

Clinical Letter

Body mass index at the onset of hidradenitis suppurativa

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Dear Editors,

Hidradenitis suppurativa (HS) has a well-known association with increased body mass index (BMI). However, studies on BMI in HS patients were performed after an average disease duration of 13.8–15.5 years [1–3]. It remains unclear to what extent increased BMI predisposes to development of HS. Increased BMI could potentially be a result of HS-related symptoms such as depression [4]. Therefore, the aim of this study was to retrospectively investigate the BMI of HS patients at the onset of the disease and to compare this to age-matched Dutch population data.

All consecutive HS patients attending the HS clinic of a tertiary center in the Netherlands between May and September 2017 were included. Patients retrospectively selected a silhouette from the Stunkard Figure Rating Scale corresponding with their body size at the age of the first HS symptoms. These figures were converted into underweight and normal weight, overweight, or obesity according to previous publications [5, 6]. Patient characteristics were collected from medical records. General population data was collected through the open-access database (StatLine) of Statistics Netherlands [7]. Categorical BMI data in this database is available stratified per age group (for example, 16–20 years) from 1981 up to now, obtained through yearly questionnaires sent to a random sample of the Dutch population. To create age-matched groups, patients were categorized into the StatLine age groups according to the age of HS onset. The average year of onset within these groups was used for comparison with population data. Groups with < 15 patients were excluded from the analyses. Statistical analysis was performed using SPSS Statistics (IBM, version 24), with *P*-values ≤ 0.05 considered significant. Under Dutch law this study is exempt from medical ethical committee approval.

At the time of inclusion 70.7 % of the 239 included patients were overweight/obese with a mean BMI of 28.98 ± 6.11 (Table 1). Seven patients could not recall the age of onset and were excluded from analysis. At the age of HS onset 40.5 % of patients were overweight or obese. Groups with an age of onset under 16 years (*n* = 6), between 40–50 years (*n* = 12) and between 50–65 years (*n* = 9) were excluded from the analysis. Patients with a disease onset between 12–16 years, 16–20 years, and 20–30 years were significantly more often overweight/obese compared with their age-matched

Table 1 Patient characteristics.

	Included patients	
	n = 239	
Female, n (%)	151	(63.2 %)
Age, mean ± SD	38.75	± 12.83
Age of onset, mean ± SD	22.84	± 11.21
Missing, n	7	
Current BMI, mean ± SD	28.98	± 6.11
Under- or normal weight, n (%)	70	(29.3 %)
Overweight, n (%)	72	(30.1 %)
Obese, n (%)	97	(40.6 %)
FRS at onset		
1, n (%)	14	(5.9 %)
2, n (%)	28	(11.7 %)
3, n (%)	47	(19.7 %)
4, n (%)	54	(22.6 %)
5, n (%)	36	(15.1 %)
6, n (%)	32	(13.4 %)
7, n (%)	17	(7.1 %)
8, n (%)	7	(2.9 %)
9, n (%)	4	(1.7 %)
BMI at onset		
Under- or normal weight (FRS 1–4), n (%)	138	(59.5 %)
Overweight (FRS 5–7), n (%)	85	(36.6 %)
Obese (FRS 8–9), n (%)	9	(3.9 %)
Missing, n	7	
Smoking status		
Current or ex-smoker, n (%)	189	(79.1 %)
Non-smoker, n (%)	44	(18.4 %)
Missing, n	6	
Hurley stage		
Stage I, n (%)	81	(33.9 %)
Stage II, n (%)	106	(44.4 %)
Stage III, n (%)	52	(21.8 %)

Abbr.: BMI, body mass index; FRS, Stunkard Figure Rating Scale.

