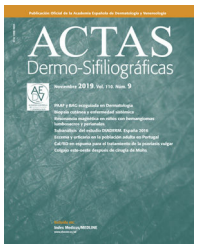
ACTAS Dermo-Sifiliográficas xxx (xxxx) xxx–xxx

ACTAS
Dermo-Sifiliográficas

Full English text available at
www.actasdermo.org



RESIDENT'S FORUM

[Translated article] RF – Metformin as Part of the Therapeutic Armamentarium of Hidradenitis Suppurativa

FR – Metformina en el tratamiento de la hidradenitis supurativa

J.M. Camino Salvador*, A. Martínez Fernández, C. Chiloeches Fernández

Servicio de Dermatología, Hospital Universitario de Guadalajara, Guadalajara, Spain

KEYWORDS
Hidradenitis suppurativa;
Acne inversa;
Metformin;
Overweight;
Diabetes

PALABRAS CLAVE
Hidradenitis supurativa;
Acné inversa;
Metformina;
Sobrepeso;
Diabetes

Hidradenitis suppurativa (HS) is a chronic inflammatory disease of the hair follicle characterized by nodules, abscesses, fistulas, and scars. Its main comorbidities include obesity, diabetes mellitus (DM), metabolic syndrome (MS), and polycystic ovary syndrome (PCOS).[1]

Metformin—the main treatment for type 2 diabetes (T2DM)—due to its ability to improve tissue sensitivity to insulin, also exhibits pleiotropic anti-inflammatory and immunoregulatory properties, according to the recent work by Petrasca et al.[1] This study highlights the ability of metformin to attenuate glycolysis and the mammalian target of rapamycin (mTOR) pathway. Additionally, the ability of metformin to normalize the expression profiles of interleukin (IL)-17A, interferon-gamma, and IL-6 in neutrophils and skin explants from HS patients was demonstrated.[2]

The use of metformin as a second-line therapy in HS in clinical practice is a common thing.[1] However, despite being included in the American (recommendation level 3) and British clinical practice guidelines (good practice point), no clinical trials have ever evaluated its efficacy profile.[3,4]

The current evidence comes from 6 case series (Table 1),[1,5] covering a total of 228 patients treated with metformin, mostly women (83.3%), with a mean age of 38.4 years. More than 50% of the cases had overweight or obesity, and comorbidities such as PCOS (21.2%) or DM (9.6%). One series registered a total of 16 pediatric patients. The Hurley scale was the most widely used to define severity, with Hurley stage II being the most represented (139 patients).

DOI of original article:
https://doi.org/10.1016/j.ad.2024.04.031
* Corresponding author.
E-mail address: jose.caminosalvador@gmail.com
(J.M. Camino Salvador).

https://doi.org/10.1016/j.ad.2025.03.005

Please cite this article as: J.M. Camino Salvador, A. Martínez Fernández and C. Chiloeches Fernández, [Translated article] RF – Metformin as Part of the Therapeutic Armamentarium of Hidradenitis Suppurativa, ACTAS Dermo-Sifiliográficas, https://doi.org/10.1016/j.ad.2025.03.005

Table 1 Summary of published case series of patients with HS treated with metformin.

		Demographics	Comorbidities	Severity	Regimen	Dosage (mg/day)	Response rate	Improvement in DLQI	Treatment duration (months)	Survival rate	Discontinuation
Senent-Valero et al., 2023[1]	Retrospective case series	*N* = 96 92% women, 37 years	Overweight or obesity (91%) MS (23%) PCOS (19%)	Hurley II (93%) SS 14.5 ± 11.1	Adjunctive (94%). Resorcinol (*N* = 77)	850	NS	NS	12 (5.3–22.8)	51% at 12 months, 21.9% at 24 months	Lack of response (34%) ADR (16%)
Segura-Palacios et al., 2021[6]	Retrospective case series	*N* = 27 66% women, 32.1 years	Overweight or obesity (70.4%)	Hurley I (51.8%), Hurley II (48.2%)	Monotherapy	1700–2550	40.7% reduction in HS-PGA score by 1 point	DLQI reduction: 13 to 9 ($p = 0.001$)	3	NS	ADR (14.8%), Desire for pregnancy (3.7%)
Jennings et al., 2020[7]	Retrospective case series	*N* = 53 85% women, 37 years	Mean weight 102 kg DM (7%), PCOS (9.5%)	Hurley I (4%) Hurley II (72%), Hurley III (24%)	Monotherapy, later addition: Dapsone (*N* = 7), Antibiotics (*N* = 2), Acitretin (*N* = 1), Adalimumab (*N* = 1)	1500 (500–3000)	Subjective clinical improvement: 68% (*N* = 36) CR: 19%, PR: 58% Hurley II, 55% Hurley III	NS	11.3	61% at 6 months, 39% at 12 months	ADR (5.6%) Lack of response (20.7%)
Moussa et al., 2020[8]	Retrospective case series	*N* = 16 75% women, 13.7 years	Obesity (81%) DM (63%) PCOS (25%) AN (50%)	Hurley I (69%), Hurley II (31%), Hurley III (0%)	Monotherapy or adjunctive, N/S	500–1000	31% reduction in number of outbreaks	NS	N/S	NS	Lack of response (6.2%) ADR (12.5%)
Sanz-Bueno et al., 2017[9]	Retrospective case series	*N* = 11 45% women	N/S	N/S	Monotherapy	450–2550	SS improvement: 18% (*N* = 2)	DLQI reduction: 5.5 points in 36%	N/S	NS	Flare-up (18%)
Verdolini et al., 2013[10]	Prospective case series	*N* = 25 88% women 31.5 years	Overweight (88%) GI (88%) PCOS (88%)	SS 34.40 (17–58)	Monotherapy	500–1500	SS improvement: 76% (*N* = 19) Severe to mild-moderate change in 48% (*N* = 12)	DLQI reduction > 50% in 64%	>6 months	NS	Lack of response (28%)

