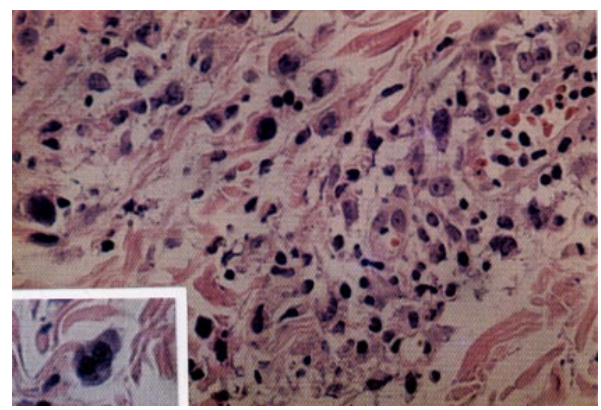

Fig. 3. Biopsy specimen showing large, atypical cells with pleomorphic nuclei, prominent nucleoli, and abundant cytoplasm(H & E, × 400). Inlet: showing large, atypical cell resembling Reed-Sternberg cell(H & E, ×400).

the abdomen. A biopsy specimen showed a superficial and middermal perivascular and interstitial infiltrate composed primarily of lymphocytes(Fig. 2), which were admixed with large, atypical, mononuclear cells with pleomorphic nuclei. These atypical cells had vesicular nuclei with prominent nucleoli and possessed abundant cytoplasm(Fig. 3). Some cells resembling the Reed- Sternburg (RS) cell were present as well. Irregular epidermal hyperplasia with little spongiosis and epidermotropism was seen in the epidermis, but epidermal changes were minimal. These atypical cells were evaluated for the presence of CD30(Ki-1), CD3, CD20, CD68, S-100 protein, and vimentin. The immunohistochemical studies demonstrated that large, atypical cells were positive for CD30(Ki-1, Dako, Copenhagen, Denmark) and pan-T cells(CD3, Dako), negative for CD20(L26, Dako), monocyte-macrophage-related antigen(CD68, Dako), S-100 protein(Dako), and vimentin(Dako)(Fig. 4).

A diagnosis of type A LyP was made. The patient was treated with oral prednisolone 10mg per