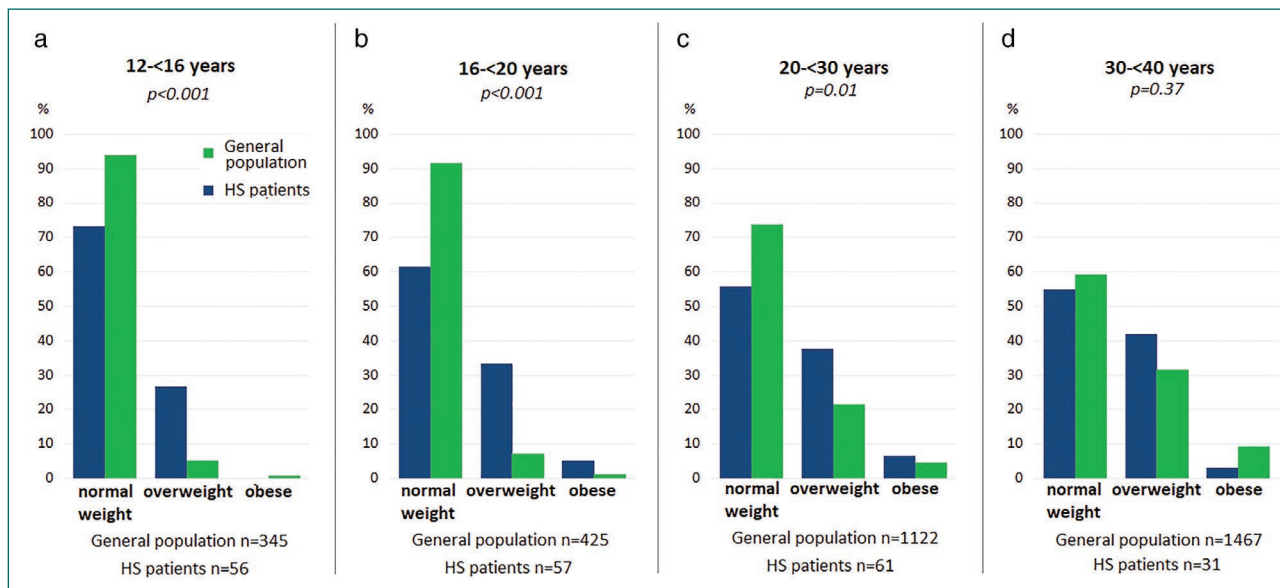


Figure 1 Categorical BMI at the onset of HS compared with the general population. Onset 12–16 years (a). Onset 16–20 years (b). Onset 20–30 years (c). Onset 30–40 years (d). HS, hidradenitis suppurativa. Categorical BMI data was analyzed using Fisher's Exact tests.

peer group (respectively $P < 0.001$, $P < 0.001$, and $P = 0.01$) (Figure 1). The BMI did not significantly differ in patients with a disease onset between 30–39 years. No significant differences in BMI at HS onset were found for sex, family history, or smoking status. No association was found between BMI at disease onset and current disease severity (Hurley stage).

This is the first study to assess BMI at the age of HS onset. The results of this study support a predisposing role of high BMI in the development of HS, at least in a subgroup of HS patients. Potentially, obesity-induced low-grade inflammation could prime the skin of HS patients towards a pro-inflammatory state with other factors such as genetics, smoking or hormonal influences providing additional hits towards developing HS [8]. This raises the question whether the subclinical inflammation seen in uninvolved HS skin could be regarded as obesity related inflammation or whether it represents a disease specific pro-inflammatory milieu in the skin of HS patients. In addition, Vossen et al. demonstrated that HS patients have a more peripheral fat distribution compared with controls which may result in increased friction between skin folds, potentially promoting HS-associated follicular occlusion [9]. However, our results do not exclude an effect of HS itself on BMI after disease onset. Hidradenitis suppurativa associated symptoms such as pain, contractures, and fatigue could reduce physical activity leading to an additional increase in BMI [10]. Moreover, the majority of patients had normal weight at disease onset and several studies have shown that certain HS phenotypes within the HS

population are associated with normal BMI [11]. Therefore, increased BMI may only serve as a predisposing factor in a subset of HS patients.

Our results may be subject to recall bias due to the retrospective nature of the study. Nonetheless, we would expect patients to choose a smaller body silhouette over a curvier one, most likely leading to an underestimation of our results rather than an overestimation. The well-known diagnostic delay poses great difficulties in assessing the causality between increased BMI and development of HS. Large, prospective, long-term follow-up studies of initially healthy participants would be required to provide evidence for a causal relationship between BMI and HS.

In conclusion, patients with an HS onset between 12 and 30 years were more frequently overweight or obese at that age than the general population. These results suggest a predisposing role of overweight in the development of HS in a subgroup of patients.

Conflict of interest

None.

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