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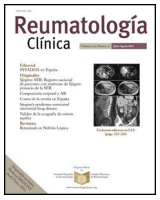

Original Article

Prevalence of hidradenitis suppurativa in patients with axial spondyloarthritis

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ABSTRACT

Objectives: To determine the prevalence of hidradenitis suppurativa (HS) in patients with axial spondyloarthritis (AxSpA) and to describe clinical, laboratory, and radiographic characteristics of patients diagnosed with HS.
Patients and methods: We performed a cross-sectional study of a cohort of 265 patients with AxSpA in follow-up at a tertiary hospital. Patients were screened for HS using a questionnaire, with subsequent diagnostic confirmation by a dermatologist. We collected demographic, clinical, laboratory, and radiographic data. Patients were classified by diagnosis of HS. A descriptive analysis and comparison were performed for both groups.
Results: A total of 148 of the 265 patients (55.8%) completed the screening questionnaire. Screening was positive in 9 patients (6.1%), although the diagnosis of HS was confirmed in only 4 (2.7%). Three patients were diagnosed during the study, with a mean diagnostic delay of 14.25 years. All the patients had mild HS (Hurley stage I). When patients with and without HS were compared, the HS group had more smokers (75% vs 18%; p = 0.005), greater disease activity according to BASDAI (5.6 ± 2.3 vs 3.2 ± 2.1; p = 0.026), less structural damage according to the axial BASRI (1.5 ± 1.3 vs 5.5 ± 3.5; p < 0.018) and shorter time since diagnosis of AxSpA (14.7 ± 2.6 vs 27.8 ± 13.5 years; p = 0.001). No significant differences were found for the remaining variables studied.
Conclusion: This study suggests that prevalence of HS in patients with axSpA is higher than the one observed in general population. The knowledge of this association should encourage clinicians to inquire about symptoms of HS and actively search for lesions.

Prevalencia de hidrosadenitis supurativa en pacientes con espondiloartritis axial

Palabras clave:
Espondiloartritis axial
Espondiloartritis
Hidrosadenitis supurativa
Prevalencia

RESUMEN

Objetivos: Determinar la prevalencia de hidrosadenitis supurativa (HS) en pacientes con espondiloartritis axial (EspAax) y describir las características clínicas, analíticas y radiográficas de los pacientes con HS.
Pacientes y métodos: Estudio transversal y unicéntrico de una cohorte de 265 pacientes con EspAax en seguimiento en una consulta monográfica de un hospital de tercer nivel. Se realizó un cribado de HS mediante cuestionario con posterior confirmación diagnóstica por Dermatología. Se recogieron variables demográficas, clínicas, analíticas y radiográficas. Los pacientes fueron clasificados según diagnóstico de HS y se realizó un análisis descriptivo y comparativo de ambos grupos.
Resultados: Un total de 148 de los 265 pacientes (55,8%) fueron incluidos en el estudio. De los 9 pacientes (6,1%) con cribado positivo, en 4 (2,7%) se confirmó el diagnóstico de HS. Tres pacientes fueron diagnosticados durante este estudio y la demora diagnóstica media fue de 14,25 años. Todos los pacientes

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presentaban una HS leve (estadio Hurley I). Al comparar ambos grupos, se observó, en el grupo de HS, un mayor porcentaje de fumadores (75% vs 18%; p = 0,005), mayor actividad medida por BASDAI (5,6 ± 2,3 vs 3,2 ± 2,1; p = 0,026), menor daño estructural medido por BASRI axial (1,5 ± 1,3 vs 5,5 ± 3,5; p < 0,018) y menor tiempo de evolución de la EspAax (14,7 ± 2,6 vs 27,8 ± 13,5 años; p = 0,001). No se encontraron diferencias en el resto de las variables estudiadas.

Conclusión: Este estudio indica que la prevalencia de HS en pacientes con EspAax es mayor a la observada en población general. El conocimiento de esta asociación debería fomentar la búsqueda activa de síntomas y lesiones por parte del clínico.

