



Hidradenitis suppurativa and suicide risk: a multivariate analysis in a disease with a high psychological burden

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Abstract

Background Hidradenitis suppurativa (HS) is a disorder that can lead to serious sequelae and important comorbidities. It has been associated with different mental health conditions, such as depression, anxiety or completed suicide. The objective is to analyze the suicide risk (SR) among patients in a monographic HS consultation, as well as to establish individual association factors.

Methods Patients older than 18 years seen in our specific HS unit were consecutively included and invited to respond to the self-administered Beck hopelessness scale. Those patients with significant intellectual disabilities or severe mental health conditions, including a history of psychosis, were excluded. In addition, data related to the skin process were collected. Subsequently, it was studied whether there were significant differences between patients with absent–mild SR and those with moderate–severe SR and a logistic regression analysis was performed to determine the relationship of these variables with SR.

Results A total of 136 patients were included in the study, 51.5% men. Of them, 21.3% presented a moderate or severe SR (score ≥ 9 in the Beck test). This risk was significantly related to having a previous or concomitant psychiatric disorder (OR = 2.586, 95% CI 1.044–6.409, $p = 0.040$) followed by the history of biological treatment (OR = 2.867, 95% CI 1.004–8.182, $p = 0.049$). The existence of other affected relatives was confirmed as a protective factor (OR = 0.377, 95% CI 0.150–0.951, $p = 0.039$).

Conclusions The prevalence of SR in patients with HS is higher than that of the general Spanish population. The presence of a psychiatric disorder and the need for biological treatment are established as factors that increase SR, both of which can be interpreted as a more advanced disease. As a protective factor, the presence of other cases in the family is established, which suggests a greater normalization of the disease.

Background

The relationship between skin and psyche is well known, with significant psychological and psychiatric morbidity derived from dermatological pathologies [1]. Different chronic pathologies, such as psoriasis or atopic dermatitis, have been linked to substance abuse, anxiety-depressive or

sleep disorders [2, 3]. However, much remains to be studied in this field and little is known about the psychological burden posed by some prevalent dermatological diseases [4].

Hidradenitis Suppurativa (HS) is an inflammatory disease, characterized by the appearance of inflammatory nodules, abscesses and suppurative fistulae in areas rich in apocrine glands that can lead to significant morbidity and sequelae [5]. Pain and itching are common symptoms and generally affect areas of folds, generating an important stigma [6]. HS has been associated with various comorbidities, such as metabolic syndrome, arteriosclerosis or spondyloarthritis, as well as with mental health conditions [7]. Among the latter, the higher prevalence of suicidal ideation and suicide risk (SR) in these patients stands out due to its importance [8]. However, to our knowledge, there is little evidence on the subgroups of patients who are at higher risk.

José Juan Pereyra-Rodríguez and Giovana Fernanda Osorio-Gómez have collaborated in equal proportion to the development of the study.

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The objective of this study is to analyze the SR presented by the patients seen in our specific HS unit. Likewise, we intend to detect the factors that most influence these by means of a multivariate analysis.

Materials and methods

Patients were included following a sample of consecutive cases in the population older than 18 years attended in our specific HS unit, regardless of the stage or years of evolution of their disease, between the months of December 2020 to June 2021. Patients with significant intellectual disabilities or severe mental health conditions, including a history of psychosis, were excluded, as well as those who did not give their informed consent to participate in the study.

Subsequently, they were invited to respond to the Beck Hopelessness Scale in its validated Spanish version, available, in printable format, through the website of the Virgen de las Nieves Hospital in Granada [9]. It is a self-administered true–false scale, with a score from 0 to 20, with the highest values correlating with a higher prevalence of ideas and risk of suicide [10]. Likewise, data related to the health process were collected: sex, age of onset, age at diagnosis, diagnostic delay, type of visit made, smoking, presence of affected relatives, somatic and mental health comorbidities, current treatment, number of surgical interventions, affected locations, Hurley stage and score on the Hidradenitis Suppurativa Severity Score System (IHS4). Anthropometric characteristics such as weight, height and body mass index (BMI) were also collected.

Subsequently, we studied whether there were significant differences between patients with absent or slight risk of suicide versus those with moderate or severe risk (< 9 and ≥ 9 on the Beck hopelessness scale, respectively). With these data, a logistic regression analysis was performed sequentially using the Wald method by steps forward to determine the relationship of these variables with the risk of suicide. For this process the Excel[®] software was used to build the database, which was later exported to SPSS[®] version 21 in order to carry out the statistical analysis and the construction of. All patients signed a written consent to participate in this study. This study has been evaluated by the Ethics Committee of the Hospitales Universitarios Virgen del Rocío-Macarena with file number 2363-N-21.

