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Challenging Diagnosis: Prurigo Pigmentosa in a Morbidly Obese Male Patient after a Starvation Diet - A Case Report

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Abstract:
Prurigo pigmentosa (PP) is a skin inflammatory disorder that primarily impacts adolescents and young adults, and its cause is unknown. This case report presents a 35-year-old morbidly obese Arab male patient who developed a pruritic rash on his chest, back, neck, and face after following a starvation diet (75-125 calories/day). The rash appeared as macular spots and rapidly spread in a reticular-like pattern. The patient had a history of a similar rash 11 years ago when following a similar diet, which improved after modifying the diet. Despite recommendations to stop the diet, the patient barely agreed to modify his diet into a Very Low-Calorie Diet (VLCD) under physician supervision. Eventually, the itch disappeared a few days after diet modification only and the rash gradually faded and subsided after 8 weeks from the last day of the starvation diet.

Introduction :
Prurigo pigmentosa is a unique and rare skin condition that presents with the sudden onset of itchy, red papules (small, raised bumps), macules (flat spots), and/or papulovesicles (blister-like lesions) on the skin (1). It appears on neck, chest and back that heals in a reticulated pattern (2). It primarily affects adolescents and young adults, with a higher prevalence in East Asian populations, especially Japanese women (3). The etiology of PP remains unknown, although both endogenous and exogenous factors have been suggested (4). For the treatment of prurigo pigmentosa, oral minocycline is typically the initial choice. However, depending on the patient, alternative options such as doxycycline, macrolide antibiotics, and/or dapsone (diaminodiphenyl sulfone) may also be considered (5). This case report presents a unique case of PP in a morbidly obese male patient following a starvation diet.

Case Presentation:
A 35-year-old morbidly obese Arab male patient presented with a pruritic rash on his chest, back, neck, and face. The rash appeared 12 days after starting a starvation diet consisting of 3-5 dates (75-125 calories) per day and a single free meal at the end of each week (Figure 1). The rash became intensely itchy, deeper in color, and engorged multiple times a day (Figure 2). Cold objects and moisturizers provided minimal relief. The patient had experienced a similar rash 11 years ago when following a similar diet, which improved after modifying the diet. A skin biopsy performed at that time was unremarkable, and the patient was treated with doxycycline for one month.

Figure 1

day 5 of the rash on Starvation diet.

Figure 2

day 7 of the rash on starvation diet, the darker the color, the more the itchiness.

Management and Outcome:

Despite recommendations to stop the starvation diet, the patient only agreed to modify the diet and increase his calorie intake to around 800 calories per day (VLCD) with an increase in fat and carbohydrate intake under physician supervision. Moreover, the patient refused going through another skin biopsy, lab investigations, or taking any antibiotics.

After one month, the patient continued to lose weight significantly, and he reported that the itchiness resolved a few days after modifying his diet (Figure 3). However, the rash persisted but gradually faded to a become flat and brownish in color. During remission, the patient mentioned it took the rash only 2 days to recur after he resumed the starvation diet for a couple of days in a trial to lose more weight (Figure 4), which, hence, lead him to discontinue the starvation diet and return to the VLCD. Finally, the rash completely disappeared after 2 months from the last day of the starvation diet with diet modification only.

Figure 3

day 5 after switching to VLCD

Figure 4

day 2 after resuming the starvation diet.

Discussion:

This case highlights the challenges in diagnosing and managing PP, particularly in patients with unique triggering factors such as a starvation diet. PP is typically seen in young females, making our patient's demographic and clinical presentation atypical. While the exact pathogenesis of PP remains unclear, it is associated with metabolic disorders such as poorly controlled diabetes, low-carbohydrate diets, anorexia nervosa, fasting or bariatric surgery can trigger the liver to produce ketones due to low glucose or insulin levels. This results in increased levels of ketone bodies in the bloodstream, which can accumulate around blood vessels and cause inflammation and infiltration of neutrophils. Antibiotics such as tetracyclines or doxycycline may be effective in treating PP by inhibiting neutrophil chemotaxis. Resolving PP lesions and reducing ketone levels can be achieved through consuming a well-balanced diet or insulin therapy. Conversely, increased ketone levels are associated with the development of PP, suggesting a potential role of ketone bodies in its pathogenesis (6). Further research is needed to better understand the mechanisms underlying PP and its association with starvation diets.

Conclusion:

This case report presents a case of PP in a morbidly obese male patient following a starvation diet. Despite challenges in managing the patient's dietary preferences, a compromise was reached, leading to resolution of itchiness and gradual fading of the rash. It emphasizes the considering of PP as a differential diagnosis of pruritic rashes, even in atypical patient populations and unique triggering factors. Further studies are needed to elucidate the underlying mechanisms and explore optimal management strategies for PP.

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