

## Successful Treatment of CD30<sup>+</sup>Lymphomatoid Papulosis using a 308-nm Excimer Light

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Received date: Mar 11, 2014, Accepted date: May 03, 2014, Published date: May 07, 2014

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### Abstract

We describe a 61-year-old Japanese patient with Lymphomatoid papulosis (LYP) successfully achieved complete remission, using a 308-nm Excimer light. Interestingly, immunohistochemical staining revealed that CD30<sup>+</sup> anaplastic tumor cells were surrounded by CD163<sup>+</sup> macrophages and CCL18 producing cells, both of which were reported to correlate with the prognosis of CTCL. Our present study sheds light on the possible pathogenesis of LYP and the possibility of a 308-nm Excimer light phototherapy for LYP.

**Keywords:** CD30<sup>+</sup>lymphomatoidpapulosis; 308-nm Excimer light; CD163 macrophage; CCL18

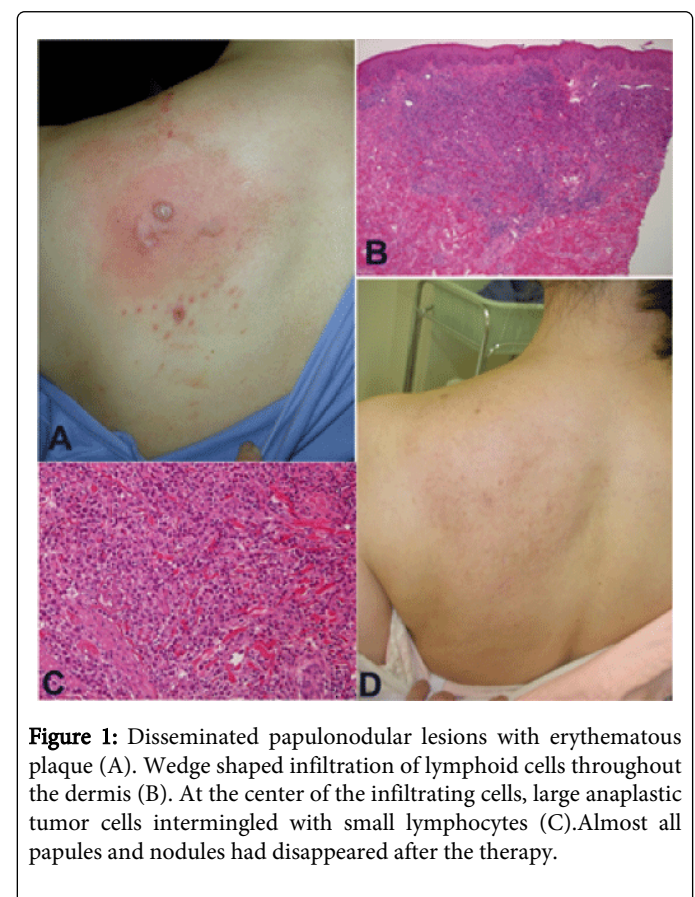
### Introduction

CD30<sup>+</sup>lymphoproliferative disorders of the skin are the second most common group of primary cutaneous T cell lymphomas (CTCLs). It represents a spectrum of diseases, including lymphomatoid papulosis (LYP) and primary cutaneous anaplastic large-cell lymphoma (PCALCL) [1,2]. LYP is characterized by recurrent papulonodular lesion, which undergoes spontaneous regression after weeks or months. Though LYP has no effect on the overall survival of such patients, LYP increases the risk for subsequent cutaneous or nodal lymphoid malignancies [1], suggesting the need for useful therapies for LYP. In this report, we describe a case of LYP in which complete remission was induced with phototherapy using a 308-nm excimer light, and its immunohistochemical study for cancer stroma.

### Case Report

A 61-year-old Japanese woman visited our outpatient clinic with a one-month history of a painful nodule on her left shoulder. She had been treated for a large plaque type of parapsoriasis en plaque five years before. On her initial visit, physical examination revealed disseminated papulonodular lesions with erythematous plaque (Figure 1A). A skin biopsy specimen revealed a wedge shaped infiltration of lymphoid cells that were prominent throughout the dermis (Figure 1B). At the center of the infiltrating cells, large anaplastic tumor cells intermingled with small lymphocytes (Figure 1C). Immunohistochemical staining revealed that these large atypical cells were positive for CD30 (Figure 2A), CD3, CD4, CD5, CD7, and negative for ALK, TIA1, GranzymeB, CD2, CD8, CD10, CD20, CD56, CD57, CD68 and CD79a (data not shown). In addition, around the CD30<sup>+</sup> area, CD163<sup>+</sup> macrophages (Figure 2B) and CCL18 producing cells (Figure 2C and 2D) were prominent. From the above findings, we diagnosed this patient as lymphomatoid papulosis (LYP) type A variant. First, we administered topical steroid with occlusive dressing therapy for 3 months without any effect. During the initial treatment,

