



HAL
open science

Prurigo pigmentosa induced by ketosis (“keto rash”): a demonstrative case and internet search results

Jérémie Delaleu, Etty Grynberg-Laloum, Philippe Moguelet, Pierre Hamann, Camille Francès, Annick Barbaud, Patricia Senet

► **To cite this version:**

Jérémie Delaleu, Etty Grynberg-Laloum, Philippe Moguelet, Pierre Hamann, Camille Francès, et al.. Prurigo pigmentosa induced by ketosis (“keto rash”): a demonstrative case and internet search results. *International Journal of Dermatology*, 2020, 59 (7), pp.876-877. 10.1111/ijd.14873 . hal-03272022

HAL Id: hal-03272022

<https://hal.sorbonne-universite.fr/hal-03272022>

Submitted on 28 Jun 2021

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L’archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d’enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

1 **Title: Prurigo pigmentosa induced by ketosis (“keto rash”): a demonstrative case and**
2 **Internet search results**

3
4 **Authors:** Jérémie Delaleu^{1,2}, Etty Grynberg-Laloum³, Philippe Moguelet^{2,4}, Pierre Hamann^{1,2},
5 Camille Frances^{1,2}, Annick Barbaud^{1,2}, Patricia Senet^{1,2}

6
7 1: Department of Dermatology, APHP, Tenon Hospital, Paris, France

8 2: Sorbonne University, Paris, France

9 3: Dermatology Practice, Place Gambetta, Paris, France

10 4: Laboratory of Pathology, APHP, Tenon Hospital, Paris, France

11

12

13 **Correspondence to:** Jérémie Delaleu, MD

14 Dermatology Department

15 APHP, Saint Louis Hospital

16 1, avenue Claude Vellefaux

17 75010 Paris, France

18 Email: jeremie.delaleu@aphp.fr

19 Tel: +33666571544

20

21

22

23

24

25 **Conflict of interest:** None

26

27 **Running head:** prurigo pigmentosa induced by ketosis

28

29

30 Key words: prurigo pigmentosa, ketosis, keto diet

31 Word count: 592

32 References: 5

33 Figures: 1

34 Table: 0

35 Prurigo pigmentosa (PP) is an inflammatory skin disorder characterized by the development
36 of erythematous papules with a net-like distribution¹. Although there is no clear cause for PP,
37 several mechanical factors have been associated with the disorder, including ketosis which
38 appears to induce the eruption of PP^{1,2}. On the Internet, there is a skin condition popularly
39 coined “keto rash” in blogs and forum discussions. Researching medical information is
40 currently the third most common use of the Internet, and the first source for health
41 information before consulting a physician³. Although websites may include useful
42 information and cite current literature, in other instances health-related information may be
43 misleading. Herein, we report a case of self-diagnosed PP in a young woman who followed a
44 ketogenic diet for weight loss and we evaluate content available on the Internet for keto rash.

45 A woman in her 20s was referred to our dermatology clinic for a pruritic skin rash that had
46 been evolving for one month. Skin examination revealed scaly erythematous papules
47 coalescing into plaques arranged in a reticulate pattern on the chest, the retro-auricular scalp,
48 the neck and the nasolabial folds, along with pigmented macules on the lower back (Fig. 1). A
49 skin biopsy on a pigmented macule demonstrated nonspecific lichenification with acanthosis,
50 hyperorthokeratosis, keratinocytes apoptosis and lymphocytic perivascular infiltrate (Fig. 2).

51 In the absence of a clear diagnosis, the patient was reassessed two weeks later. She then
52 spontaneously reported that she had been following a ketogenic diet for 3 months to lose
53 weight. Our patient herself suggested the diagnosis of keto rash. Reintroduction of
54 carbohydrates into the diet associated with doxycycline regimen resulted in the total
55 disappearance of the skin rash within two weeks with no relapse after a 10-month follow-up.

