Original Article

Demographic and Clinical Features of Hidradenitis Suppurativa in Turkey

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Abstract

Background: The literature contains conflicting reports on the epidemiology and frequency of hidradenitis suppurativa (HS), a chronic, recurrent inflammatory disease of the apocrine glands.

Objective: To evaluate the clinical and demographic characteristics of HS cases in Turkey and investigate the similarities with world epidemiology.

Method: The records of 208 patients that presented to our polyclinics and were diagnosed with HS between June 2012 and July 2017 were retrospectively evaluated.

Results: Of the cases, 68.3% were male and 31.7% were female. Of the patients, 75.5% had no family history of HS, 60.6% were smokers, 39.4% were aged 20-29 years, and 36.1% were aged 30-39 years. The most commonly involved regions were the axilla (62%), groin (50.5%), and gluteus (15.9%). According to univariate analyses, male patients had higher disease stages than females (odds ratio=1.67). The patients with groin involvement, high body mass index (BMI), and low education level (0-8 years) had higher risk of severe disease stage (odds ratio=1.63, 8.91, and 1.51, respectively). The most commonly used treatment was oral antibiotics in Hurley stages I and II, and surgical intervention in Hurley III. In all 3 Hurley stages, clavulanic acid–amoxicillin combination was the mostly used systemic antibiotic (41.8%, 43.2%, and 47.8%, respectively).

Conclusions: This is the first epidemiological study on HS in the Turkish population, where HS shows male predominance. Male gender, low education level, absence of acne, high BMI, and groin involvement were associated with severe disease stages. Determining associated comorbidities and possible risk factors is important in progression and prevention of the disease.

Keywords

Turkey, hidradenitis suppurativa, demographics

Introduction

Hidradenitis suppurativa (HS) is a chronic, recurrent inflammatory disease of the apocrine glands. Patients with HS present with painful nodules, sinus tracts, and abscesses that form scars. These lesions often occur in the axilla, groin, pubic area, and hips, where there are numerous apocrine glands.[1] Although it is difficult to predict the true prevalence of HS since it is often overlooked or misdiagnosed, the literature reports values between 0.0003% and 4%.[2] In relation to the etiopathogenesis of HS, it is thought that follicular hyperkeratosis initiates the event, which is further developed by follicular occlusion and secondarily contributed by apocrine glands. The localization of the lesions and presence of malodorous discharge lead to social withdrawal in patients. There is no single effective treatment for HS. Depending on the severity of the patient's clinical state, treatment options include topical and systemic antibiotics, retinoids, antiandrogenes, corticosteroids, anti-tumor necrosis factor-α biologic agents, botulinum toxin, radiation therapy, radiofrequency therapy, cryotherapy, carbon dioxide laser therapy, and surgery.[3]

HS is seen worldwide and can be a cause of morbidity; however, studies investigating its epidemiology and frequency have reported significant differences. Thus, this study aimed to evaluate the demographic and clinical characteristics of patients with HS that presented to our clinic, emphasize the importance of a multidisciplinary approach by identifying comorbidities, and reduce the severity of the disease by determining the risk factors.

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Methods

Study Design and Patients

The medical files of 295 patients that presented to the Istanbul Medipol Mega University Dermatology and General Surgery outpatient clinic and were diagnosed with HS between June 2012 and July 2017 were retrospectively evaluated. The demographic and clinical characteristics (age, gender, body mass index [BMI]), smoking status, family history, education level, age of onset, duration of disease, localization of lesions, presence of acne and/or pilonidal sinus, coexisting diseases, and treatments received were recorded. The stage of the disease was classified according to the Hurley staging in each patient.[4] Diagnosis was made based on clinical findings according to the European guidelines, which specify that painful nodules, abscesses, and sinus tracts must occur at least twice in 6 months.[1] The patients who did not meet all of these criteria were excluded from the study. As a result, of the initially evaluated 295 patients, 208 were included in the study, and the approval of the local ethics committee was obtained (Number: 10840098-604.01.01-E.15019, Date: 06.05.2019).

Statistical Analysis

The data were collected by the relevant clinical physician, transferred to Microsoft Excel program, edited, and prepared for statistical analysis. Data analysis was conducted using the Statistical Package for Social Sciences (SPSS Statistics, IBM) v. 25.0.

