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Concordance of severity scores assessed on photographs in hidradenitis suppurativa.

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Study concept and design: Dr Prouteau, Dr Droitcourt, Pr Dupuy, Pr Oger and Dr Pruvost-Balland.
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Statistical analysis: Dr Prouteau, Dr Droitcourt, Pr Dupuy and Pr Oger.

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The management of Hidradenitis suppurativa (HS) is complex.[1] A photo-based patient assessment enables clinical evaluation by several raters or a group of experts. We studied the agreement among raters for photography-based severity scores in patients with HS.

Nine experienced dermatologists from nine centres in France, members of the French Society of Dermatology HS working group, here named the "expert" photographic raters, and five more inexperienced dermatology residents, named the "junior" photographic raters, evaluated photographs of consecutive HS patients, all having signed an informed consent, from a specialized HS consultation at the Dermatology Department of Rennes University Hospital.

For each patient, seven standardized photographs (right axilla, left axilla, groin, gluteal area, inter-gluteal cleft, inter-mammary area, sub-mammary area) and the unedited JPEG pictures (at least 3 MO) were presented via an integrated file viewer software on a secure web-based health data server. Each assessor rated, independently from each other, the following “photographic” scores: Hurley, IHS4, Sartorius, modified Sartorius, and HSS. All these scores had been clinically rated by two on-site clinicians (the scores of one of the two is given in the descriptive part). Agreement was assessed using concordance correlation coefficients (CCC) or Kendall’s coefficients for continuous and ordinal scores respectively (SAS Institute, Inc., USA).[2,3]

Eighteen women and 8 men (median age 35 years; IQR, 28-42) with a median HS duration of 10.3 ± 6.5 years, were included. Seven patients (26.9%) were on antibiotics and 21 (80.7%) had had surgical treatment. Five (19.2%), 19 (73.1%) and 2 (7.6%) had Hurley stage I, II and III, respectively. The median Sartorius and Modified Sartorius Scores were 30.5 (IQR, 20-42) and 25.3 (IQR, 16.5-31.5), respectively. Using the HS-PGA scale, the degree of severity was considered as clear for 5 patients (19.2%), minimal for 4 patients (15.4%), mild for 11 patients (42.3%), moderate for 5 patients (19.2%), and severe for 1 patient (3.9%).

All patients agreed to photographs of their axilla, 21 of the mammary region, 19 of the genital area and 18 of the inter-gluteal cleft, leading to 11 patients (42.3%) having a full set of photographs.

The inter-rater agreement on photographic scores between experts, and juniors, for each type of lesion, is presented in Table 1.

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In this study, inter-rater agreement among experts for the “photographic” Hurley staging and the IHS4 was good, and moderate for the HSPGA, Sartorius, Modified Sartorius score, and HSS. The same applies to the juniors.

Photographs were not easy to collect, and several photographic sets were incomplete, due to reluctance by patients for photographs of intimate areas. Being photographed, especially entailing exposure of the genital area, was an uncomfortable experience for patients and merits specific attention, because of the psychological and emotional impact.

The moderate agreement between raters can be explained by difficulties in counting and defining the lesions (Infiltration, pain and the suppurative aspect could be difficult to evaluate on photographs), and by their location making photographic evaluation even more complex, especially in folds. A recent score SAHS has grouped the different type of inflammatory lesions in the same category and easily differentiate them from fistula.[4]

Conditions of image capture were the same for all patients, and all “photographic” raters had the same sets. One recent study investigated agreement, on the Hurley staging system only, between dermatologists and surgeons from photographs selected from websites.[5] A standard set of photographs of eleven HS areas has also recently been proposed.[6] However, its feasibility (time required) and acceptability for patients has not yet been evaluated in practice. The validation of a standardized set will be useful for future studies.

The “photographic” assessment is rather less discordant with the categorical scales than with continuous scores. For the categorical scales (Hurley and HS-PGA), the number of choices available to raters is limited to three or six categories. For the “continuous” scores, the moderate concordance between raters may not have clinical significance. The minimum clinically important improvement (MCII) is defined by the smallest change in measurement corresponding to a marked improvement for the patient.[7] This approach requires the determination of a cutoff that is clinically correlated to patient improvement. Determining the “MCII” in HS would help interpret what degree of discordance between scores is clinically significant. However, for the calculation of the CCC, differences across multiple raters are penalized proportionally by the disagreement resulting from their variance and the squared mean difference.

In this pilot study, inter-rater agreement between experts was moderate to good. Digital HS patient assessments have several advantages, preserving a record of a clinical condition and facilitating the development of telemedicine.[8] Further photo-based assessment studies are required on patients with HS.

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Table 1: Agreement among expert raters, and among junior raters: Kendall's concordance coefficients for categorical scores (Hurley, HSPGA, IHS4), and concordance correlation coefficients (95% confidence interval) for continuous scores

Score	Agreement[a] among Expert raters (n = 9)	Agreement among Junior raters (n = 5)
Hurley	0.669	0.711
HSPGA	0.599	0.629
IHS4 points	0.487 (0.308 - 0.633)	0.493 (0.290 - 0.653)
IHS4 scale	0.640	0.656
Sartorius	0.534 (0.311 - 0.701)	0.481 (0.212 - 0.682)
Full set of photographs[b]	0.485 (0.186 - 0.702)	0.428 (0.106 - 0.669)
Fully assessed[c]	0.480 (0.180 - 0.698)	0.441 (0.099 - 0.691)
Modified Sartorius[f]	0.562 (0.337 - 0.727)	0.419 (0.137 - 0.638)
Full set of photographs[b]	0.539 (0.238 - 0.745)	0.451 (0.115 - 0.695)
Fully assessed[c]	0.524 (0.221 - 0.735)	0.420 (0.083 - 0.670)
HSS[g]	0.597 (0.296 - 0.790)	0.553 (-.220 - 0.899)
Full set of photographs[b]	0.522 (0.156 - 0.762)	0.653 (-.164 - 0.939)
Fully assessed[c]	0.526 (0.147 - 0.770)	0.614 (-.228 - 0.931)
Lesions:		
Abscesses	0.303 (0.144 - 0.446)	0.100 (-.49 - 0.244)
Nodules	0.692 (0.536 - 0.802)	0.558 (0.363 - 0.707)
Fistulas	0.431 (0.255 - 0.580)	0.490 (0.288 - 0.651)
Scars	0.122 (0.030 - 0.213)	0.267 (0.083 - 0.433)
Other features	0.454 (0.279 - 0.599)	0.646 (0.465 - 0.775)

[a] Results were interpreted using the Altman's Kappa Benchmark Scale (values of 0–0.20 represent poor agreement, 0.21–0.40 fair agreement, 0.41–0.60 moderate agreement, 0.61–0.80 good agreement and 0.81–1.00 very good agreement).

[b] A full set of photographs is defined as 7 standardized photographs per patient, and concerned 11 patients.

[c] Fully assessed is defined as follows: among the patients with a full set of photographs (n=11), 7 patients were completely assessed by the raters.

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