56 Our Google search using the term “keto rash” produced 1,580,000 results. Of the first 10
57 search results, 9 were websites attributed to self-proclaimed experts and promotional
58 information and 1 was an educational resource. Most of the websites advised PP patients to
59 wait and see (8/10), reintroduce carbohydrates (10/10), avoid “allergens” such as dairy, eggs,
60 fish, shellfish, tree nuts or peanuts (6/10), take vitamin supplements (6/10), avoid various skin
61 irritants, including heavy sweating (5/10), not use antibiotics, or only as a last resort (3/10).

62 The pathogenesis of PP is not well understood, but a strong association with ketosis arising
63 with various etiologies has been reported. A ketogenic diet consists in reducing the
64 carbohydrate content in the diet while increasing fat and protein intake. There is resurgence in
65 the interest in this diet regimen because there are a growing number of reports of its beneficial
66 effect in terms of weight control, cardiovascular disease, etc.⁴ With the increasing popularity
67 of ketogenic diets, more frequent accounts of PP have emerged. In most cases, reintroduction
68 of carbohydrates into the diet is sufficient to cure keto rash; if this treatment is insufficient,

69 oral cycline antibiotics are usually the first-line therapy for PP⁵. Most of the results from our
70 Internet search on ketosis-induced PP were webpages whose accuracy may be uncertain. The
71 information and their recommendations (cited above) regarding PP are not evidence-based.
72 Due to easy, widespread access to health-related information on the Internet, patients may opt
73 to self-diagnose and therefore delay seeking professional care.
74 In conclusion, PP should be considered in patients on a ketogenic diet who have cutaneous
75 eruptions, especially in light of the growing interest in adopting such dietary regimens. It is
76 important that physicians be aware of the latest information available on the Internet to
77 discredit any unfounded recommendations regarding ketosis-induced PP.

78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100
101
102

103 **Figure legends:**

104

105 **Figure 1** Clinical presentation of prurigo pigmentosa. (a) Scaly erythematous papules
106 arranged in a reticulate pattern on the chest. (b) Scaly erythematous and brown papules on the
107 neck. (c) Pigmented macules arranged in a reticulate pattern on the lower back.

108

109 **Figure 2:** pathological presentation of prurigo pigmentosa with nonspecific lichenification
110 with acanthosis, hyperorthokeratosis, rare keratinocytes apoptosis and lymphocytic
111 perivascular infiltrate of superficial dermis (HES, Original magnification x250).

112

113 **Acknowledgements**

114

115 Jérémie Delaleu had full access to all the data in the study and takes responsibility for the
116 integrity of the data and the accuracy of the data analysis.

117

118 We have no conflicts of interest to declare.

119

120 The author(s) received no specific funding for the research, authorship, and/or publication of
121 this article.

122

123

124 **References**

125

- 126 1. Oh YJ, Lee M-H. Prurigo pigmentosa: a clinicopathologic study of 16 cases. *J Eur*
127 *Acad Dermatol Venereol.* 2012;26(9):1149-1153. doi:10.1111/j.1468-
128 3083.2011.04263.x
129
- 130 2. Hartman M, Fuller B, Heaphy MR. Prurigo pigmentosa induced by ketosis: resolution
131 through dietary modification. *Cutis.* 2019;103(3):E10-E13.
132
- 133 3. Prestin A, Vieux SN, Chou W-YS. Is Online Health Activity Alive and Well or
134 Flatlining? Findings From 10 Years of the Health Information National Trends
135 Survey. *J Health Commun.* 2015;20(7):790-798. doi:10.1080/10810730.2015.1018590
136
- 137 4. Paoli A, Rubini A, Volek JS, Grimaldi KA. Beyond weight loss: a review of the
138 therapeutic uses of very-low-carbohydrate (ketogenic) diets. *Eur J Clin Nutr.*
139 2013;67(8):789-796. doi:10.1038/ejcn.2013.116
140
- 141 5. Böer A, Misago N, Wolter M, Kiryu H, Wang XD, Ackerman AB. Prurigo

142
143
144

pigmentosa: a distinctive inflammatory disease of the skin. *Am J Dermatopathol.*
2003;25(2):117-129. doi:10.1097/00000372-200304000-00005

