Factors Determining Affected Sites in Hidradenitis Suppurativa

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Sir,

We have read the comments of Dr. van Straalen with great interest [1]. She raises 3 points of discussion:

The first point concerns gender as a confounding factor. We strongly agree that gender is a confounding factor. Initial univariate analysis of our data (Table 1) shows the sex differences observed. Gender is however not the only confounding factor and the same reasoning could be applied to many other confounders. Looking at the multivariate logistic regression analysis of the same data some differences appear while others disappear [2]. For instance, the association of female sex and HS of the groin became apparent, while male sex and axillary HS was not supported. Performing the analysis separately for men and women would have missed this.

The second point concerns the absence of a standard definition of anatomical sites involved in HS and subsequent inter-observer variation. Inter-observer variation was eliminated as all patients were assessed by the same physician [1]. Dr. van Straalen furthermore suggests

combining sites in what she calls “more accepted” anatomical regions would be of interest [1]. The suggested regions are intended standardized photography [3]. We have explored this suggestion and redefined our cohort accordingly (Table 2). We find this new categorization interesting for the comparison of proportions with those of another cohort. It may however entail loss of information.

The third point raised concerns the logistic regression models. Dr. van Straalen relevantly points that Hurley stage is a categorical variable and therefore suggests to report odds for Hurley stage II and III with Hurley stage I as the reference category [1]. We would argue that Hurley staging is not only a categorical variable, but a semi-quantitative ordered variable (stage III is more severe than stage II, which is itself more severe than stage I). When, therefore, the odds ratio for Hurley stages was quoted at 1.62, it means that the considered risk increased by 1.62 from Hurley I to Hurley II and from Hurley II to Hurley III.

In conclusion, we thank Dr. van Straalen for her critical reading of our work and agree with her that further standardized studies are clearly required.

Key Message

Further multivariate regression analyses and clearer definitions of anatomical sites are required to better associate affected sites and pathophysiological triggering factors.

Conflict of Interest Statement

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Author Contributions

F.B. and A.P.V.: critical revision of the work. P.G.: design of the work, acquisition, analysis and interpretation of the data, drafting of the work.

References

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- 2 Benhadou F, Villani AP, Guillem P. Which Factors Determine Affected Sites in Hidradenitis Suppurativa? *Dermatology*. 2020;236(1):15–20.
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Table 1. Gender-specific characteristics in patients with hidradenitis suppurativa (univariate analysis; cohort described in [2])

	Males (n = 411)	Females (n = 727)	Significance (p value)
<i>Covariates</i>			
Age, years, mean ± SD	33±11	31±10	0.008
BMI, kg/m ² , mean ± SD	27±5	27±7	0.329
Age at onset, years, mean ± SD	22±8	20±8	<0.001
Disease duration, years, mean ± SD	11±9	11±9	0.652
Family history of HS, %	23.1	25.9	0.303
Smoking, %	88.6	74.3	<0.001
Hurley stage, %			
I	44.5	61.9	
II	35.8	29.0	<0.001
III	19.7	9.1	
Inflammatory joint disease, %	2.4	5.8	0.009
Inflammatory bowel disease, %	0.7	2.9	0.015
Acne vulgaris, %	21.9	16.2	0.018
Acne conglobate, %	5.4	2.1	0.003
Dissecting folliculitis of the scalp, %	2.2	0.4	0.011
Epidermal cyst, %	23.6	14.4	<0.001
<i>Sites</i>			
Axilla, %	73.0	68.2	0.092
Neck, %	18.0	3.9	<0.001
Retroauricular, %	14.6	7.1	<0.001
Breast, %	7.1	28.6	<0.001
Buttocks, %	32.1	30.4	0.547
Subgluteal, %	9.0	5.8	0.040
Intergluteal, %	51.6	28.3	<0.001
Groin, %	61.8	83.6	<0.001
Inner thighs, %	21.4	19.8	0.519
Pubis, %	20.2	23.9	0.147
Abdominal fold, %	4.9	5.9	0.458
Genitals, %	19.2	22.3	0.225
Perineum, %	18.5	6.1	<0.001
Anus, %	17.8	10.7	<0.001
Affected sites, n (mean ± SD)	3.9±2.0	3.6±1.8	0.007

Table 2. Multivariate analysis according to the site categorization

Site categories according to our original article [1]		Site categories according to Zouboulis et al. [3]		Factors positively associated with this site*	Factors negatively associated with this site*
Armpits	<i>n</i> = 796 (70.0%)	Armpits	<i>n</i> = 796 (70.0%)	Pubis; Submammary BMI; Hurley stage	Buttocks; Groins Age at 1st occurrence (epidermal cyst)
Groins	<i>n</i> = 862 (75.7%)	Groins	<i>n</i> = 919 (80.8%)	Woman; Age Pubis; Genitals Epidermal cyst (BMI for inner thighs)	Chest Age at 1st occurrence (BMI for groin)
Inner thighs	<i>n</i> = 232 (20.4%)				
Genitals	<i>n</i> = 241 (21.2%)	Genitals	<i>n</i> = 308 (27.1%)	Pubis; Groin; Anal area Hurley Age at 1st occurrence (Woman for genitals) (Smoking) (DF of the scalp)	Acne vulgaris (abdominal fold) (Woman for perineum)
Perineum	<i>n</i> = 120 (10.5%)				
Anal area	<i>n</i> = 151 (13.3%)	Anal area	<i>n</i> = 151 (13.3%)	Genitals; Buttocks Age at 1st occurrence Joint disease	Woman BMI
Buttocks	<i>n</i> = 353 (31.0%)	Buttocks	<i>n</i> = 389 (34.2%)	Pubis; anal area Age; (family history) (Hurley and acne conglobata for subgluteal)	Armpit; BMI Age at 1st occurrence
Subgluteal fold	<i>n</i> = 79 (6.9%)				
Pubis	<i>n</i> = 257 (22.6%)	Pubis	<i>n</i> = 293 (25.8%)	Armpit; groin; buttocks BMI Genitals for pubis	(Genitals for abdominal fold)
Abdominal fold	<i>n</i> = 53 (4.7%)				
Breast	<i>n</i> = 237 (20.8%)	Chest	<i>n</i> = 111 (9.8%)	Woman; BMI Epidermal cyst Acne conglobata Groin, armpit, pubis Buttocks, BMI	Age Groin
		Submammary (only in the 727 women)	<i>n</i> = 146 (20.1%)		
Neck	<i>n</i> = 102 (9.0%)	Other	<i>n</i> = 614 (54.0%)	Analysis not performed because of huge heterogeneity	
Retroauricular	<i>n</i> = 112 (9.8%)				
Intergluteal fold	<i>n</i> = 417 (36.6%)				
Other	<i>n</i> = 193 (17.0%)				

* Factors already found in our original article are shown in bold; factors described in our original article and not found to be significant with the revised categorization are indicated in brackets.