




The role of lifestyle and supplements in hidradenitis suppurativa

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ABSTRACT

Acne inversa is a chronic, inflammatory skin disease that manifests itself in persistent, painful nodules, abscesses, or fistulas in their usual locations. The epidemiology of the disease oscillates between 0.00033% and 4.1%. Its pathogenesis is multifactorial and still poorly understood. Patients are also often burdened with obesity, inflammatory bowel diseases and metabolic disorders. Chronic pain, disorders of the sexual sphere, and limited or ineffective therapeutic options significantly reduce the quality of life in these patients. Treatment of acne inversa is difficult and often requires the use of multiple therapeutic methods at the same time, which often turn out to be unsatisfactory. Educating patients about their eating habits, the selection of appropriate clothing fabrics and care products, and smoking can enable them to make lifestyle changes. These changes may be helpful in reducing discomfort caused by hidradenitis suppurativa. The aim of the work is to review the literature on the importance of lifestyle modification in reverse acne.

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Key words: acne inversa, hidradenitis suppurativa, lifestyle, treatment

INTRODUCTION

Acne inversa (hidradenitis suppurativa, HS) is a chronic, inflammatory skin disease manifested by persistent, painful nodules, abscesses, or fistulas in typical areas such as armpits, groins, or intergluteal cleft. The epidemiology of the disease oscillates between 0.00033–4.1% [1–3]. Its pathogenesis is multifactorial and still poorly understood, while it is now believed that the skin lesions start within hair follicles and the activation of immune cells, with a key role for pro-inflammatory cytokines, underpins the process. The inflammatory process is not limited to the skin area but is systemic [1]. HS patients often present with comorbidities such as obesity, inflammatory bowel diseases, and metabolic disorders [4]. Chronic pain or sexual dysfunctions significantly reduce the quality of life in these patients. For this reason, it is estimated that the risk of depression and anxiety disorders is significantly higher in this patient group [5]. Treatment of HS is difficult and often requires multiple therapeutic methods to be applied simultaneously, which often prove unsatisfactory. The following paper aims to review the literature on the importance of lifestyle modifications in HS.

RISK FACTORS

According to the literature data, HS is more common in females, with a female-to-male ratio of 3:1. Moreover, a higher pre-

valence of the disease is observed among Black patients [6, 7]. It has also been proven that up to 40% of HS patients have a positive family history of the condition [8]. Furthermore, there is a strong correlation between a family history of HS and an earlier onset of the first skin lesions in the course of the disease [9]. In addition, environmental risk factors are not insignificant in the progression and severity of HS, with obesity and smoking playing a key role. It has been proven that approximately 90% of HS patients report a history of nicotine use and more than 75% of them are burdened with overweight or obesity [1, 10].

HIDRADENITIS SUPPURATIVA VS. OVERWEIGHT AND OBESITY

It is implied that there is a positive correlation between body mass index (BMI) and the severity of disease symptoms. Patients with excess adipose tissue and comorbid HS have a much more severe course of the disease due to, inter alia, increased friction and maceration around skin folds [11]. Moreover, adipocytes — through the secretion of pro-inflammatory cytokines — can lead to an exacerbation of the chronic inflammation already present in the course of HS. There are also reports of an improved clinical picture of HS after bariatric surgery [12, 13]. This demonstrates the pathogenic role of excess adipose tissue in the disease progression. In a study by Canard et al. [14], two groups

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of HS patients were compared. The first group consisted of patients who had undergone bariatric surgery, while the second group received only nutritional care. Improvement was only observed in the first group, which showed a reduction in the area of skin involvement by HS. Furthermore, compared to the group receiving only nutritional care, the post-surgery group had a significant improvement in quality of life as measured by the Dermatology Life Quality Index (DLQI) scale [14]. Therefore, in light of the abovementioned information, it seems extremely important to advise patients to maintain healthy body weight.

DIETARY RECOMMENDATIONS

The importance of diet as a means of supporting the treatment of HS has also been the subject of much research. The most widely studied diet is the Mediterranean diet, which has a recognized position as one of the healthiest in the world due to its preventive effects on cardiovascular, metabolic, cancer, and degenerative diseases. This diet is rich in green vegetables, fruit, fish, seafood, and red wine, which show strong anti-inflammatory properties, as well as gut microflora-modulating properties in obese patients [15]. The introduction of a Mediterranean diet in HS patients may have a beneficial effect on the course of the disease [16, 17]. A study of 221 patients in the Spanish population found that strict adherence to the Mediterranean diet was associated with a lower rate of disease progression [17].

