CLINICAL PRACTICE ARTICLE

REVISED Case report: Treating a co-existence of hidradenitis suppurativa and psoriasis with different therapeutic approaches [version 2; peer review: 3 approved]

Previously titled: Case report: Treating a combination of hidradenitis suppurativa and psoriasis with different therapeutic approaches

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Abstract
Hidradenitis suppurativa and psoriasis are considered chronic inflammatory diseases suggesting the existence of common pathogenetic pathways. We present two cases of comorbid psoriasis and hidradenitis suppurativa, treated with certolizumab pegol and brodalumab due to failure of response to other conventional therapies. Monoclonal antibody therapies have revolutionized the treatment of chronic inflammatory disorders such as psoriasis and hidradenitis suppurativa. Given the good clinical response to anti-IL-17 and anti-tumor necrosis factor agents in patients undergoing psoriasis and hidradenitis treatment, investigations on this direction could represent the starting point in new therapeutic approach for revolutionary treatment in these difficult-to-treat diseases.

Keywords
hidradenitis suppurativa, psoriasis, certolizumab, brodalumab

Open Peer Review

Reviewer Status ✓ ✓ ✓

	Invited Reviewers		
	1	**2**	**3**
version 2 (revision) 22 Dec 2020		✓ report	✓ report
version 1 26 Nov 2019	✓ report	✗ report	? report

1. **Thrasyvoulos Tzellos**, University of Tromsø, Tromsø, Norway
2. **Georgios Nikolakis**, Brandenburg Medical School Theodor Fontane, Dessau, Germany
European Hidradenitis Suppurativa Foundation, Dessau, Germany
3. **Kevin K. Wu**, University of California, Irvine, Irvine, USA

Any reports and responses or comments on the article can be found at the end of the article.

Corresponding author: Theodora Kanni (kannidora@med.uoa.gr)

Author roles: Tampouratzi E: Conceptualization, Data Curation, Methodology, Supervision, Validation, Visualization, Writing – Original Draft Preparation, Writing – Review & Editing; **Kanni T**: Writing – Original Draft Preparation; **Katsantonis J**: Writing – Original Draft Preparation; **Douvali T**: Writing – Original Draft Preparation

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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First published: 26 Nov 2019, **8**:2002 https://doi.org/10.12688/f1000research.21216.1

REVISED **Amendments from Version 1**

In the revised version of our manuscript, we changed the title to "Treating co-existence of hidradenitis suppurativa and psoriasis", instead of the term combination.

Also, we provide severity assessment before and after treatment for psoriasis and hidradenitis, for both cases. The clinical improvement is estimated using the PASI (Psoriasis Area Severity Index) score, BSA (Body Surface Area), and IHS4 (International Hidradenitis Suppurativa Severity Scoring System) score, while the impact on the quality of life is estimated with the DLQI (Dermatology Life Quality Index) score.

Any further responses from the reviewers can be found at the end of the article

Introduction

Hidradenitis suppurativa (HS) and psoriasis are considered chronic inflammatory diseases suggesting the existence of common pathogenetic links[1–3]. Patients with psoriasis and HS have elevated levels of tumor necrosis factor (TNF) and interleukin-17 (IL-17) in lesional and non lesional tissues, which has been the justification for selective targeting of these inflammatory pathways[4–7]. We present two cases of co-existence of psoriasis and HS treated with certolizumab pegol and brodalumab due to the peculiarities of treatment with other therapies.