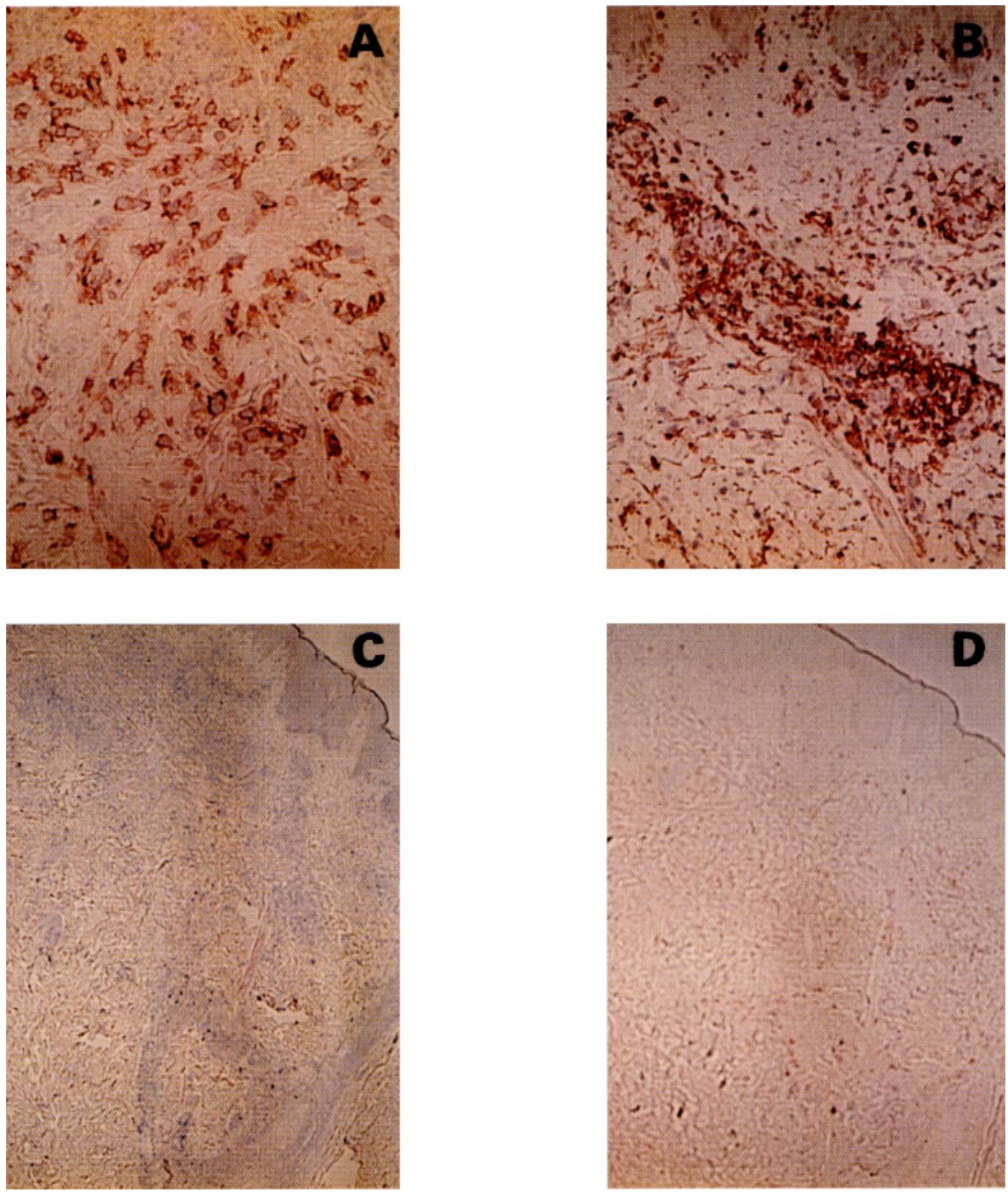

Fig. 4. Immunohistochemical stainings show positive reactions to CD30(A, ×100), CD3(B, ×100), and negative reactions to CD20(C, ×100), CD68(D, ×100).

day, erythromycin 750mg per day, and application of a topical corticosteroid (diflucortolone valerate 0.3% ointment). After 3 weeks of this therapy, all lesions regressed with hyperpigmentation without scarring. He has had no new lesions in 10 months under close observation, and is in good health.

DISCUSSION

Lymphomatoid papulosis (LyP) was first defined by Macaulay[1] in 1968 as a chronic, self-healing, clinically benign but histologically malignant eruption. This disorder is characterized by erythematous

papules and papulonodules that often progress to form crusts or hemorrhagic ulcerations. Typically, the lesions occur in crops, each lesion lasting approximately 2 to 8 weeks, although larger nodules can persist for months[2,3,5]. The eruption can occur at any age, but usually develop in the third to fifth decades[2,5,6]. LyP is rare in children[3,11,12]. In the Korean literature, at least 25 cases of LyP have been reported, but no case was described in pediatric patient[5,14-21]. Moreover, to our knowledge only about 21 cases of LyP with onset under the age of 10 years have been reported in the English literature[3,4,6,12,13,22,23].

On histologic examination, Lyp is characterized by a dense, wedge-shaped dermal infiltrate that is usually patchy and perivascular[2,5,10]. Two histopathologic patterns can be discerned in lesions of LyP, termed type A and B by Willemze[8]. Type A lesion is characterized by the presence of large, atypical cells with pale-staining convoluted nucleus, prominent nucleoli and abundant amphophilic cytoplasm. Some of these cells are binucleate and closely resemble RS cells[2,3,8,9]. In type B, the atypical cells are smaller and resembling the lymphocytes found in mycosis fungoides. The nucleus is generally hyperchromatic and cerebriform surrounded by scant cytoplasm[2,3,8,9]. In some patients with LyP, however, those features of both types are frequently encountered, and they may evolve or interchange depending on the time at which they undergo a biopsy[10,24,25]. The infiltrate may also be interstitial with confluence toward the dermoepidermal junction, often with epidermal invasion[2]. Other epidermal findings include mild to moderate spongiosis, parakeratosis, necrosis, and ulceration. But the lesions that had mainly the large RS-like cells without any significant epidermal involvement were reported[10].