AN: acanthosis nigricans; DLQI: Dermatology Life Quality Index; DM: diabetes mellitus; HS-PGA: Hidradenitis Suppurativa Physician Global Assessment; GI: glucose intolerance; ADR: adverse drug reactions; MS: metabolic syndrome; PCOS: polycystic ovary syndrome; NS: not specified; N/S: non-significant.

There are significant disparities in the evaluation methods used, with standardized tools—Sartorius Score, Physician Global Assessment—being employed in only 3 of the studies. The others used activity descriptors (number of outbreaks, suppuration, and pain). Despite the reported heterogeneity, most studies reported clinical improvements in 31–76% of the patients. Lack of response was the most common cause for discontinuation (6.2–34%). Metformin was well tolerated, with transient digestive discomfort being the most reported adverse effect. Although the pediatric series described 2 cases of mood swings, they did not require discontinuation. Three studies described changes in the Dermatology Quality of Life Index (DLQI), and a reduction of 4 points turned out to be significant ($p < 0.01$) in a series of 27 subjects. This same series showed a 12-month survival rate of 31%. Only 2 series have provided survival data, the most recent being the one by Senent-Valero et al., who showed drug persistence rates of 51% and 21.9% at 12 and 24 months, respectively, in a cohort of 96 patients, the largest published to this date.[5]

Therefore, despite the heterogeneity of the available data, metformin happens to be an affordable and well-tolerated therapeutic option with promising properties for patients with mild-to-moderate HS. The low percentage of patients with comorbidities (DM, PCOS) included in the series may underestimate the real effect of the drug in these subgroups. Although the collected data support the use of metformin in HS, further studies are needed to accurately evaluate safety and efficacy profile.

Conflict of interest

The authors declare that they have no conflict of interest.

References

1. Tsentemeidou A, Vakirlis E, Papadimitriou I, Ioannides D, Sotiriou E. Metformin in hidradenitis suppurativa: is it worth pursuing further? Skin Appendage Disord. 2023;9:187–90, http://dx.doi.org/10.1159/000529359.
2. Petrasca A, Hambly R, Kearney N, Smith CM, Pender EK, Mac Mahon J, et al. Metformin has anti-inflammatory effects and induces immunometabolic reprogramming via multiple mechanisms in hidradenitis suppurativa. Br J Dermatol. 2023;189:730–40, http://dx.doi.org/10.1093/bjd/ljad305.
3. Alikhan A, Sayed C, Alavi A, Alhusayen R, Brassard A, Burkhart C, et al. North American clinical management guidelines for hidradenitis suppurativa: a publication from the United States and Canadian Hidradenitis Suppurativa Foundations: Part II: Topical, intralesional, and systemic medical management. J Am Acad Dermatol. 2019;81:91–101, http://dx.doi.org/10.1016/j.jaad.2019.02.068.
4. Ingram JR, Collier F, Brown D, Burton T, Burton J, Chin MF, et al. British Association of Dermatologists guidelines for the management of hidradenitis suppurativa (acne inversa) 2018. Br J Dermatol. 2019;180:1009–17, http://dx.doi.org/10.1111/bjd.17537.
5. Senent-Valero M, Matijasevich A, Jara-Rico N, Sivera F, Pascual JC. Drug survival of metformin in patients with hidradenitis suppurativa. Br J Dermatol. 2023;190:125–7, http://dx.doi.org/10.1093/bjd/ljad364.
6. Segura Palacios JM, Colmenero Sendra M, del Boz González J, Rivas Ruiz F, de Troya Martín M. Metformin for the treatment of hidradenitis suppurativa: our experience with 27 patients. Actas Dermosifiliogr. 2021;112:202–8, http://dx.doi.org/10.1016/j.ad.2020.12.001.
7. Jennings L, Hambly R, Hughes R, Moriarty B, Kirby B. Metformin use in hidradenitis suppurativa. J Dermatolog Treat. 2020;31:261–3, http://dx.doi.org/10.1080/09546634.2019.1592100.
8. Moussa C, Wadowski L, Price H, Mirea L, O'Haver J. Metformin as adjunctive therapy for pediatric patients with hidradenitis suppurativa. J Drugs Dermatol. 2020;19:1231–4, http://dx.doi.org/10.36849/JDD.2020.5447.
9. Sanz Bueno J, Gutiérrez Medina S, Sánchez-Gilo A, Vicente Martín F. Metformin failed to improve hidradenitis suppurativa in a cohort of eleven patients. In: 26th EADV Congress; 2017: Abstract BL 1125.
10. Verdolini R, Clayton N, Smith A, Alwash N, Mannello B. Metformin for the treatment of hidradenitis suppurativa: a little help along the way. J Eur Acad Dermatol Venereol. 2013;27:1101–8, http://dx.doi.org/10.1111/j.1468-3083.2012.04668.x.