Results

A total of 136 patients were included, of which 70 (51.47%) were men. Overall, 29 of the people seen (21.23%) had a score of ≥ 9 on the Beck hopelessness scale and, therefore,

had a moderate or severe risk of suicide. The percentages of men and women in each group were similar, 44.83% and 53.27% being men ($p = 0.120$) in patients with moderate/severe and absent/mild SR, respectively (Table 1).

If we describe these general characteristics in both groups (Table 1), most of the patients represented monitoring visits with 69.85%. Regarding affected family members, 44.11% of the patients presented them, with the majority in the group with absent/mild SR (48.60%) compared to patients with moderate/severe SR (27.59%, $p = 0.034$). Most of the patients—105 of them—presented somatic comorbidities and 27.21% also referred present or past mental health comorbidities, the percentage being higher in patients with moderate/severe SR ($n = 12$, 41.38%, $p = 0.047$). Only one patient had a history of suicide attempt in our cohort. Regarding the age of onset, the mean was 22.89 years, very similar in both groups, highlighting a diagnostic delay of more than 12 years (12.68 years in the absent/mild risk group and 13, 66 in moderate/severe risk). Regarding the disease classification parameters, the mean Hurley was 1.98 and the IHS-4 was 5.62, both parameters slightly higher in the moderate/severe risk group, with values of 2.13 and 6.62, respectively. Also noteworthy are the high BMI and smoking values in both groups, with an average of 29.74 kg/m² and 18.42 pack-years.

Regarding the affected areas (Table 2), the most frequent in both the high-risk and low-risk groups were the inguinal region (68.97% and 52.34%, respectively), followed by the gluteal areas (55.17% and 42.06%) and axillary (51.72% and 42.06%), without finding significant differences in these parameters. On the other hand, in both groups, the most prescribed treatment was antibiotic therapy, with a similar frequency in both groups (65.42% in patients with Beck < 9 and 72.41% in patients with Beck ≥ 9), followed by biological therapy, which was more frequently received by patients with moderate/severe SR (27.59%) compared to those with absent/mild SR (13.08%, $p = 0.049$).

In the univariate analysis, the following variables proved to be significant: family history ($p = 0.034$), past or present mental health comorbidities ($p = 0.047$) and receiving biological treatment ($p = 0.049$). In the multivariate analysis using the Wald method, these three variables once again proved to be significant and maintained statistical significance, confirming the existence of a previous or concomitant mental health condition (OR = 2.586, 95% CI 1.044–6.409, $p = 0.040$) and the biological treatment (OR = 2,867, 95% CI 1.004–8.182, $p = 0.049$), as independent risk factors. The existence of other affected relatives was confirmed as a protective factor (OR = 0.377, 95% CI 0.150–0.951, $p = 0.039$). These values were represented in a funnel plot (Fig. 1). The following logistic regression formula was also constructed:

Table 1 General characteristics of the study population and stratified according to suicide risk

	All patients (n = 136)	Absent-low risk (Beck < 9) (n = 107)	Moderate-severe risk (Beck ≥ 9) (n = 29)	
Sex (n; %)				
Female	66; 48.3%	50; 46.73%	16; 55.17%	<i>p</i> = 0.120 [†]
Male	70; 51.47%	57; 53.27%	13; 44.83%	
Type of visit (n; %)				
Initial visit	41; 30.15%	31; 28.97%	10; 34.48%	<i>p</i> = 0.359 [†]
Monitoring visit	95; 69.85%	76; 71.03%	19; 65.42%	
Family background (n; %)	60; 44.11%	52; 48.60%	8; 27.59%	<i>p</i> = 0.034[†]
Somatic comorbidities (n; %)	105; 77.20%	82; 76.64%	23; 79.31%	<i>p</i> = 0.761 [†]
Mental health comorbidities (n; %)	37; 27.21%	25; 23.36%	12; 41.38%	<i>p</i> = 0.047[†]
Age in years (mean; SD)	42.13; 12.88	41.40; 13.38	44.79; 10.61	<i>p</i> = 0.156 [‡]
Onset age in years (mean; SD)	22.89; 10.73	22.86; 10.83	23; 10.53	<i>p</i> = 0.950 [‡]
Diagnostic age in years (mean; SD)	35.78; 12.05	35.54; 13.01	36.66; 12.91	<i>p</i> = 0.683 [‡]
Time of evolution in years (mean; SD)	19.24; 13.83	18.54; 14.05	21.79; 12.85	<i>p</i> = 0.242 [‡]
Diagnostic delay in years (mean; SD)	12.89; 12.56	12.68; 12.56	13.66; 12.75	<i>p</i> = 0.716 [‡]
Tobacco use in pack-years (mean; SD)	18.42; 20.95	17.20; 19.40	22.89; 25.81	<i>p</i> = 0.276 [‡]
BMI (mean; SD)	29.74; 6.28	29.73; 6.36	29.76; 6.08	<i>p</i> = 0.980 [‡]
Hurley (mean; SD)	1.98; 0.73	1.93; 0.73	2.13; 0.69	<i>p</i> = 0.173 [‡]
IHS-4 (mean; SD)	5.62; 7.09	5.35; 6.89	6.62; 7.81	<i>p</i> = 0.429 [‡]