Case report

The first patient, a 27-year-old Caucasian woman, presented with extensive psoriasis vulgaris covering her head, trunk, lower limbs over a period of 5 years, with a recent PASI (Psoriasis Area Severity Index) score of 10.5 and 10% BSA (Body Surface Area) score. She, also, suffered from psoriatic arthritis with axial joint involvement (manifestations of hierolagonitis) over the previous 2 years and moderate HS of Hurley II stage disease on the axillae over the last year, with IHS4 (International Hidradenitis Suppurativa Severity Scoring System) score 10 (Figure 1a, b, c, d, e). Despite the limited extent of the lesions, the patient presented considerable pain, discomfort and substantial negative effect on quality of life. Patient's DLQI (Dermatology Life Quality Index) score was, also very high, 21. The patient didn't have a positive family history for the above diseases and the molecular control for HLA-B27 was negative. Previous treatments with topical corticosteroids and methotrexate for one year were not effective and treatment with apremilast for 8 months didn't offer clinical improvement in both diseases. The patient underwent comprehensive laboratory investigations, including complete blood cell count, chemistry panel, tuberculosis (Quantiferon-TB Gold test), human immunodeficiency virus and hepatitis B and C screening and chest x-ray. Since all these examinations revealed values within normal limits and because of the patient's desire for childbirth, she was treated with certolizumab pegol (CZP). The initial dose was 400mg, followed by 400mg every 2 weeks. Treatment with CZP significantly improved psoriasis and psoriatic arthritis at week 8 and HS at week 12. The PASI score after treatment was 1, BSA was 2%, whereas IHS4 score was 1. Except the clinical improvement, the DLQI score was impressively reduced to 2. (Figure 1f–i). She continues treatment 9 months after and at 3 months follow-up is fully controlled.

