CASE REPORT

REVISED Case Report: A case of hypertrophic lupus erythematosus with negative CD123 staining and absence of transepidermal elimination of elastin [v2; ref status: indexed, http://f1000r.es/3n7]

Previously titled: A case of hypertrophic lupus erythematosus with negative CD123 staining and transepidermal elimination of elastin

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v2 **First published:** 21 Mar 2014, **3**:76 (doi: 10.12688/f1000research.3267.1)
Latest published: 04 Jun 2014, **3**:76 (doi: 10.12688/f1000research.3267.2)

Abstract

We report the case of a 49-year-old male with clinical and histological findings consistent with hypertrophic lupus erythematosus (HLE). HLE must be clinically and histologically differentiated from keratoacanthoma, hypertrophic lichen planus, squamous cell carcinoma and plaque type psoriasis. CD123 positivity and transepidermal elimination of elastin have recently been reported as tools to distinguish HLE. Interestingly, in this case, biopsies of two separate lesions failed to reveal these two features. The etiology of this discrepancy is unknown and further studies are needed to clarify the utility of CD123 positivity and transepidermal elimination of elastin in the diagnosis of hypertrophic lupus erythematosus.

Article Status Summary

Referee Responses

Referees	1	2	3
v1 published 21 Mar 2014	report 1	report 1	
v2 published 04 Jun 2014 REVISED	report	report	report

1 **Victoria Werth**, University of Pennsylvania USA

2 **Theresa Lu**, Hospital for Special Surgery USA

3 **Jordan Reynolds**, Cleveland Clinic USA

Latest Comments

No Comments Yet

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How to cite this article: Hughes M, Gardner JM and Gao L (2014) **Case Report: A case of hypertrophic lupus erythematosus with negative CD123 staining and absence of transepidermal elimination of elastin [v2; ref status: indexed, http://f1000r.es/3n7]** *F1000Research* 2014, **3**:76 (doi: 10.12688/f1000research.3267.2)

Grant information: The author(s) declared that no grants were involved in supporting this work.

Competing interests: No competing interests were disclosed.

First published: 21 Mar 2014, **3**:76 (doi: 10.12688/f1000research.3267.1)
First indexed: 05 Jun 2014, **3**:76 (doi: 10.12688/f1000research.3267.2)

REVISED **Amendments from Version 1**

We appreciate the time and effort of the referees and we believe that addressing and accepting their suggested revisions has greatly enhanced the quality of our manuscript. Following the reviewer's suggestions, the second version of this report contains a figure displaying positive CD123 immunohistochemistry in control tissue and negative CD123 immunohistochemistry in our reported case of hypertrophic lupus erythematosus. We have changed the title and corrected a previous error stating ustekinumab as a TNF-alpha inhibitor.

See referee reports

Introduction

Hypertrophic lupus erythematosus (HLE) is a rare subset of discoid lupus erythematosus, characterized by erythematous, indurated, verrucous papules and nodules located on sun-exposed areas. HLE must be clinically and histologically differentiated from keratoacanthoma, hypertrophic lichen planus, squamous cell carcinoma and plaque type psoriasis. CD123 positivity and transepidermal elimination of elastin have recently been reported to distinguish HLE[1,2].

Report of case

A 49-year-old, unemployed, white male presented with a three-year history of an expanding "rash". He reported no constitutional symptoms. He had previously been treated with oral prednisone and an unknown topical steroid without improvement and was off all medications at our initial visit. The patient had a past medical history of hepatitis C. He denied a family history of skin or autoimmune diseases. Laboratory work-up was significant for positive anti-nuclear antibodies and anti-Ro antibodies. Physical exam revealed multiple hyperkeratotic, verrucous papules and nodules with white, scaly, cribriform centers overlying patches of depigmentation, erythema and atrophy on his bilateral arms (Figure 1) and anterior legs. His face and scalp had several atrophic, depigmented patches. Two punch biopsies were obtained from separate lesions. Histological

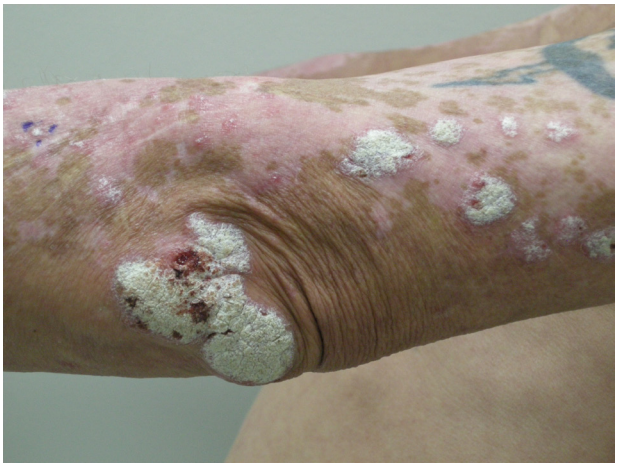

Figure 1. Clinical photo of hypertrophic lupus erythematosus. Hypertrophic lupus erythematosus presenting as a verrucous plaque on the patient's elbow.