Introduction

Axial spondyloarthritis (AxSpA) is a chronic inflammatory disease that most often involves the axial skeleton, although it may also debut with peripheral manifestations in the form of arthritis, enthesitis, or dactylitis. It has an estimated prevalence of 0.25% in Europe[1] predominantly in males (2:1 ratio). It frequently begins in the second or third decade of life and may be associated with other extra-articular manifestations, such as uveitis, psoriasis, and inflammatory bowel disease (IBD).

Hidradenitis suppurativa (HS) is a chronic inflammatory skin disease with onset typically after puberty. In Europe, it has a prevalence rate of 0.4–1.1%[2] and affects females more frequently than males (3:1 ratio). It is associated with other non-dermatological inflammatory diseases such as IBD.

In the last few years, several studies have linked AxSpA to HS after detecting a greater prevalence than expected in the general population.[3–6] Both conditions share the same aetiopathogenic mechanisms, inasmuch as there are changes in both innate and adaptive immunity in which the proinflammatory cytokines, such as TNF-, IL-17, IL-17, IL-17, IL-17, IL-17, IL-17, IL-17, and IL-17, play a major role. Moreover, one of the mainstays of treatment in both diseases is biological treatment with anti-TNF.[7–9] Other arguments in favour are that the prevalence of IBD is higher in both AxSpA and HS[9] patients and that smoking and being overweight or obese are known to constitute poor prognostic factors for both disorders.[5]

Early diagnosis of HS in individuals with AxSpA could improve prognosis and assist in selecting appropriate treatment, with a beneficial impact on the quality of life in these cases.

The main objective of this study was to ascertain the prevalence of HS in people with AxSpA and, with the secondary aim of describing the clinical, analytical, and radiographic characteristics of patients diagnosed with HS and to compare them with the AxSpA group without HS.

Patients and methods

Study design

Cross-sectional, single centre study to determine the presence of HS in individuals with AxSpA. An observational cohort of 265 people with a clinical diagnosis of AxSpA who satisfied the classification criteria of the Assessment of SpondyloArthritis international Society (ASAS) and were undergoing follow-up at a monographic spondyloarthritis (SpA) clinic in a third-tier hospital was evaluated. Individuals under the age of 18 years, those with any cognitive impairment that prevented them from understanding the nature of the study, and patients with difficulties in reading comprehension or understanding the Spanish language were excluded.

Table 1
Screening questions for the diagnosis of HS.

Do you repeatedly have outbreaks of large nodules, painful nodules, or boils that heal with scarring in any of these areas?		
Groin	Anal region	No
Underarms	Breast regions and folds	
Genital area	Abdominal and periumbilical folds	
Have you had any lumps, boils, or abscesses in the last 6 months?		
Yes	No	
Have you experienced two or more episodes in the last six months?		
Yes	No	

Source: Esmann et al.[10] and Saunte and Jemec.[11]

Screening for hidrosadenitis supurativa

Patients meeting the inclusion criteria were called to obtain oral consent and, subsequently, they were sent the informed consent in writing by e-mail, as well as a screening questionnaire for HS.

The HS screening questions included in the questionnaire are listed in Table 1. A validated questionnaire[10] was used to formulate the questions to establish a diagnosis of HS, with a sensitivity of 90% and specificity of 97%. Given that only English versions of the questionnaire are available, it was translated into Spanish and the questions were accompanied by images of the lesions that are characteristic of HS. The images used were the ones provided in the study by Rondags et al.[5]

Diagnosis of hidrosadenitis supurativa

Those subjects who screened positive were requested to have a face-to-face visit with dermatology to confirm the diagnosis.

The diagnosis of HS is made on the basis of the following three clinical criteria: 1) the presence of distinctive lesions such as deep painful nodules, abscesses, fistulae, and scars; 2) the presence of such lesions in the typical locations such as in the groin region, axillae, the genital area, the anal area, breast folds or abdominal folds, and 3) a history of chronicity and recurrence, with at least two episodes occurring in the last six months or lesions persisting for $\geq$ 3 months.[11] To be diagnosed with HS, the individual must meet all three criteria.

A person was regarded as having screened positive in two scenarios: *1)* those patients who responded 'yes' to all three screening questions and *2)* those who were on anti-TNF biologic therapy and had a history of the typical lesions in the characteristic locations, even if they did not meet the time criterion.