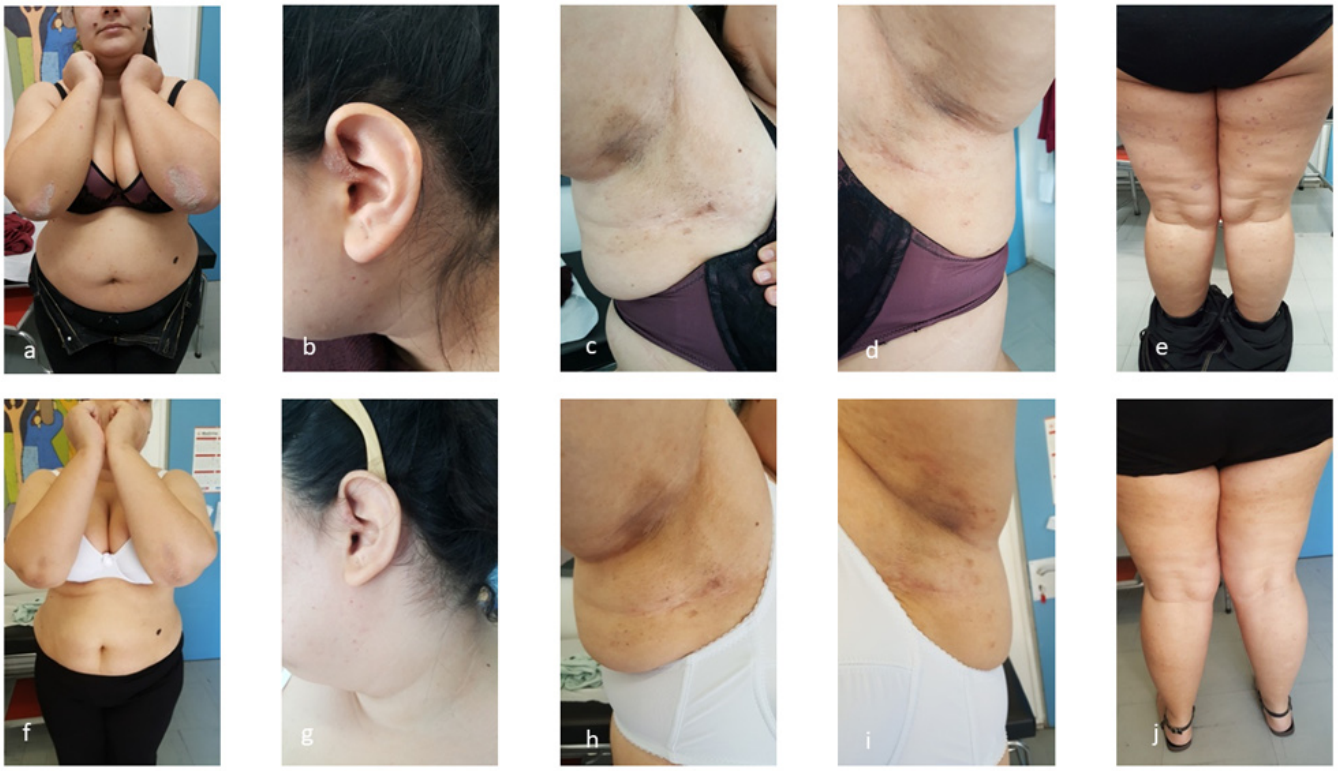

Figure 1. Psoriatic and HS lesions of patient 1. (**a**–**e**) Psoriatic and HS lesions of first patient before treatment with certolizumab pegol. (**f**–**j**) Psoriatic and HS lesions of first patient after treatment with certolizumab pegol.

The second patient, a 42-year-old Caucasian man, was referred to our hospital's dermatological department with multiple, itchy, scaly, red-gray psoriatic plaques covering almost all his body: scalp, arms, trunk, thighs (Figure 2a–d) for the previous 6 months, over a history of 10 years psoriatic disease (recent PASI: 18.5, BSA: 45%). The patient, also, experienced concomitant psoriatic arthritis with peripheral joint involvement and dactylitis discomfort over the previous 10 years, and moderate HS of Hurley II stage disease appearing on the groin area in the previous year. The IHS4 score was 10. The above diseases had a negative impact factor on his quality of life with DLQI 25. The patient's family history was positive: his mother and sister were also suffering from psoriasis. The patient had until recently received almost all the available therapies related to his diseases: cyclosporine for 2 years interrupted due to urea and creatinin increase (examinations restored after discontinuation), methotrexate and golimumab for 3 years with improvement only in psoriatic arthritis, adalimumab ustekinumab and secukinumab, with a partial response. After a complete laboratory examination, with results in normal limits, the patient started therapy with brodalumab. The initial dose was 210 mg at weeks 0, 1, 2 followed by 210 mg every 2 weeks. His psoriasis and psoriatic arthritis were highly improved at week 8 (Figure 2 e–h), as was HS at week 16. The PASI score after treatment was 1.5, the BSA was 8%, while IHS4 score was reduced to 3. He has continued treatment for 1 year; at 3 months follow-up he reported improvement in his quality of life and the DLQI score was 1.

Discussion

Monoclonal antibody therapies have revolutionized the treatment of chronic inflammatory disorders such as psoriasis and HS. CZP is a TNF inhibitor that does not have a fragment crystallizable (Fc) region, which is normally present in a complete antibody and therefore it does not cause antibody-dependent cell-mediated cytotoxicity[8–10]. In contrast to other whole-antibody anti-TNFs, CZP crosses the placenta only by passive diffusion and could therefore be considered as the first-line choice of treatment for women who wish to become pregnant. Since CZP is an anti-TNF drug, therapies which have good clinical