newly infiltrated papules and papules appeared around the initial lesion. Therefore, we started phototherapy using a 308-nm excimer light with a total of 5.95 J/cm<sup>2</sup> in 20 fractions during one half of a year, and almost all papules and nodules had disappeared (Figure 1D). There was no evidence of recurrence after 15 months without any additional treatment.



**Figure 1:** Disseminated papulonodular lesions with erythematous plaque (A). Wedge shaped infiltration of lymphoid cells throughout the dermis (B). At the center of the infiltrating cells, large anaplastic tumor cells intermingled with small lymphocytes (C). Almost all papules and nodules had disappeared after the therapy.

## Discussion

In this report, we describe a case of LYP successfully treated with phototherapy using a 308-nm excimer light. Immunohistochemical staining revealed that CD30<sup>+</sup>anaplastic cells were surrounded by CD163<sup>+</sup> macrophages and CCL18 producing cells. Our present study sheds light on the possible pathogenesis of LYP and the possibility of using a 308-nm excimer light phototherapy for LYP.

LYP is characterized by a chronic course of years to decades of recurrent papulonodular lesions, each of which undergoes spontaneous regression after weeks or months [3,4]. Though LYP has no effect on the overall survival of such patients, LYP increases the risk for subsequent cutaneous or nodal lymphoid malignancies, including mycosis fungoides, anaplastic large-cell lymphoma (ALCL), and Hodgkin lymphoma [3], which suggesting the need for useful therapies for LYP. Indeed, a recent report suggested that, although UV light phototherapy and low-dose methotrexate (MTX) are commonly used therapies for LYP, sustained CR is rarely achieved [5]. Therefore, other optimal therapies for LYP are needed.

To establish novel therapies for skin disorders, immunopathological investigation is one of the conventional methods. We employed immunohistochemical staining for CD163 and CCL18, both of which are reported to correlate with the recruitment of lymphoma cells and the prognosis of cutaneous T cell lymphoma (CTCL) [6-10]. CD163, described as a classical marker for M2 macrophages, is reported to be co-expressed with CCL18 in the skin lesions of CTCL [6]. As we previously reported, M2 macrophages produce CCL18 [11], and to modify the production of CCL18 could be one of the possible immunotherapies for varieties of M2 macrophages-rich skin cancers [11-13]. In our present case, though we could not perform the double staining for CD163 and CCL18, at least both CD163<sup>+</sup> macrophages and CCL18 producing cells were detected in the same areas of the dermis. In addition, Günther et al. also reported that CCL18 from CD163<sup>+</sup> macrophages promotes the chemotaxis of CTCL cells [6], suggesting that CCL18 producing macrophages might be a target for the treatment of LYP. From the therapeutic point of view, Erkin et al. reported that 308-nm narrow-band UVB reduced macrophages and their expression of CD86 and HLA-DR in the lesional skin of psoriasis [9]. This report suggested the therapeutic effect of NB-UVB on MF might be connected to the decrease of macrophages in the lesional skin. From the above findings, we selected phototherapy using a 308-nm Excimer light, the beneficial effect of which for the treatment of various skin disorders, including CTCL, has been reported [4-9].

## Conclusion

Our present case suggests the beneficial effect of a 308-nm Excimer light on LYP. Since we described a single case, to confirm our hypothesis, further case reports will be necessary.