Variables

Age, sex, smoking history, body mass index (BMI), onset of symptoms, time to diagnosis, time to disease progression, type

of AxSpA, a positive family history, the presence of HLA-B27, a history of peripheral manifestations (arthritis, dactylitis, enthesitis), a history of extra-skeletal symptoms (uveitis, psoriasis, IBD), parameters of disease activity measured at the most recent follow-up visit (C-reactive protein [CRP], glomerular sedimentation rate [GSR], Bath Ankylosing Spondylitis Disease Activity Index [BASDAI], Bath Ankylosing Spondylitis Disease Activity Score [ASDAS]-CRP), and the use of biologic therapy.

The latest radiographs of the cervical spine, lumbar spine, and pelvis were examined. The axial Bath Ankylosing Spondylitis Radiology Index (BASRI) was utilized to assess radiographic structural damage.

In patients with a dermatology-confirmed HS, the presence of a prior diagnosis of HS, age at onset of lesions, age at time of diagnosis, the presence of a positive family history, the locations involved, and the severity of HS as quantified by the Hurley stage were all evaluated.

Statistical analysis

Two groups were defined according to the presence of HS. Descriptive statistics of the baseline characteristics of both groups were performed. Categorical variables are expressed as number and percentage of subjects in each category, while continuous variables are reported as the mean and standard deviation.

In order to analyse the intergroup differences, a bilateral 95% confidence interval and statistical significance as a p value < 0.05 were applied. All analyses were performed using the SPSS statistical software for Windows, version 28.0 (IBM Corp., Armonk, NY, USA).

Ethical aspects

The study protocol was approved by the hospital's clinical research ethics committee (CREC) prior to the launch of the study. Both oral and written informed consent were secured from all the people who participated in the study. Patients were not treated with any procedure that entailed additional risks beyond those associated with managing their disease and routine clinical practice.

Results

Of the 265 cases enrolled in the cohort, we excluded those who could not be contacted by telephone after at least five calls on different days and at different times (32 of 265 individuals; 12%), those who refused to give consent (28 of 233 individuals; 12%), and those who failed to answer the screening questionnaire (57 of 205 individuals; 27.8%). Finally, 148 people (55.8% of the total) who answered the HS screening questionnaire were included for analysis (Fig. 1).

A total of 9/148 patients (6.1%) met the criteria for a positive screening and were asked to attend a face-to-face appointment with dermatology. The diagnosis of HS was confirmed in four of the patients evaluated; consequently, the prevalence rate of HS in our sample was determined to be 2.7% (4/148).

Three participants were diagnosed during the study period, while the remaining person, despite having been previously diagnosed by axillary nodule biopsy, had never been seen by a dermatologist. One of the four individuals was selected in spite of not satisfying the time criteria, inasmuch as he was taking adalimumab for his AxSpA.

The characteristics of the four patients diagnosed with HS are provided in Table 2. Most presented lesions beginning at an age close to adolescence, with a mean diagnostic delay of 14.25 years. All subjects had mild HS (Hurley I) and only one person had a family history of HS.