Results

Of the 208 patients who participated in the study, 66 (31.7%) were female and 142 (68.3%) were male. The male/female ratio was 2.1/1.1. At the time of presentation, 118 of the patients (56.7%) were in Hurley stage II. The median age of onset of symptoms was 26 years in women and 25 years in men (Table 1). The most commonly involved regions in females and males were the axilla (62%), groin (50.5%), and gluteus (15.9%). An accompanying systemic disease was detected in 46.6% of the patients (Table 2).

In both women and men, the most commonly involved site was the axillary region, followed by the groin and by the gluteal region to a lesser degree (Table 3). There was no statistically significant difference between the patients with and without a family history of HS in terms of age of onset.

Male patients had 1.67 times higher risk of the severe stage disease than women, but smokers did not have risk of severe disease. The patients with a high BMI had 8.9 times greater risk of entering the severe disease stage compared to those with a low BMI. The cases in which 2 or more areas were involved were found to have 1.9 times higher risk of severe disease stage compared to single area involvement. Furthermore, there was 1.6 times greater risk of severe disease stage in patients with groin involvement. The patients with a low education level (0, 8 years) were

Table 1. Demographic Characteristics of the Patients.

Variable	*N* (%)
Gender	
Female	66 (31.7%)
Male	142 (68.3%)
Education (years)	
0-8	70 (33.7%)
8-16	138 (66.3%)
Smoking status	
Nonsmoker	82 (39.4%)
Smoker	126 (60.6%)
Family history	
Absent	157 (75.5%)
Present	51 (24.5%)
Age (years)	
10-19	18 (8.7%)
20-29	82 (39.4%)
30-39	75 (36.1%)
40-49	26 (12.5%)
50-59	6 (2.9%)
60 and above	1 (0.5%)
Body mass index	
Below 18.5	1 (0.5%)
18.5-25	59 (28.4%)
25-29	92 (44.2%)
30 and above	56 (26.9%)
Pilonidal sinus	
Absent	156 (75.0%)
Present	52 (25.0%)
Acne	
Absent	68 (32.7%)
Present	140 (67.3%)
Presence of pilonidal sinus and acne	
Either	172 (82.7%)
Both	36 (17.3%)
Outpatient clinic (first presentation)	
General surgery	112 (53.8%)
Dermatology	96 (46.2%)
Hurley stage	
1	67 (32.2%)
2	118 (56.7%)
3	23 (11.1%)

Table 2. Clinical Characteristics and Comorbidities of the Patients with Hidradenitis Suppurativa.

Variable	*N* (%)
Localization	
Axillary	129 (62%)
Groin	105 (50,5%)
Gluteal	33 (15.9%)
Pubic	20 (9.6%)
Perineal	19 (9.1%)
Intramammarian	15 (7.2%)
Genital	9 (4.3%)
Other	15 (7.2%)
Accompanying disease	
None	111 (53.4%)
Hypertension	11 (5.3%)
Migraine	6 (2.9%)
Polycystic ovary syndrome	6 (2.9%)
Ankylosing spondylitis	6 (2.9%)
Hypothyroidism	6 (2.9%)
Diabetes	5 (2.4%)
Fibromyalgia	5 (2.4%)
Hemorrhoid	4 (1.9%)
Familial Mediterranean fever	3 (1.4%)
Hyperlipidemia	3 (1.4%)
Depression	3 (1.4%)
Other	27 (12.6%)

1.5 times at higher risk of severe disease stage. Finally, absence of acne resulted in 1.6 times higher risk of severe disease stage.

The patients were found to have undergone the following treatments: topical antibiotics (fucidic acid, mupirocin, clindamycin, benzoyl peroxide, resorcinol) and/or oral antibiotics (clavulanic acid–amoxicillin, tetracycline, sodium fucidate, ciprofloxacin) and/or oral isotretinoin and/or adalimumab and/or surgery. When the treatments applied were examined according to the Hurley staging, it was determined that oral antibiotics were most used in Hurley stages I and II (76.1% and 85.8%, respectively), and the most common treatment undertaken in Hurley stage III was surgical excision (60.9%). In all 3 stages, clavulanic acid–amoxicillin combination was the most commonly used antibiotic. The most frequently used second oral antibiotic was tetracycline in Hurley stage I, and ciprofloxacin in Hurley stages II and III. In terms of topical antibiotics, fucidic acid was most encountered in Hurley stages I and II (19.4% and 11%, respectively), while clindamycin and fucidic acid had equal rates (4.3%) in Hurley stage III. Surgical intervention was performed in 38 patients (32.2%) in Hurley stage II. Oral isotretinoin was used at the highest rate (n = 9; 39.1%) in Hurley stage III, followed by 4 patients in Hurley stage II (3.4%).