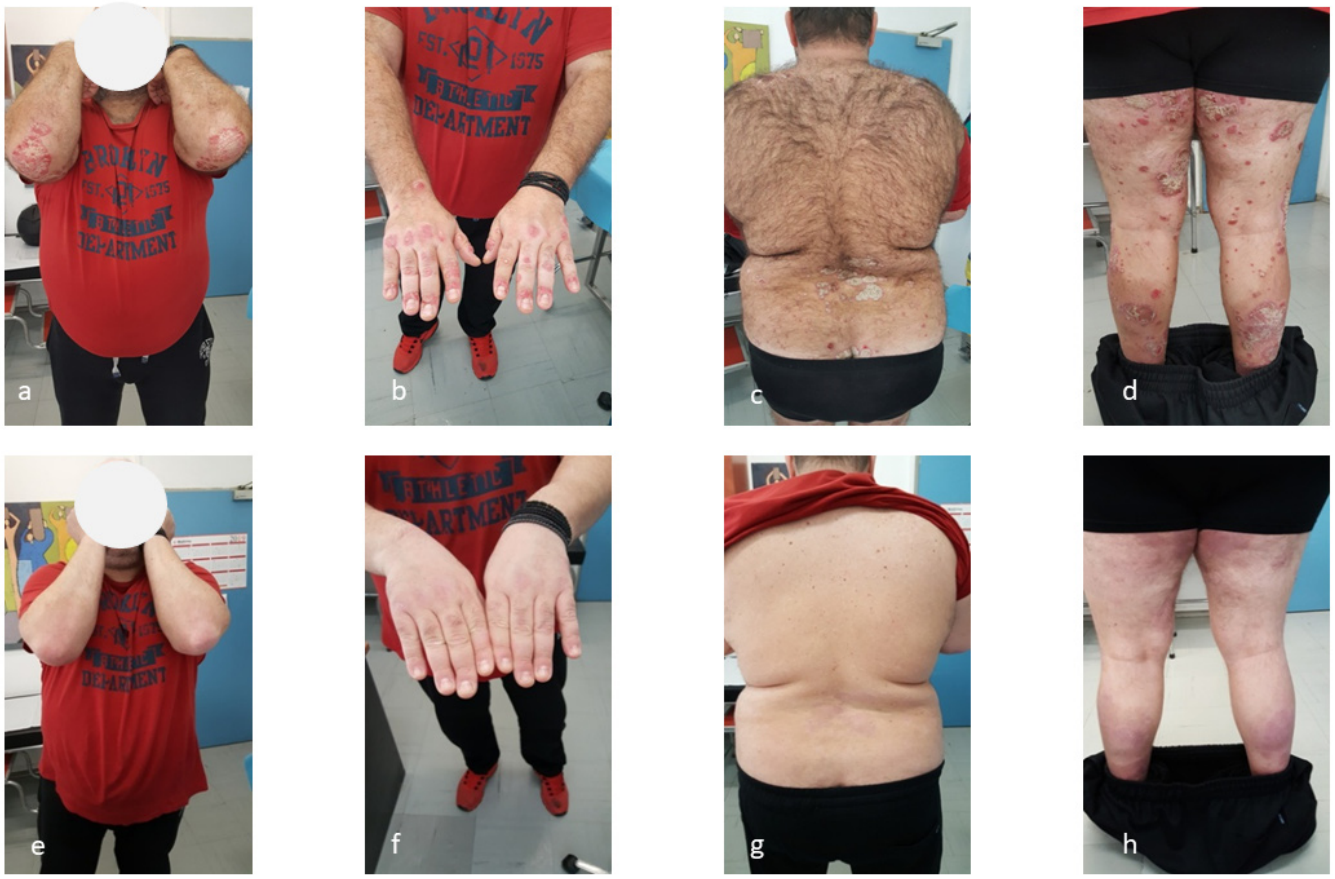

Figure 2. Psoriatic lesions of patient 2. (**a**–**d**) Psoriatic lesions of second patient before treatment with brodalumab. (**e**–**h**) Psoriatic lesions of second patient after treatment with brodalumab.

response in both psoriasis/psoriatic arthritis and HS, it was chosen as the treatment of choice in our case since it also has a safe profile for possible future pregnancy.

Brodalumab is a monoclonal antibody against human IL-17 receptor A (IL-17RA). Given its efficacy in psoriasis and its mechanism of action in psoriatic arthritis and HS, due to the patient's non response to all the available treatment options it was decided its use on the above combination diseases[11–14].

It is well known that psoriasis and HS likely share immunopathogenetic pathways, including involvement of IL-17 and TNF. Given the good clinical response to anti-IL 17 and anti-TNF drugs in psoriasis and HS treatment, investigations into this direction could represent a starting point for a new therapeutic approach for revolutionary treatment of two difficult to treat diseases.

Data availability

All data underlying the results are available as part of the article and no additional source data are required.

Consent

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

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Open Peer Review

Current Peer Review Status: ✔ ✔ ✔

Version 2

Reviewer Report 08 January 2021

https://doi.org/10.5256/f1000research.30681.r76345

✔ **Kevin K. Wu**
University of California, Irvine, Irvine, CA, USA

Accept. No additional comments.