Elimination diets have also drawn the attention of researchers. A prospective cohort study of 12 HS patients evaluated the effect of a diet containing no brewer's yeast (mainly *Saccharomyces cerevisiae* fungi) for 12 months after surgery. After one year of follow-up, regression of skin lesions was observed as well as an improvement in the quality of life in all patients [18]. Another study investigated the effect of dairy product restriction on the course of HS [19]. None out of 47 studied HS patients reported a worsening of their symptoms after eliminating dairy products, and up to 83% of patients saw an improvement in their symptoms. Nevertheless, the aforementioned studies were limited by small study groups and the lack of use of validated assessment tools, indicating the need for further research in this area.

A prospective cohort study by Guillet et al. [20] revealed the importance of normal vitamin D levels in HS patients. All 22 patients included in the study presented with vitamin D deficiency. Furthermore, the severity of disease on the Hurley scale was found to inversely correlate with vitamin D levels. The authors proposed that factors contributing to reduced vitamin D levels in these patients include low sun exposure, lack of oral supplementation, or impaired activation of this vitamin. After vitamin D3 supplementation in individually adjusted doses according to baseline levels,

79% of patients showed a reduction in the number of skin lesions, as well as a lower frequency of disease exacerbations. However, this evidence is not sufficient to justify routine vitamin D supplementation in these patients.

In a retrospective study of 54 HS patients with Hurley grade I or II, treated with zinc gluconate 90 mg daily and topical 2% triclosan for 3 months, there was an improvement in the mean DLQI score [21]. On the other hand, in a study by Brocard et al. [22], 22 patients receiving 90 mg of zinc gluconate once daily reported significant improvement, including eight subjects showing complete remission of the disease. European guidelines for the treatment of HS suggest there is potential for oral zinc gluconate to show significant beneficial effects in adjuvant therapy in the early stages of HS [23]. Its action is mainly based on its anti-inflammatory properties; it also inhibits neutrophil chemotaxis and the development of Th17 lymphocytes, involved in the progression of the disease. In view of the guidelines, long-term supplementation with zinc gluconate at a dose of 90 mg per day is recommended, with necessary monitoring of gastrointestinal side effects.

NICOTINISM

The relationship between the prevalence and severity of HS and cigarette smoking has been the subject of research by many scientists. Literature data show a strong correlation between the prevalence of HS and active cigarette smoking. This was demonstrated in both a meta-analysis by Prakash Acharya and Mahesh Mathur and a systematic review by John R. Ingram, in which the odds ratio (OR) was (OR = 4.26; 95% CI 3.68–4.94) and (OR = 4.34; 95% CI 2.48–7.60), respectively [24, 25]. The prevalence of HS in former smokers remains a contentious issue among researchers. In the meta-analysis cited above, the authors describe that there was no increased proportion of former smokers (OR = 0.65; 95% CI 0.46–0.91) among the group of HS patients compared to controls [24]. Given that literature data also indicate a correlation between disease severity and cigarette smoking [11, 25], current guidelines and recommendations imply the need for smoking cessation, which may lead to clinical improvement of HS [10, 23, 26–29]. Furthermore, Siddiquee et al. [30] proved that a combination of pharmacotherapy and behavioral change in HS patients was more effective in terms of leading to smoking cessation compared to those in whom this intervention was not introduced. It should also be noted that in one publication, as many as 68 out of 102 studied patients did not know that there were drugs (i.e., varenicline) that could aid smoking cessation [31]. As the papers cited above indicate, the elimination of cigarette smoking among HS patients should be pursued and it is also worth making them aware of possible methods that can aid the process.

SPORT

There are currently few literature reports on the effect of sports participation on the clinical status of HS patients. It has been implied that physical activity may have a positive effect on the course of the disease, although this evidence is of very poor quality [32, 33]. Sabat et al. [1] emphasize that it can be difficult for patients to actively participate in sports due to the pain associated with the friction of the affected skin folds. In this regard, it is worth noting the paper by JM von der Werth and HC Williams [34], according to which patients experienced relief from unpleasant discomfort caused by their condition while swimming.