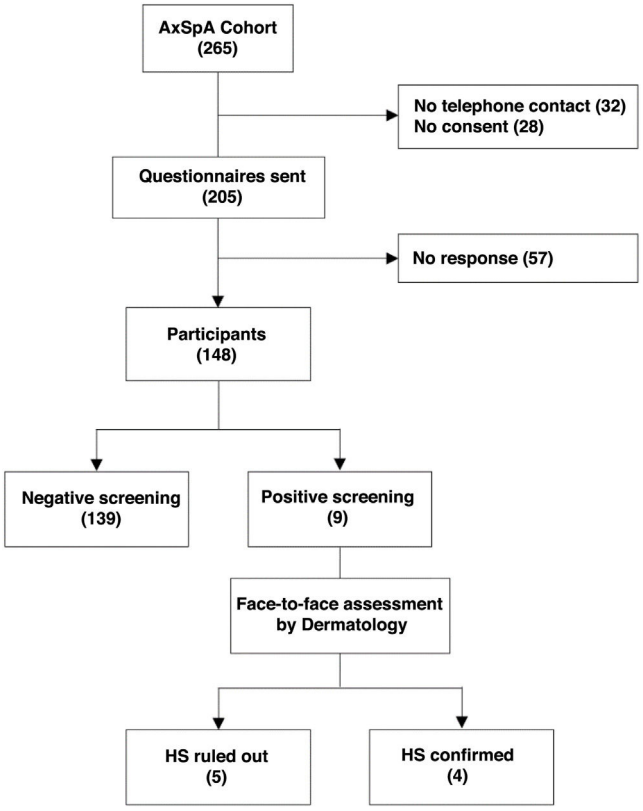

Fig. 1. Flow chart of the patient selection process and distribution of patients into groups. AxSpA: axial spondyloarthritis; HS: hidradenitis suppurativa.

The results of the comparative study between participants with and without a diagnosis of HS are displayed in Table 3. It is worth pointing out the higher percentage of smokers among those with HS (75% vs. 18%; p = 0.005), as well as greater clinical activity as determined by the BASDAI in this group (5.6 ± 2.3 vs. 3.2 ± 2.1; p = 0.026). In contrast, patients with HS had a shorter time of evolution of AxSpA (14.7 ± 2.6 vs. 27.8 ± 13.5 years; p < 0.001) and less structural damage as quantified by the axial BASRI on plain x-ray (1.75 ± 1.3 vs. 5.5 ± 3.5; p = 0.018).

As for demographic characteristics, no statistically significant differences were detected with regard to sex, albeit there was a trend toward a higher percentage of females in the group with HS (50% vs. 32%). In both groups, most participants had a BMI > 25 kg/m^2 (67.3% without HS, 75% with HS), with overweight accounting for 45.9% and obesity for 21.6% of all cases.

No differences were noted between the two groups as concerns the rest of the variables examined.

The number of patients included in the HS group was insufficient for multivariate analysis.

Discussion

Since 1982, several authors have reported the association between AxSpA and HS in case series.[12–18] More recently, Richette et al.[3] and Fauconier et al.[4] examined the prevalence of AxSpA in people with HS, obtaining a proportion of 3.7% (24/640) and 28.2% (11/39), respectively. Rondags et al.[5] performed the only study to date that has looked at the prevalence of HS in patients with AxSpA. In their cohort of 592 patients, they document a prevalence rate of 6.9–9.1% by means of a screening questionnaire and a telephone confirmation by dermatology. These values are consistent with the prevalence of other extra-articular manifestations of AxSpA, such as psoriasis or IBD.[19]

Table 2
Characteristics of patients diagnosed with hidradenitis suppurativa.

	Patient 1	Patient 2	Patient 3	Patient 4
Sex	Female	Female	Male	Male
Age, years	56	38	41	38
Smoking status	Smoker	Smoker	Non-smoker	Smoker
BMI, kg/m²	30.47	28.67	24.6	25.4
Age at onset of AxSpA, years	44	21	28	21
Diagnostic delay of AxSpA, years	3	6	1	5
Time of evolution AxSpA, years	12	17	13	17
Type of AxSpA	Radiographic	Non-radiographic	Radiographic	Radiographic
Family history of SpA	No	Yes	No	No
HLA-B27	Negative	Positive	Positive	Positive
History of peripheral arthritis	No	Yes	No	No
History of enthesitis	No	Yes	No	No
History of dactylitis	No	No	No	No
History of psoriasis	No	No	No	No
History of IBD	No	No	No	No
History of uveitis	No	No	No	No
CRP, mg/l	1.2	2.1	2	0.6
GSR, mm/h	5	7	1	2
BASDAI	7.8	7.2	3.2	4
ASDAS-CRP	3.2	3.3	1.5	2.4
Axial BASRI	2	0	2	3
Cervical spine	0	0	0	0
Lumbar spine	0	0	0	0
Sacroiliac	2	0	2	3
Current biologic treatment	No	No	No	Yes (ADA)
Age at onset of HS, years	49	15	18	24
Diagnostic delay of HS, years	7	23	13	14
Hurley stage	I	I	I	I
Sites involved	Groin Breast area and folds Genital region Abdominal fold	Groin Breast area and folds	Underarms Thighs	Groin Genital region Abdominal fold Glutes
Family history of HS	No	No	No	Yes