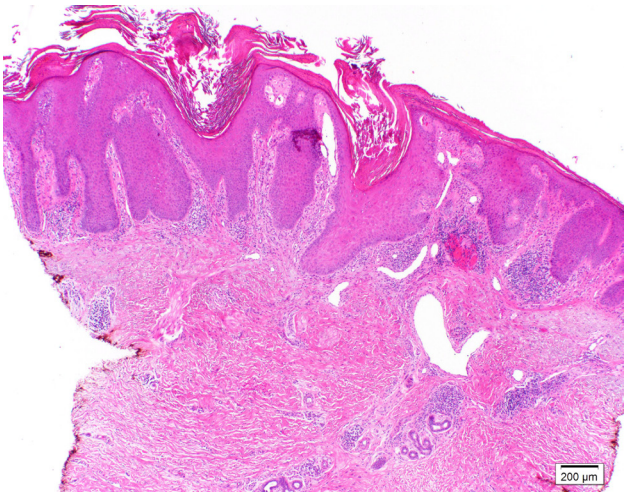

Figure 2. Histological photo of hypertrophic lupus erythematosus. Hypertrophic lupus erythematosus displays epidermal acanthosis and expansion of follicular ostia with a superficial and deep perivascular and periappendageal intradermal lymphocytic infiltrate (hematoxylin and eosin, 40× magnification).

sections demonstrated an interface inflammatory pattern with deep peri-vascular and peri-appendageal lymphocytic infiltrate and rare plasma cells (Figure 2). A diagnosis of HLE was made. The patient was prescribed clobetasol ointment 0.05% twice daily. At the three month follow-up, there was improvement of the hypertrophic lesions. The patient was subsequently lost to follow-up.

Discussion

HLE was first described by Bechet in 1940[3]. Clinical diagnosis can be challenging as HLE can mimic psoriasis or even squamous cell carcinoma. Uitto *et al.* described two histological patterns of HLE One resembled hypertrophic lichen planus, while the other was similar to keratoacanthoma[4]. Daldon *et al.* found that transepidermal elimination of elastin was present in 14 cases of HLE[1]. Recently, Ko *et al.* reported that a band of CD123 positive cells at the dermal-epidermal junction was characteristic of five cases of HLE[2].

In this patient, we examined these two recently described histologic features of HLE. Interestingly, both CD123 positivity and transepidermal elimination of elastin were not present in this case (Figure 3). However, the histological and clinical findings were most consistent with HLE. The etiology of this discrepancy is unknown and further studies are needed to clarify the utility of CD123 positivity and transepidermal elimination of elastin in the diagnosis of hypertrophic lupus erythematosus.

There is no definitive treatment for HLE. Options include topical or intralesional steroids, hydroxychloroquine, topical calcineurin inhibitors, topical or oral retinoids, thalidomide and surgical excision[5,6]. Winchester *et al.* reported on the efficacy ustekinumab, an inhibitor of IL-12 and IL-23[7].

This case highlights the discrepancies of CD 123 positivity and absence of transepidermal elimination of elastin in HLE.

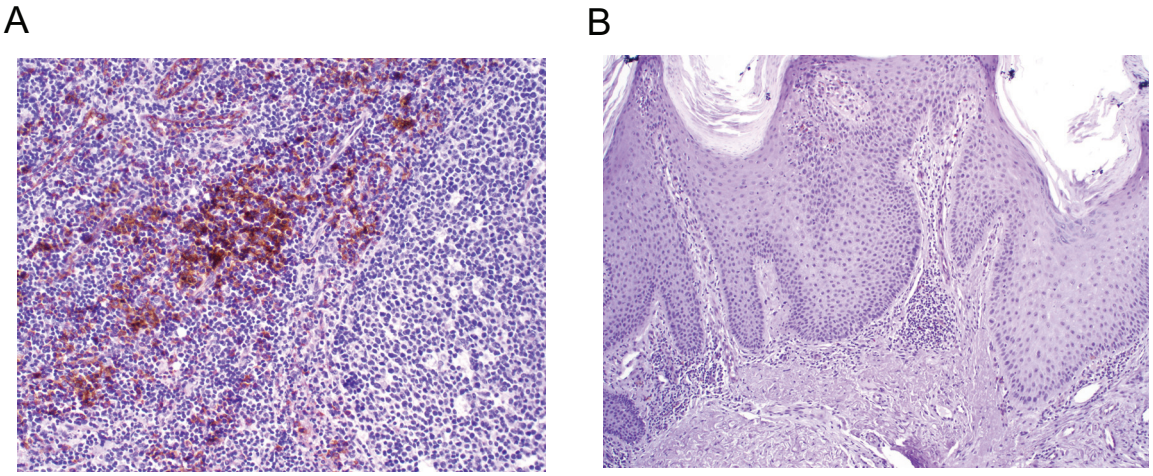

Figure 3. (**A**): Example of positive CD123 immunohistochemical stain from tonsil control tissue (200× magnification). (**B**): CD123 immunohistochemical stain on the biopsy of hypertrophic lupus erythematosus from the reported patient. Only rare plasmacytoid dendritic cells are seen in the dermis. The stain is negative for the dense band of CD123 positive cells that Ko *et al.* described in hypertrophic lupus erythematosus (100× magnification).