Competing Interests: No competing interests were disclosed.

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

Reviewer Report 07 January 2021

https://doi.org/10.5256/f1000research.30681.r76343

✔ **Georgios Nikolakis**
[1] Department of Dermatology, Venereology, Allergology and Immunology, Dessau Medical Center, Brandenburg Medical School Theodor Fontane, Dessau, Germany
[2] European Hidradenitis Suppurativa Foundation, Dessau, Germany

In this version of the manuscript Tampouratzi and colleagues have provided all validated scores and patient reported outcomes to strengthen the quality of their manuscript. I would like to congratulate them and have no further comments.

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: HS, sebocytes, acne, melanoma, allergy

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

Version 1

Reviewer Report 28 September 2020

https://doi.org/10.5256/f1000research.23356.r71707

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Kevin K. Wu
University of California, Irvine, Irvine, CA, USA

Thank you for these two interesting cases. One major thing missing from this paper are objective measurements of improvement after starting the respective therapies. Simply stating "His psoriasis and psoriatic arthritis were highly improved at week 8 (Figure 2 e–h), as was HS at week 16" or "Treatment with CZP significantly improved psoriasis and psoriatic arthritis at week 8 and HS at week 12 (Figure 1f–i)." does not give the reader an objective measurement of how much better the patient's disease process became following therapy. Did you measure PASI/IGA scores? Did the patients improve based on their Hurley or HISCR scores? This paper should only be accepted for indexing after including some essential, objective outcome measures. If these measures cannot be obtained, then this manuscript should be rejected for indexing.

Is the background of the cases' history and progression described in sufficient detail?
Yes

Are enough details provided of any physical examination and diagnostic tests, treatment given and outcomes?
No

Is sufficient discussion included of the importance of the findings and their relevance to future understanding of disease processes, diagnosis or treatment?
Yes

Is the conclusion balanced and justified on the basis of the findings?
Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Psoriasis, HS, atopic dermatitis, biologics, epidemiology.

I confirm that I have read this submission and 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.

Author Response 08 Dec 2020

Theodora Kanni, Andreas Sygros University Hospital, Athens, Greece

Dear Dr. Wu,
We revised our manuscript according to your comments.
We provide severity assessment before and after treatment for both cases.
The clinical improvement for psoriasis and hidradenitis is estimated using the PASI (Psoriasis Area Severity Index) score, BSA (Body Surface Area), and IHS4 (International Hidradenitis Suppurativa Severity Scoring System) score, while the impact on the quality of life is estimated with the DLQI (Dermatology Life Quality Index) score.

Competing Interests: No competing interests were disclosed.

Reviewer Report 11 December 2019

https://doi.org/10.5256/f1000research.23356.r57162

Georgios Nikolakis
[1] Department of Dermatology, Venereology, Allergology and Immunology, Dessau Medical Center, Brandenburg Medical School Theodor Fontane, Dessau, Germany
[2] European Hidradenitis Suppurativa Foundation, Dessau, Germany

I have prepared a PDF file with most of the points I think need to be addressed in order to make this case acceptable for indexing - please find the file here. For the second case we have really no proof, even a single photo, showing that brodalumab led to improvement of HS. Both Psoriasis and HS need to be assessed using both descriptive terms but also objective and validated scoring systems, to quantify the improvement.

Moreover, the improvement of HS under certolizumab pegol is not clear for me, since I cannot tell that inflammatory lesions (nodules, abscesses or sinus tracts) have decreased after therapy.

Since I believe that this case report can add to the current literature, opening ways for more anti-inflammatory treatments for HS, I think that updating the documentation accordingly and providing some proof for the improvement of HS will make the manuscript acceptable for indexing.

Is the background of the cases' history and progression described in sufficient detail?