ADA: adalimumab; BASDAI: Bath Ankylosing Spondylitis Disease Activity Index; BASRI: Bath Ankylosing Spondylitis Radiology Index; IBD: inflammatory bowel disease; SpA: spondyloarthritis; AxSpA: spondyloarthritis axial; HS hidrosadenitis supurativa; BMI: body mass index; CRP: C-reactive protein; GSR: glomerular sedimentation rate.

As yet, there have been no studies that have addressed the prevalence of HS in individuals with other inflammatory rheumatological diseases. Nevertheless, a greater incidence of rheumatoid arthritis and psoriatic arthritis has been confirmed in patients with HS.[20–22]

The prevalence of HS in our cohort was 2.7%, higher than the estimated prevalence in the general population (0.4–1.1%).[2] Of the total, 6.1% of the patients screened positive, which is on a par with the percentage reported by Rondags et al.[5] The screening questionnaire identified individuals who were highly suspicious of having HS and the diagnosis was confirmed in person by dermatology in four of the nine patients (44.4%). This result highlights the importance of a face-to-face dermatological evaluation in cases of high diagnostic suspicion, given that the diagnosis of HS is based on clinical criteria.

Seventy-five percent of the confirmed cases (3/4) were diagnosed during the study. In the series by Rondags et al.,[5] this proportion was 92.7% (38/41). Forty-eight participants in our cohort were receiving anti-TNF treatment for AxSpA, a circumstance that might have reduced the number of HS flare-ups, hindering its detection at the time of evaluation. Nonetheless, one patient in this group exhibited the typical clinical signs of HS, enabling the diagnosis to be confirmed.

In half of the cases, HS lesions preceded the beginning of AxSpA, with an early onset of symptoms and significant diagnostic delay. These findings support the hypothesis that HS is an underdiagnosed disorder and highlight the value of meticulous anamnesis and physical examination to increase detection rates.

All HS cases manifested a mild form of the condition. Only one person had a known family history, although it is estimated that 40% of those affected typically also have a history in the family.[23]

Patients with HS displayed greater AxSpA activity as gauged by the BASDAI index; three of them (75%) had active disease (BASDAI $\geq$ 4). This finding could have to do with the higher percentage of smokers in this group, taking into account the impact of smoking as a poor prognostic factor in both conditions.

With respect to radiographic characteristics, the subjects with HS only presented lesions at the sacroiliac level. This accounts for their more limited structural damage measured by axial BASRI and could be due to a shorter time of evolution of AxSpA in this group.

Overweight and obesity were prevalent in both groups: 67.3% among participants without HS and 75% among those with HS. These figures are higher than those estimated for the general Spanish population in 2020 (46.1% among females and 61.4% among males according to the Spanish National Institute of Statistics[24]). Similarly, Rondags et al.[5] identified 62% of obesity in their cohort. We also detected a trend towards more women in the HS group (3:1 ratio), a result that is consistent with the female predominance observed in this disease.

The main limitation of the study is the small sample size. Patients who signed the informed consent form and completed the screening questionnaire were included, which comprised 55.8% of the initial cohort. This resulted in a small comparator group that was insufficient for multivariate analysis. Furthermore, there is sampling bias derived from the fact that patients treated at a reference centre were included.

Among the strengths of this work, the diagnostic method for HS is especially salient. Although there is no validated screening questionnaire in Spanish, we used a literal translation of validated questions in English with high sensitivity and specificity and supplemented it with photographs of typical HS lesions to facilitate identification. Face-to-face confirmation by dermatology provided greater diagnostic confidence. The response rate of the question-

Table 3
Intergroup comparison on the basis of HS diagnosis.