Consent

Written informed consent for publication of clinical details and clinical images was obtained from the patient.

Author contributions

Hughes – data collection, manuscript preparation

Gardner – data collection, manuscript preparation

Gao – manuscript preparation, oversight/supervision

Competing interests

No competing interests were disclosed.

Grant information

The author(s) declared that no grants were involved in supporting this work.

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PubMed Abstract | Publisher Full Text
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PubMed Abstract | Publisher Full Text

Current Referee Status:

Referee Responses for Version 2

Theresa Lu
Autoimmunity and Inflammation Program and Pediatric Rheumatology, Hospital for Special Surgery, New York, NY, USA

Approved: 18 June 2014

Referee Report: 18 June 2014
doi:10.5256/f1000research.4723.r5159
The authors have now addressed all the concerns.

I have read this submission. I believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Competing Interests: No competing interests were disclosed.

Victoria Werth
Department of Dermatology, University of Pennsylvania, Philadelphia, PA, USA

Approved: 17 June 2014

Referee Report: 17 June 2014
doi:10.5256/f1000research.4723.r5010
The authors successfully addressed the reviewer comments in this case report.

I have read this submission. I believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Competing Interests: No competing interests were disclosed.

Jordan Reynolds
Department of Anatomic Pathology, Cleveland Clinic, Cleveland, OH, USA

Approved: 05 June 2014

Referee Report: 05 June 2014
doi:10.5256/f1000research.4723.r5015
This article is well written but needs a few additions to improve it:

1. Please elaborate on what CD 123 is, and how it is used for diagnosing HLE. It is not common knowledge and should be expanded upon.

2. It might also be worth commenting on this paper by Miyashita A *et al.* (2013, *Acta derm venereal*) in which the authors showed patients with CD123 positive cells responded better to treatment than patients with low CD123. Do you think any of this could be supported or refuted by your cases?

I have read this submission. I believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Competing Interests: No competing interests were disclosed.

Referee Responses for Version 1

Theresa Lu
Autoimmunity and Inflammation Program and Pediatric Rheumatology, Hospital for Special Surgery, New York, NY, USA

Approved with reservations: 29 April 2014

Referee Report: 29 April 2014
doi:10.5256/f1000research.3507.r4445

This report describes a case of hypertrophic lupus erythematosus based on clinical and histopathologic criteria that is negative for CD123 and elastin elimination. Negative data is important. However, as the emphasis is on the lack of CD123 and the lack of transepidermal elastin elimination, it would be good to show the negative results. For the CD123 stain, it would be good to show a positive control to make sure that the antibody really worked.

I have read this submission. I believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Competing Interests: No competing interests were disclosed.

1 Comment

Jerad Gardner, UAMS, USA
Posted: 28 May 2014

Thank you for your commentary. The second version of this report will contain a histological photo of the positive control and negative CD 123 staining of the biopsy specimen.
Competing Interests: No competing interests were disclosed.

Victoria Werth
Department of Dermatology, University of Pennsylvania, Philadelphia, PA, USA

Approved with reservations: 14 April 2014

Referee Report: 14 April 2014
doi:10.5256/f1000research.3507.r4229

This is a case of hypertrophic lupus erythematosus that is described as unusual in pathologic presentation.

The title needs to indicate absence of transepidermal elimination of elastin. It is currently unclear if transepidermal elmination of elastin was present.

The order of treatment described for HLE is confusing. One would start with hydroxychloroquine, then add quinacrine to hydroxychloroquine, with topicals as adjunctive therapy. Oral retinoids, thalidomide, and immuosuppressives would be options. Given that frequently there are multiple lesions that may actually koebnerize in a surgical scar, one would not include surgical excision as an option.

The report cited in favor of TNF-alpha inhibitor is on ustekinumab, which is not a TNF inhibitor. This needs revision.

Information about the antibody used for CD123 staining, as well as whether frozen or fixed tissue was used, is important. Anti-CD123 staining is not as good on fixed tissue. Were there any positive controls stained simultaneously?

I have read this submission. I believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Competing Interests: No competing interests were disclosed.

1 Comment

Jerad Gardner, UAMS, USA
Posted: 28 May 2014

Thank you for your commentary. The title has been changed to more clearly reflect the absence of transepidermal elimination in this case. The treatments listed in the report were a review of treatment options from the literature. They were not ordered as a suggested line of therapy. Ustekinumab has been reported to improve the plaques of hypertrophic lupus erythematosus. It is an inhibitor of IL-12 and IL-23. This fact has been corrected. We performed CD 123 staining on paraffin embedded tissue which is the method Ko *et al.* employed in her report on the novel use of CD 123 staining in hypertrophic lupus erythematosus. The second version of this report will contain a figure displaying positive control staining and negative CD 123 staining of the biopsy from this case.
Competing Interests: No competing interests were disclosed.