Partly

Are enough details provided of any physical examination and diagnostic tests, treatment given and outcomes?
No

Is sufficient discussion included of the importance of the findings and their relevance to future understanding of disease processes, diagnosis or treatment?
Partly

Is the conclusion balanced and justified on the basis of the findings?
No

Competing Interests: Dr Kanni and I both work on collaborating groups on Hidradenitis suppurativa (Athens, Greece and Dessau Germany, respectively). We published together in 2016 in JID (Journal of Investigative Dermatology). This does not affect my current review, it was objective to the best of my knowledge.

Reviewer Expertise: HS, sebocytes, acne, melanoma, allergy

I confirm that I have read this submission and believe that I have an appropriate level of expertise to state that I do not consider it to be of an acceptable scientific standard, for reasons outlined above.

Author Response 08 Dec 2020

Theodora Kanni, Andreas Sygros University Hospital, Athens, Greece

Dear Dr. Nikolakis,
We revised our manuscript according to your comments.
We provide severity assessment before and after treatment for both cases.
The clinical improvement for psoriasis and hidradenitis is estimated using the PASI (Psoriasis Area Severity Index) score, BSA (Body Surface Area), and IHS4 (International Hidradenitis Suppurativa Severity Scoring System) score, while the impact on the quality of life is estimated with the DLQI (Dermatology Life Quality Index) score.
Regarding your comment about the photographic documentation of HS improvement of the second patient, the patient denied taking photos. The location of his HS lesions is on the groin area and we did not have the patient's consent for photographic documentation.

Competing Interests: No competing interests were disclosed.

Reviewer Report 10 December 2019

https://doi.org/10.5256/f1000research.23356.r57163

Thrasyvoulos Tzellos
Department of Clinical Medicine, University of Tromsø, Tromsø, Norway

I suggest changing the title to:
"Treating co-existence of hidradenitis suppurativa and psoriasis"

Introduction:
- Please change "We present two cases of comorbidity of psoriasis and HS" to "We present two cases of co-existence of psoriasis and HS".

For case report 1:
- Please provide a severity assessment for psoriasis.
- The authors only refer to "extensive". It would be important to report PASI or another measure of severity assessment.

For case report 2:
- Please provide a severity assessment for psoriasis as for case 1.
- Also it reported negative impact on quality of life. Please provide a measure if available. For example VAS pain 6 or DLQI 10.

Is the background of the cases' history and progression described in sufficient detail?
Partly

Are enough details provided of any physical examination and diagnostic tests, treatment given and outcomes?
Yes

Is sufficient discussion included of the importance of the findings and their relevance to future understanding of disease processes, diagnosis or treatment?
Yes

Is the conclusion balanced and justified on the basis of the findings?
Yes

Competing Interests: Advisory Board and primary investigator for UCB and Abbvie. Do not know about the authors. These conflicts of interest did not influence my review of this manuscript.

Reviewer Expertise: Hidradenitis suppurativa, atopic dermatitis, biologics, Evidence based medicine

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

Author Response 08 Dec 2020

Theodora Kanni, Andreas Sygros University Hospital, Athens, Greece

Dear Prof. Tzellos,

We revised our manuscript according to your comments. All your comments were taken into account and please find below the answers:

- We changed the title according to your suggestion.
- In the introduction section, we changed the term comorbidity with the term co-existence.
- Finally, we provide severity assessment before and after treatment for both psoriasis and hidradenitis, as well as DLQI score for the impact on the quality of life.

Competing Interests: No competing interests were disclosed.

Comments on this article

Version 1

Reader Comment ( ) 17 Dec 2019

Michael Schön, University Medical Center Göttingen, Germany, Göttingen, Germany

In recent years, experimental and clinical evidence has accumulated that certain pathophysiological relationships exist between acne inversa and psoriasis. Therefore, it seems logical to treat the two diseases with a TNF inhibitor or an IL-17 receptor inhibitor if they are both present in individual cases. The therapeutic response reported here underlines the pathophysiological relationships mentioned on the one hand and is of interest for the treatment of selected patients on the other hand. The case reports presented here are therefore a valuable contribution.

Competing Interests: None.