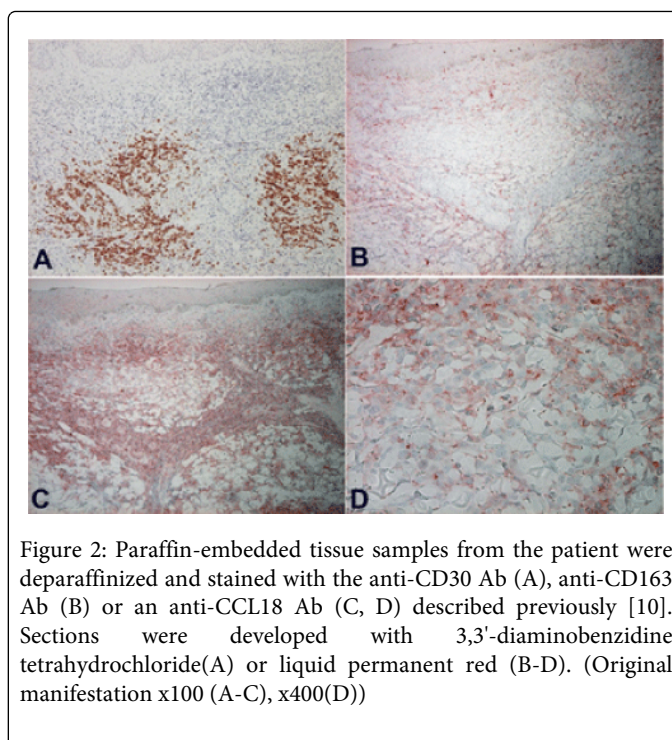


Figure 2: Paraffin-embedded tissue samples from the patient were deparaffinized and stained with the anti-CD30 Ab (A), anti-CD163 Ab (B) or an anti-CCL18 Ab (C, D) described previously [10]. Sections were developed with 3,3'-diaminobenzidine tetrahydrochloride(A) or liquid permanent red (B-D). (Original manifestation x100 (A-C), x400(D))

## References

1. Kempf W, Pfaltz K, Vermeer MH, Cozzio A, Ortiz-Romero PL, et al. (2011) EORTC, ISCL, and USCLC consensus recommendations for the treatment of primary cutaneous CD30-positive lymphoproliferative disorders: lymphomatoid papulosis and primary cutaneous anaplastic large-cell lymphoma. *Blood* 118: 4024-4035.
2. Kempf W (2006) CD30+ lymphoproliferative disorders: histopathology, differential diagnosis, new variants, and simulators. *J Cutan Pathol* 33 Suppl 1: 58-70.
3. Erkin G, Uğur Y, Güner CK, Aşan E, Korkusuz P, et al. (2007) Effect of PUVA, narrow-band UVB and cyclosporin on inflammatory cells of the psoriatic plaque. *J Cutan Pathol* 34: 213-219.
4. Mori M, Campolmi P, Mavilia L, Rossi R, Cappugi P, et al. (2004) Monochromatic excimer light (308 nm) in patch-stage IA mycosis fungoides. *J Am Acad Dermatol* 50: 943-945.
5. Niwa Y, Hasegawa T, Ko S, Okuyama Y, Ohtsuki A, et al. (2009) Efficacy of 308-nm excimer light for Japanese patients with psoriasis. *J Dermatol* 36: 579-582.
6. Nisticò S, Costanzo A, Saraceno R, Chimenti S (2004) Efficacy of monochromatic excimer laser radiation (308 nm) in the treatment of early stage mycosis fungoides. *Br J Dermatol* 151: 877-879.
7. Park KK, Liao W, Murase JE (2012) A review of monochromatic excimer light in vitiligo. *Br J Dermatol* 167: 468-478.
8. Hammes S, Hermann J, Roos S, Ockenfels HM (2011) UVB 308-nm excimer light and bath PUVA: combination therapy is very effective in the treatment of prurigonodularis. *J Eur Acad Dermatol Venereol* 25: 799-803.
9. Iga N, Otsuka A, Tanioka M, Miyachi Y, Kabashima K (2012) Improvement of Anti-TNF- $\alpha$  Antibody-Induced Palmoplantar Pustular Psoriasis Using a 308-nm Excimer Light. *Case Rep Dermatol* 4: 261-264.
10. Kambayashi Y, Fujimura T, Aiba S (2013) Comparison of immunosuppressive and immunomodulatory cells in keratoacanthoma and cutaneous squamous cell carcinoma. *Acta Derm Venereol* 93: 663-668.

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11. Fujimura T, Kambayashi Y, Furudate S, Kakizaki A, Aiba S (2013) Immunomodulatory effect of bisphosphonate risedronate sodium on CD163<sup>+</sup> arginase 1<sup>+</sup> M2 macrophages: the development of a possible supportive therapy for angiosarcoma. *Clin Dev Immunol* 2013: 325412.
  12. Furudate S, Fujimura T, Kambayashi Y, Aiba S (2014) Comparison of immunosuppressive cells and cytotoxic cells in invasive and non-invasive Bowen's disease. *Acta Derm Venereol* 94: 337-339.
  13. Fujimura T, Furudate S, Kambayashi Y, Aiba S (2013) Potential use of bisphosphonates in invasive extramammary Paget's disease: an immunohistochemical investigation. *Clin Dev Immunol* 2013: 164982.