SKINCARE

Recommendations for the personal hygiene of HS patients are based on low-quality scientific evidence. According to specialists in HS, washing the skin with antibacterial preparations can have an effect on the alleviation of skin lesions. In this respect, North American and UK guidelines recommend the use of agents containing benzoyl peroxide, zinc pyrithione, and chlorhexidine [28, 35]. Despite the lack of sufficient scientific evidence, it is recommended that patients use, especially around the lesions, gentle cosmetics that are free of parabens, fragrances, dyes, and alcohol which could lead to skin irritation [10, 36].

DEPILATION

There are several studies evaluating the effect of shaving on the course of HS [37, 38]. Although there has been no link shown between daily shaving or the use of hair removers and the severity of HS, this method can cause micro-injuries and skin irritation and is thus not currently recommended. On the other hand, laser hair removal may prove to be a good solution for this group of patients. Vossen et al. [39] found that in patients with moderate HS, depilation with Nd:Yag (neodymium-yag) laser resulted in a decrease in the number of exacerbations, as well as a reduction in the severity of the disease compared to the status before therapy. Patients who underwent laser hair removal reported high satisfaction with this type of treatment, and two-thirds of them would recommend laser hair removal to others with HS [39]. Other similarly interesting results were published in 2019 in an article by Nazzaro et al. [40]. That study consisted of the analysis of ultrasound images of 180 HS patients to search for strands of hair that were visible as bilayered, hyperechoic linear structures occurring within abscesses or fistulas. Patients were classified according to the Hurley scale — Sonographic Score Hidradenitis Suppurativa (SOS-HS) and the Hidradenitis Suppurativa Physician Global Assessment (HS-PGA). Ectopic hair fragments were detected in 79% of abscesses and 74% of fistulas. They appeared as structures running parallel to the skin surface, in contrast

to normal strands of hair that run perpendicularly. The presence of hair in these structures is believed to confirm their pathogenic role in the progression of HS [41]. The results of the observations led the researchers to conclude that hair removal with the Nd:YAG laser should be recommended for patients with mild to moderate HS. Furthermore, the authors recommend that HS patients avoid waxing or shaving, as these can act as factors that increase the local inflammatory process and facilitate hair breakage. In addition, the US guidelines for the treatment of HS have classified the use of the Nd:YAG laser at the same level of reliability (level II) as surgery [9].

SELECTION OF APPROPRIATE CLOTHING

Additional factors that may help to alleviate HS symptoms undoubtedly deserve attention. Based on the available literature, it can be concluded that HS has a significant impact on clothing choices among the HS-affected [42]. In a study by Singh et al. [42], more than 80% of patients with severe HS reported that clothing made of tight-fitting and movement-restricting material exacerbated symptoms during the course of the disease. Recent reports emphasize the role of properly selected clothing, which should be loose-fitting and made of absorbent and breathable material [43]. Fabrics that are non-breathable and cause skin irritation, such as polyester and nylon which retain perspiration and create a warm environment ideal for bacterial growth, can intensify pain, and discomfort, and promote the formation of new lesions. Women are advised to avoid tight underwire bras in the submammary region and underwear that can cause irritation in the inguinal region. Men, on the other hand, are encouraged to wear loose, airy underwear. To reduce the risk of microbial colonization and reduce mechanical friction, the material of the garment should be absorbent, and breathable and not increase body temperature. Therefore, materials such as lyocell based on the cellulose of artificial silk, 100% cotton, and bamboo-based fabrics seem to be ideal [43].

ALCOHOL AND OTHER SUBSTANCES

Data from a 2020 meta-analysis by Phan et al. [44] found that HS patients tend to abuse not only alcohol but also some other psychoactive substances. Studies revealed that opioids are the most commonly abused psychoactive substances, followed closely by cannabis. It is believed that these abuses are due to the pain experienced during the course of the disease, which is considered by patients to be one of the most bothersome symptoms [45]. In light of the abovementioned information, it is extremely important to manage the pain caused by skin lesions in an appropriate manner, as well as to introduce screening for alcohol, opioid,

or cannabis abuse, particularly in patients experiencing severe pain in the course of HS.

CONCLUSIONS

HS is a debilitating skin condition that negatively affects the quality of life of those affected. Although there are several therapeutic approaches, which include i.e., topical and systemic antibiotics, biological therapy, and surgery, the importance of non-pharmacological treatment methods should not be underestimated. Educating patients about dietary habits, selection of appropriate clothing fabrics and care products, or smoking can enable them to make lifestyle changes that will consequently help reduce the discomfort caused by HS.

Conflict of interest

The authors of this publication declare no conflicts of interest.

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