	Total (n = 148)	AxSpA without HS (n = 144)	AxSpA with HS (n = 4)	p-Value
Age, years, mean ± de	52.2 ± 12.4	52.4 ± 8.6	43.2 ± 12.5	0.146
Sex, female, n (%)	48 (32.4)	46 (32)	2 (50)	0.447
Smoking status, n (%)				0.005
Smoker	29 (19.6)	26 (18)	3 (75)	
Ex-smoker	41(27.7)	41(28.5)	0 (0)	
Non-smoker	78 (52.7)	77 (53.5)	1 (25)	
BMI, kg/m^2, mean ± SD	27.3 ± 4.3	27.3 ± 4.4	27.3 ± 2.7	0.999
Overweight, BMI 25−30 kg/m^2, n (%)	68 (45.9)	66 (45.8)	2 (50)	0.748
Obesity, BMI >30 kg/m^2, n (%)	32 (21.6)	31 (21.5)	1 (25)	0.748
Age at onset of AxSpA, mean ± SD	24.7 ± 7.7	24.6 ± 7.7	28.5 ± 10.8	0.322
Diagnostic delay of AxSpA, years, mean ± SD	6.2 ± 7.1	6.3 ± 7.1	3.8 ± 2.2	115
Time of evolution of AxSpA, years, mean ± SD	27.5 ± 13.5	27.8 ± 13.5	14.7 ± 2.6	0.001
Type of AxSpA, n (%)				0.535
Radiographic	126 (85.1)	123 (85.5)	3 (75)	
Non-radiographic	22 (14.9)	21 (14.5)	1 (25)	
Family history of SpA, n (%)	39 (26.4)	38 (26.4)	1 (25)	0.924
HLA-B27, positive, n (%)	129 (87.2)	126 (87.5)	3 (75)	0.461
History of peripheral arthritis, n (%)	43 (29.1)	42 (29.1)	1 (25)	0.856
History of enthesitis, n (%)	30 (20.3)	29 (20.1)	1 (25)	0.817
History of dactylitis, n (%)	6 (4.1)	6 (4.2)	0 (0)	0.677
History of uveitis, n (%)	42 (28.4)	42 (29.1)	0 (0)	0.200
History of psoriasis, n (%)	11 (7.4)	11 (7.6)	0 (0)	0.566
History of IBD, n (%)	9 (6.1)	9 (6.3)	0 (0)	0.705
Crohn's disease	5 (3.4)	5 (3.5)	0 (0)	
Ulcerative colitis	4 (2.7)	4 (2.8)	0 (0)	
CRP, mg/l, mean ± SD	4.5 ± 6.1	4.6 ± 6.1	1.5 ± 0.7	0.308
GSR, mm/h, mean ± SD	11.9 ± 10.5	12.1 ± 10.6	3.8 ± 2.7	0.117
BASDAI, mean ± SD	3.3 ± 2.1	3.2 ± 2.1	5.6 ± 2.3	0.026
ASDAS-CRP, mean ± SD	2.1 ± 0.9	2.1 ± 0.9	2.6 ± 0.8	0.248
Axial BASRI, mean ± SD	5.4 ± 3.5	5.5 ± 3.5	1.75 ± 1.3	0.018
Cervical spine	1.2 ± 1.5	1.2 ± 1.5	0 ± 0	0.001
Lumbar spine	1.4 ± 1.5	1.4 ± 1.5	0 ± 0	0.001
Sacroiliac	2.8 ± 3.5	2.9 ± 1.1	1.75 ± 1.3	0.048
Current biologic treatment, yes, n (%)	62 (41.9)	61 (42.3)	1 (25)	0.488
Type of biologic treatment, n (%)				0.586
Anti-TNF-α	48 (32.4)	47 (32.6)	1 (25)	
Anti-IL-17	11 (7.4)	11 (7.6)	0 (0)	
Anti-IL-12/23	2 (1.4)	2 (1.4)	0 (0)	
iPDE4	1 (0.7)	1 (0.7)	0 (0)	
Number of biologics received, n (%)				0.488
0	86 (58.1)	83 (57.7)	3 (75)	
1	32 (21.6)	31 (21.5)	1 (25)	
>1	30 (20.3)	30 (20.8)	0 (0)	