Table 3. Areas of Involvement According to Gender.

Localization	*N* (%)	
	Female	Male
Axillary	44 (66.7%)	85 (59.9%)
Groin	42 (63.6%)	63 (44,3%)
Gluteal	8 (12.1%)	25 (17.6%)
Pubic	3 (4.5%)	17 (12.0%)
Perianal	3 (4.5%)	16 (11.3%)
Intramammarian	6 (9.1%)	9 (6.3%)
Genital	1 (1.5%)	8 (5.6%)
Other	6 (9.1%)	9 (6.3%)

Discussion

In the etiopathogenesis of HS, it is considered that a follicular structural anomaly first causes an inflammatory response, and then bacteria are secondarily involved in this event. In addition, genetic factors, hormonal factors, smoking, diet, and mechanical factors are thought to contribute to the emergence of the disease.[5-7] When studies in the literature are examined, it is determined that there is a female predominance in HS in Europe and male predominance in Asia.[8-10] In the current study, male predominance with a male/female ratio of 2.1/1 was observed, similar to the results obtained from Asian countries. More than half of the patients were in Hurley stage II, and the median age was 30.1 years. According to the BMI calculations, 71.1% of the patients were overweight or obese. Regardless of gender, the axilla was the most involved area, followed by first groin and then gluteal regions. The order of the affected areas was consistent with previous reports.[11] In the current study, 24.6% of the patients had a family history of HS. The mean age of onset of disease was 26.1 years (14 at the earliest and 40 at the latest). The median disease duration was 36 months.

In recent years, numerous studies indicate that HS is associated with a large number of diseases that have inflammation in their pathogenesis. The most common comorbidity in patients with HS is reported as metabolic syndrome, which refers to a group of diseases, including abdominal obesity, insulin resistance or diabetes, hypertension, and hyperlipidemia. It is known that in dermatological diseases, such as psoriasis, lichen planus, and HS, there is increased risk of metabolic syndrome, and thus cardiovascular diseases.[12] In addition, a high coexistence of autoimmune diseases, eg, inflammatory bowel diseases, arthritis, and spondyloarthropathy, tobacco smoking, and acne vulgaris has been shown.[13] In the current study, 26.9% of the patients were in the obese group with a BMI above 30. The accompanying systemic diseases were hypertension in

5.3% of the patients, hyperlipidemia in 1.4%, and diabetes in 2.4%. In a large case series consisting of a healthy Turkish population, Unal et al reported the rate of diabetes in men and women as 14.6% and 12.6%, respectively.[14] Chiricozzi et al evaluated 234 patients with HS and calculated the rates of hypertension and type II diabetes as 11.9% and 9.5%, respectively.[15] In a systematic review and meta-analysis, Phan et al reported that the risk of developing diabetes was 1.69 times higher in patients with HS compared to the healthy population.[16] The lower rate of diabetics in our patients with HS may be because the majority of the sample consisted of young individuals or diabetes had not yet been diagnosed in some of the patients at the time of data collection.

In a large case series of HS comparing tobacco smokers and nonsmokers in the United States, the prevalence of HS was approximately 2 times higher in the former. Tobacco is effective in multiple ways in the pathogenesis of HS. Nicotine released from the sweat glands causes follicular infundibular hyperkeratosis, changes the cutaneous flora, and stimulates the proliferation of *Staphylococcus aureus* and the release of tumor necrosis factor-alpha by keratinocytes.[17] In a Polish study of 56 patients, 72.2% were determined to be smokers at the onset of HS.[18] In a case–control study conducted with 302 French patients, Revuz et al found the smoking rate to be 75.6%.[19] The rate of smoking in our patient group was 60.6%.