Statistically significant results are shown in bold characters

SD standard deviation

[†] χ^2 test; [‡]Student's *t*-test

$$P(\text{Suicide risk} = \text{moderate} - \text{severe}) = \frac{1}{1 + \exp(1.444 + 0.975 \cdot \text{Family} - 0.950 \cdot \text{Psychiatric} - 1.053 \cdot \text{Biologic})}$$

Table 2 Affected areas and current treatment of study patients stratified according to suicide risk

	Absent-low risk (Beck < 9)	Moderate-severe risk (Beck ≥ 9)	
Affected areas (n; %)			
Axillary	45; 42.06%	15; 51.72%	<i>p</i> = 0.235 [†]
Inguinal	56; 52.34%	20; 68.97%	<i>p</i> = 0.081 [†]
Gluteal	45; 42.06%	16; 55.17%	<i>p</i> = 0.147 [†]
Mammary	15; 14.02	3; 10.34%	<i>p</i> = 0.435 [†]
Cuello	3; 2.80%	0. 0%	<i>p</i> = 0.484 [†]
Abdominal	8; 7.48%	2; 6.90%	<i>p</i> = 0.639 [†]
Genital	23; 21.50%	6; 20.69%	<i>p</i> = 0.575 [†]
Other	12; 11.21%	2; 6.90%	<i>p</i> = 0.389 [†]
Current treatment (n; %)			
Antibiotic therapy	70; 65.42%	21; 72.41%	<i>p</i> = 0.317 [†]
Retinoids	12; 11.21	4; 13.79%	<i>p</i> = 0.458 [†]
Methotrexate	1; 0.93%	0. 0%	<i>p</i> = 0.484 [†]
Biological therapy	14; 13.08%	8; 27.59%	<i>p</i> = 0.049[†]
Radiotherapy	2; 1.87%	0. 0%	<i>p</i> = 0.618 [†]
Surgery	7; 6.54%	2; 6.90%	<i>p</i> = 0.610 [†]

Statistically significant results are shown in bold characters

[†] χ^2 test

Discussion

Recently, mental health is becoming increasingly important, thanks, among other factors, to the awareness that emerged as a result of the COVID-19 pandemic and the call to governments and health institutions to improve the mental health of the population [11]. In the field of Dermatology, the diseases' effects on self-perception, quality of life and psychological affectation is well known [4]. Post-traumatic stress disorder, anxiety, or depression have been associated with acute disorders—such as Stevens-Johnson Syndrome and Toxic Epidermal Necrolysis—as well as with chronic conditions, such as psoriasis with depression rates of up to 60% [12, 13]. Among these chronic diseases, HS is a pathology with profound consequences on the individual's psyche due to how deforming and disabling both its flares and its sequelae can be [8].

In our cohort of patients with HS, we found a prevalence of suicidal ideas of 21.23%, well above the Spanish average, where, even in a stressful period such as the first months