Significant investigative effort has sought to categorize the lineage of the atypical cells in LyP Characteristic T-cell antigens expressed by the large cells include CD2, CD3, CD4, and CD5 with sparse or absent staining with CD7, CD1, and CD8[2,4,9,10,24-26]. The lymphoid infiltrate of LyP is also characterized by the expression of CD30(Ki-1)[2,4,7,10]. In LyP, CD30+ cells have been identified in type A and type B lesions, but are most commonly associated with the larger atypical cells in type A lesions[24]. These cells react with other lymphocyte activation markers, such as HLA-DR, interleukin-2 receptor(CD25), and stain sparsely or negatively for CD15(Leu-M1) and CD38[2-4,10,25]. Although our patient was presented with the slight epidermal involvement, large, atypical cells with pleomorphic nuclei, RS-like cells were infiltrated in the superficial and middermis. CD30 and CD3 expression was noted in these cells in the dermis.

An estimated 10% to 20% of Lyp patients progress to malignant lymphoproliferative disorders of T-cell phenotype[2-4,7]. Recently Wang et al. reported the risk for developing lymphoma in LyP patients varies from 10-20% to 80% after 15 years follow-up[27]. Hodgkin's disease, mycosis fungoides, CD30+ anaplastic large cell lymphoma(ALCL), and immunoblastic lymphoma, are the most commonly associated lymphomas[2,8,9]. The pathogenesis and categorization as a benign versus a malignant disease are the most controversial aspects of LyP[2]. Because of its long duration and tendency for self-healing lesions in otherwise healthy persons, LyP has been considered as a benign, chronic disorder[2,6]. On the other hand, these days many authors have argued that LyP may be a low-grade malignant lymphoma of activated helper T cells[2,5,25,26,28]. The criteria for labeling a lymphoid process as malignant have traditionally included aberrant immunophenotypic expression, monoclonality, and cell lineage antigen loss[2]. LyP meets the criteria listed above that define a malignant neoplasm.

The differential diagnosis of Lyp includes pityriasis lichenoides et varioliformis acuta (PLEVA), mycosis fungoides, Hodgkin's disease, CD30+ ALCL, leukemia, arthropod bite reaction, histiocytosis X[2,5]. As compared with PLEVA, clinically LyP has a more protracted course and tends to be associated with plaques and histopathologically, LyP shows fewer epidermal changes and deeper and more nodular dermal infiltrates. Moreover, Ki-1 positive cells are usually found only in LyP[29]. However, the benign-appearing histologic pattern of PLEVA usually serves to differentiate it from LyP and CD30+ ALCL can be differentiated based on both clinical and morphological grounds[2,5,9,10,24].

Little has been written on the treatment of LyP in children[3]. Because of the documented association with systemic lymphoma, therapy is generally undertaken despite the tendency of lesions to regress spontaneously[2]. Treatments that have been applied in LyP in pediatric patients include PUVA, UVB and sunlight, low-dose systemic steroid, topical steroid, and systemic antibiotics including ery-

thromycin and tetracycline[3,13,15,22]. In adult patients, weekly low dose methotrexate, topical 1,3-bis-(2-chloroethyl)-1-nitrosourea (carmustine, BCNU), human recombinant interferon α-2b, etretinate, electron beam therapy and surgical excision have also been employed[2,3,5,19,27]. Although many of these modalities are effective, their invasive nature and potentially serious side effects limit their use in children. Traditionally, oral antibiotics and topical corticosteroids have been considered less effective[6,13]. However, our patient treated with oral erythromycin, oral and topical corticosteroids experienced apparent benefit.

Continued longitudinal follow-up is essential. Although there is agreement that all patients with LyP require lifelong observation for development of lymphoma, there are few established guidelines[3,10]. Zirbel et al. suggest a thorough physical examination every 6 months in children with LyP with attention to growth and development, skin lesions, and lymph nodes. Additional studies such as bone marrow evaluation or computed tomography scans should be performed only if abnormalities are noted on routine evaluation[3].

We herein report a case of CD30 (Ki-1) positive type A LyP present in 10-year-old boy, who was treated with oral prednisolone, erythromycin, and application of a topical corticosteroid.

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