Shalom et al showed that in a large case series of 3207 patients with HS, the coexistence of Crohn's disease was approximately 2 times higher compared to the healthy population.[20] In our study, there was only 1 patient with Crohn's disease (0.01%). Concerning other accompanying diseases, Richette et al found the prevalence of spondyloarthopathy in HS as 3.7%,[21] compared to 2.9% in the current study. Another accompanying disease, familial Mediterranean fever (FMF), was reported at a rate of 0.7% ($n = 33$) in 4417 HS cases in a Mediterranean country, Israel, which was significantly higher compared to the control group.[22] We detected FMF in 3 patients (1.4%).

In a study by Hamadah et al 38% of the patients with Down syndrome were found to have HS.[23] In another study conducted in 2016 with HS cases, the age of onset of HS symptoms was reported as 14.9 years in cases with Down syndrome.[24] In the current study, Down syndrome was only seen in 1 patient, a 23-year-old man with Hurley stage II HS, whose symptoms had started at the age of 13.

Shavit et al investigated psychiatric comorbidities in 3207 patients with HS and found that the rates of depression (5.9%) and anxiety (3.9%) were significantly higher in the HS group compared to the control group.[25] In our study, 1.4% of the patients had undergone treatment for depression. The reason for our lower rate may be that some of the patients may have been depressed but had not yet been diagnosed due to the lack of routine referrals to psychiatry outpatient clinics.

In the first stage of HS treatment, general precautions include not wearing tight and synthetic clothes, shortening the hair on the lesion areas without shaving, and not using deodorants. There are topical, systemic and surgical treatment options in HS according to the stage of the disease. Topically, the efficacy of clindamycin, azelaic acid, resorcinol, adapalene, and silver has been demonstrated. Among oral antibiotics, clavulanic acid–amoxicillin and fluoroquinolones are most commonly used. In addition, the oral combinations of clindamycin–rifampicin and rifampicin–moxifloxacin have been shown to be effective. Although tetracycline did not work in advanced HS cases, it was reported to be useful in maintenance therapy. In severe exacerbations, intralesional and oral prednisolone can reduce inflammation. Dapsone and cyclosporine are other systemic drugs used as antiinflammatory options. Oral retinoids can also be used, and cyproterone acetate is preferred in patients diagnosed with polycystic ovary syndrome. Oral metformin, zinc gluconate, botulinum toxin administration, cryotherapy, photodynamic therapy, and Nd:YAG laser are among the medical treatments that are not widely used but have been shown to be effective in a limited number of studies.

The biological agents used in the treatment of Hurley stages II and III, and persistent HS include adalimumab, infliximab, anakinra, efalizumab, and ustekinumab. Surgical options are drainage and incision of the abscesses. However, when medical treatment is not successful or there is a relapse of the disease, local excision with skin graft and skin flap transfer are frequently applied.[1,6,7] In our study, the most commonly used treatment was oral antibiotics in Hurley stages I and II (76.1% and 85.8%, respectively) and surgical excision in Hurley stage III (60.9%). In all 3 stages, clavulanic acid–amoxicillin combination was the most commonly used antibiotic, followed by tetracycline in Hurley stage I, and ciprofloxacin in Hurley stages II and III. In a study involving 62 patients with HS, oral antibiotics were found to be the most commonly used treatment in all stages, and doxycycline and rifampicin were preferred as oral antibiotics. The second most commonly used treatment was topical antibiotics, mostly fucidic acid.[11] Similarly, in the current study, the most commonly used topical antibiotic was fucidic acid in Hurley stages I and II, and fucidic acid and clindamycin in Hurley stage III.

In this study, male gender, high BMI, groin involvement, involvement of multiple areas, low education level, and acne absence were found to be associated with severe disease stage. In a study conducted with 846 Dutch patients, Schrader et al reported that male gender, high BMI, and axillary involvement were associated with the severe disease stage.[26]

HS has been shown to affect the quality of life of patients to a greater extent than other dermatological diseases, such as chronic urticaria, atopic dermatitis, and psoriasis; therefore, a multidisciplinary approach is very important.[27] An effective treatment approach for the prevention or control of

the disease involves counseling or guiding smoking cessation, referring patients with a high BMI to internal medicine clinic and dieticians for weight loss, and analyzing fasting blood glucose and lipid levels, measuring BMI and monitoring blood pressure at the time of presentation. In addition, early psychiatric consultation is important to provide the necessary psychosocial support and prevent depression.

Declaration of Conflicting Interests

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