ASDAS, Ankylosing Spondylitis Disease Activity Score; BASDAI, Bath Ankylosing Spondylitis Disease Activity Index; BASRI: Bath Ankylosing Spondylitis Radiology Index; SD: standard deviation; IBD: inflammatory bowel disease; ApA: spondyloarthritis; AxSpA: axial spondyloarthritis; HS: hidrosadenitis supurativa; IL-17: interleukin 17; IL-12/23: interleukin 12/23; BMI: body mass index; iPDE4: phosphodiesterase-4 inhibitor; CRP: C-reactive protein; TNF-α, tumour necrosis factor alpha; GSR: glomerular sedimentation rate.

naire was relatively high at 72.2% (148/205). Finally, this is the first Spanish study to assess the prevalence of HS in patients with AxSpA in our setting.

Conclusions

The prevalence of HS among individuals with AxSpA in this study was greater than that observed in the general population. Further studies, with larger patient samples, should be conducted to determine the actual strength of this association. Awareness of this association should encourage clinicians to actively explore symptoms and lesions, although specific studies are warranted to determine the most appropriate screening method in these cases.

Declaration of Generative AI and AI-assisted technologies in the writing process

AI has not been used in the drafting process of this manuscript.

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Data availability

The data were collected and used solely for this study and are not available for other uses.

Declaration of competing interest

None.