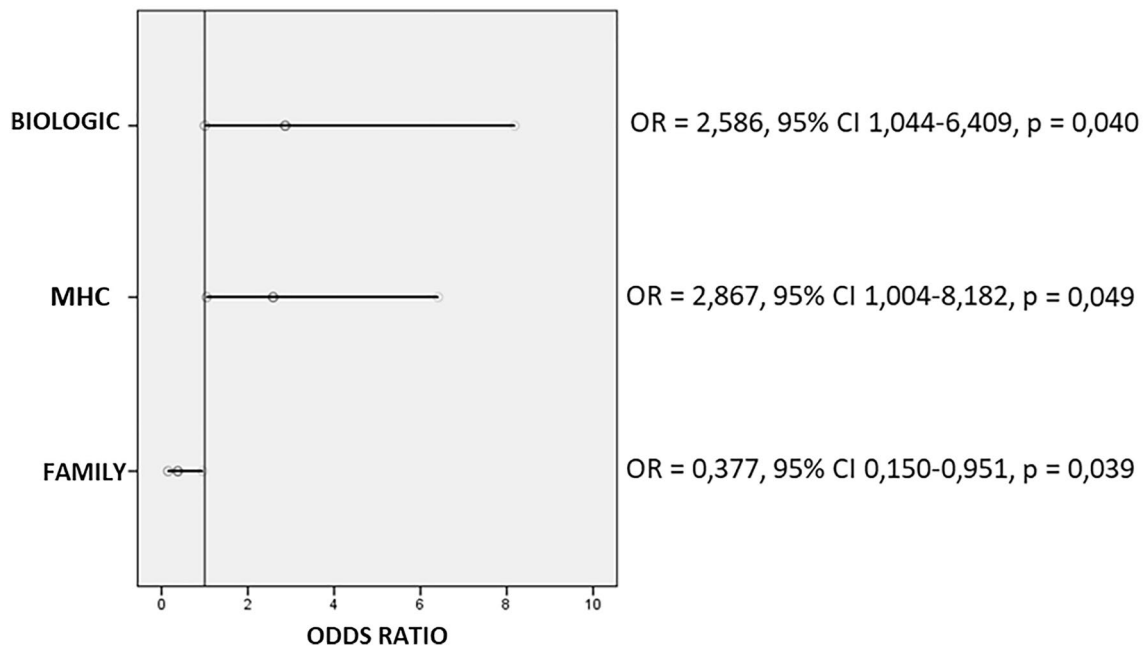


Fig. 1 Graphical representation of the variables included in the logistic regression equation for the risk of suicide in a patient with HS. *Biologic* biologic treatment, *family* family history of HS, *MHC* mental health condition

of the COVID-19 pandemic, it did not reach 5% [14]. This would be in line with the publications that correlate HS with this phenomenon [15, 16]. Compared with other conditions, we can observe a higher prevalence of suicidal ideas in our series; for example Dalgard et al. report suicidal ideas in 17% of psoriasis patients and 9.3% of eczema patients [4]. This could be explained by the greater impact of HS on quality of life, largely motivated by pain, a central characteristic of this disease and usually absent in other disorders [17]. Moreover, the repercussions of HS on daily activities and body image are greater compared to other skin disorders like psoriasis [18, 19]. Regarding the sexuality, this is also negatively affected in patients with HS, with higher rates of sexual dysfunction compared to other skin disorders [20].

There is growing interest in establishing better protocols not only for the diagnosis and treatment of HS itself, but also of the associated comorbidities in order to provide the HS patient with holistic and comprehensive care [7]. The latest evidence-based recommendations include screening for depression, anxiety, and sexual dysfunction in all patients, but only recommend screening for suicide risk in patients with known mental health conditions [7]. Our study stresses this fact and adds, as a subgroup of higher risk, patients under biological treatment, in whom the risk is significantly increased. As an explanation for this striking finding, we suggest the lower drug survival of these drugs and its often delayed onset if compared with other skin disorders that we hypothesize may lead to higher rates of frustration [21]. This contradicts the results reported by Gupta et al., who point

out a reduction in suicidal behaviors in HS patients receiving anti-TNF, but their results are based on pharmacovigilance registries and not on a clinical cohort [22].

However, the most novel finding of our study is the protective factor that the existence of a family history of HS seems to have. To our knowledge, similar findings have not been reported either for cohorts of patients with HS or with other dermatoses. HS is a disease about which there is great ignorance, largely motivated by the areas of the body where it develops [23]. We can hypothesize that these patients, having other close examples with the same pathology and an understanding environment, can better cope with the disease. In this way, it is easier to establish a reliable support network in which there is close and true knowledge of the problem, as occurs with other pathologies and situations [24]. Therefore, it is a fact that should be studied further not only in HS but in other dermatoses.

On the other hand, the association of mental health conditions with the risk of suicide is a widely known fact. In this context, it is not something that we should underestimate, since conditions such as anxiety or depression are significantly associated with both HS and suicide, as we have commented previously [15, 16]. In this way, they stand as a modifiable risk factor and recent studies indicate the effectiveness of preventive strategies even brief and transitory, so it is something that we should not stop addressing in the consultation, even with brief questions that affect anhedonia and hopelessness [25]. Having been widely accepted by our patients, we propose the Beck hopelessness scale as a useful

instrument in these patients due to its ease and speed of administration, as well as its good correlation with suicidal ideation and the risk of autolysis [10].

Among the limitations of our study are that it was carried out in a monographic HS consultation, where, although patients from the entire spectrum of the disease were included, a higher percentage of seriously ill patients could be included. On the other hand, it is a cross-sectional study, not prospective. Thus, future studies are needed to further refine these associations and establish their dynamic evolution in the context of a protocolized follow-up of patients with this disease.

Conclusions

HS is a disease with significant somatic and psychological repercussions, highlighting its association with the risk of suicide. In our study, receiving biological therapy, a finding that could be comparable to advanced disease, and the history or presence of mental health conditions are confirmed as risk factors. On the other hand, the existence of a family history stands as a protective factor, which can be related to the existence of better support networks. We want to point out the importance of screening for these risk factors for the early detection of these suicidal ideas and avoiding a fatal outcome.

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Declarations

Conflict of interest The authors declare no conflict of interest.

Informed consent The patients in this manuscript have given written informed consent to publication of their case details.

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