Figure 2 :

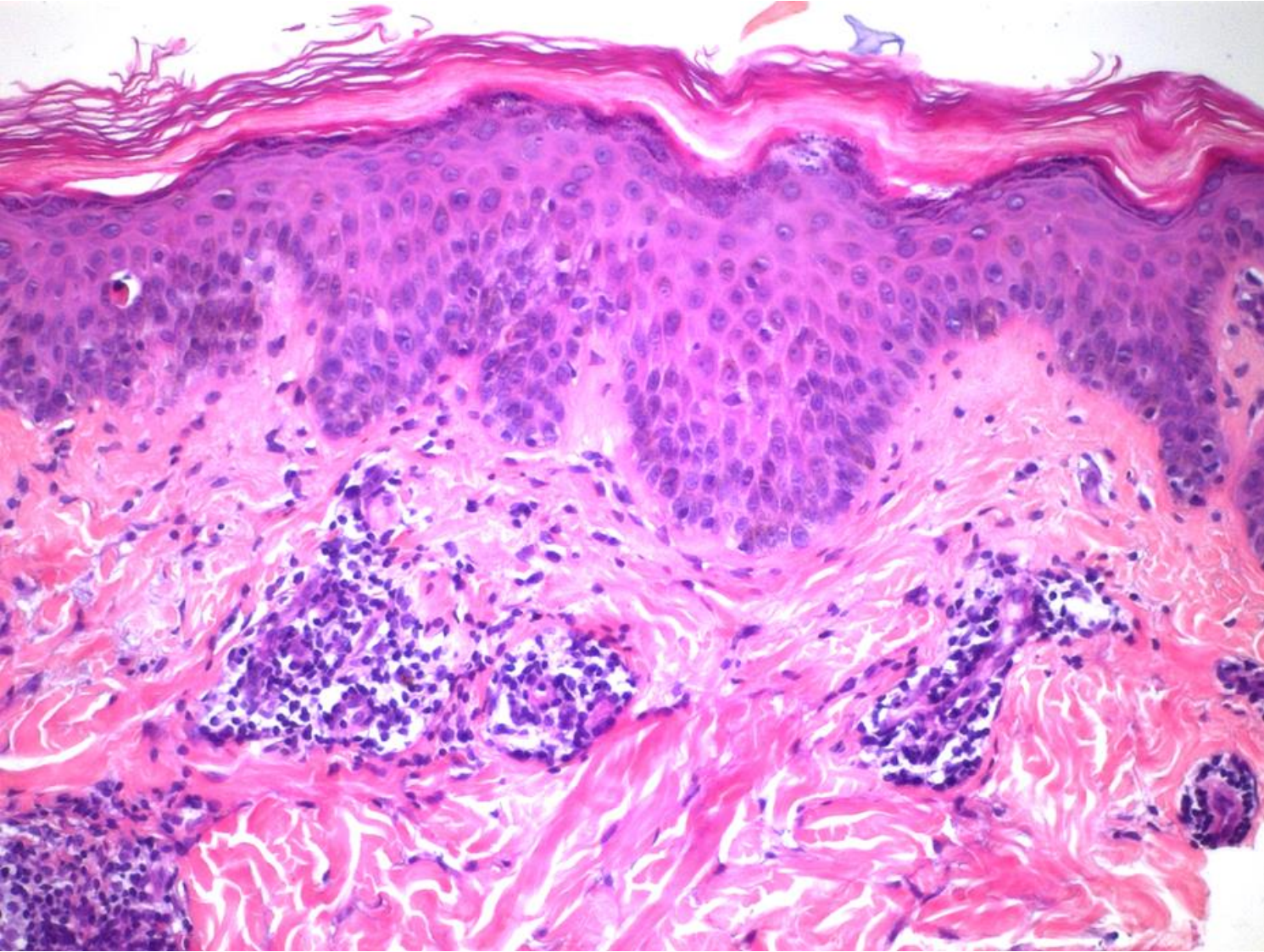


Figure 1 :