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References

1. Stolwijk C, van Onna M, Boonen A, van Tubergen A. Global prevalence of spondyloarthritis: a systematic review and meta-regression analysis. Arthritis Care Res. 2016;68:1320–31, http://dx.doi.org/10.1002/acr.22831.
2. Jfri A, Nassim D, O'Brien E, Gulliver W, Nikolakis G, Zouboulis CC. Prevalence of hidradenitis suppurativa: a systematic review and meta-regression analysis. JAMA Dermatol. 2021;157:924–31, http://dx.doi.org/10.1001/jamadermatol.2021.1677.
3. Richette P, Molto A, Viguier M, Dawidowicz K, Hayem G, Nassif A, et al. Hidradenitis suppurativa associated with spondyloarthritis — results from a multicenter national prospective study. J Rheumatol. 2014;41:490–4, http://dx.doi.org/10.3899/jrheum.130977.
4. Fauconier M, Reguiai Z, Barbe C, Colosio A, Eschard JP, Salmon JH, et al. Association between hidradenitis suppurativa and spondyloarthritis. Joint Bone Spine. 2018;85:593–7, http://dx.doi.org/10.1016/j.jbspin.2017.09.005.
5. Rondags A, Arends S, Wink FR, Horváth B, Spoorenberg A. High prevalence of hidradenitis suppurativa symptoms in axial spondyloarthritis patients: a possible new extra-articular manifestation. Semin Arthritis Rheum. 2019;48:611–7, http://dx.doi.org/10.1016/j.semarthrit.2018.03.010.
6. Schneider-Burrus S, Witte-Haendel E, Christou D, Rigoni B, Sabat R, Diederichs G. High prevalence of back pain and axial spondyloarthropathy in patients with hidradenitis suppurativa. Dermatology. 2016;232:606–12, http://dx.doi.org/10.1159/000448838.
7. Bosnić D, Žarković B, Barešić M, Zarkovic M, Anić B. Improvement of overlapping hidradenitis suppurativa and ankylosing spondylitis after the introduction of adalimumab. Reumatologia. 2016;54:321–5, http://dx.doi.org/10.5114/reum.2016.64910.
8. Bruzzese V. Pyoderma gangrenosum, acne conglobata, suppurative hidradenitis, and axial spondyloarthritis: efficacy of anti-tumor necrosis factor α therapy. J Clin Rheumatol. 2012;18:413–5, http://dx.doi.org/10.1097/RHU.0b013e318278b84c.
9. Roussomoustakaki M, Dimoulios P, Chatzicostas C, Kritikos HD, Romanos J, Panayiotides JG, et al. Hidradenitis suppurativa associated with Crohn's disease and spondyloarthropathy: response to anti-TNF therapy. J Gastroenterol. 2003;38:1000–4, http://dx.doi.org/10.1007/s00535-003-1185-9.
10. Esmann S, Dufour DN, Jemec GB. Questionnaire-based diagnosis of hidradenitis suppurativa: specificity, sensitivity and positive predictive value of specific diagnostic questions. Br J Dermatol. 2010;163:102–6, http://dx.doi.org/10.1111/j.1365-2133.2010.09773.x.
11. Saunte DML, Jemec GBE. Hidradenitis Suppurativa: Advances in Diagnosis and Treatment. JAMA. 2017;318:2019–32, http://dx.doi.org/10.1001/jama.2017.16691.
12. Rosner IA, Richter DE, Huettner TL, Kuffner GH, Wisnieski JJ, Burg CG. Spondyloarthropathy associated with hidradenitis suppurative and acne conglobata. Ann Intern Med. 1982;97:520–5, http://dx.doi.org/10.7326/0003-4819-97-4-520.
13. De Souza A, Solomon GE, Strober BE. SAPHO syndrome associated with hidradenitis suppurativa successfully treated with infliximab and methotrexate. Bull NYU Hosp Jt Dis. 2011;69:185–7.
14. Leybishkis B, Fasseas P, Ryan KF, Roy R. Hidradenitis suppurativa and acne conglobata associated with spondyloarthropathy. Am J Med Sci. 2001;321:195–7, http://dx.doi.org/10.1097/00000441-200103000-00007.
15. Marquardt AL, Hackshaw KV. Reactive arthritis associated with hidradenitis suppurativa. J Natl Med Assoc. 2009;101:367–9, http://dx.doi.org/10.1016/s0027-9684(15)30886-5.
16. Fioravanti A, Lauraflori M, Guidelli GM, Giordano N. Dactylitis as a first manifestation of arthritis associated with hidradenitis suppurativa. Indian J Dermatol Venereol Leprol. 2011;77:74–6, http://dx.doi.org/10.4103/0378-6323.74999.
17. Rosner IA, Burg CG, Wisnieski JJ, Schacter BZ, Richter DE. The clinical spectrum of the arthropathy associated with hidradenitis suppurativa and acne conglobata. J Rheumatol. 1993;20:684–7.
18. Bhalla R, Sequeira W. Arthritis associated with hidradenitis suppurativa. Ann Rheum Dis. 1994;53:64–6, http://dx.doi.org/10.1136/ard.53.1.64.
19. Stolwijk C, van Tubergen A, Castillo-Ortiz JD, Boonen A. Prevalence of extraarticular manifestations in patients with ankylosing spondylitis: a systematic review and meta-analysis. Ann Rheum Dis. 2015;74:65–73, http://dx.doi.org/10.1136/annrheumdis-2013-203582.
20. Kridin K, Shavit E, Damiani G, Cohen AD. Hidradenitis suppurativa and rheumatoid arthritis: evaluating the bidirectional association. Immunol Res. 2021;69:533–40, http://dx.doi.org/10.1007/s12026-021-09221-4.
21. Almuhanna N, Finstad A, Alhusayen R. Association between hidradenitis suppurativa and inflammatory arthritis: a systematic review and meta-analysis. Dermatol. 2021;237:740–7, http://dx.doi.org/10.1159/000514582.
22. Hanna N, Silverberg OM, Reaume M, Gladman D, Davis MDP, Piguet V, et al. Incidence, prevalence, and predictors of inflammatory arthritis in patients with hidradenitis suppurativa: a systematic review and meta-analysis. Int J Dermatol. 2022;61:1069–79, http://dx.doi.org/10.1111/ijd.15860.
23. Patil S, Apurwa A, Nadkarni N, Agarwal S, Chaudhari P, Gautam M. Hidradenitis suppurativa: inside and out. Indian J Dermatol. 2018;63:91–8, http://dx.doi.org/10.4103/ijd.IJD_412_16.
24. Instituto nacional de estadística. In: Encuesta Europea de Salud en España (ESEE) 2020 [Conjunto de datos]. Ministerio de Sanidad; 2021 https://www.sanidad.gob.es/estadEstudios/estadisticas/EncuestaEuropea/EncuestaEuropea2020/EESE2020_inf_evol_princip_result.pdf