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### CASE REPORT

## Pyoderma Gangrenosum Associated with Hidradenitis Suppurativa: A Case Report and Review of the Literature

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#### KEYWORDS

Pyoderma gangrenosum;  
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Ciclosporin;  
Systemic diseases

#### Abstract

Pyoderma gangrenosum is an inflammatory disease that has been found to be associated with many systemic illnesses. The case presented here is of a man with a 20-year history of hidradenitis suppurativa who developed pyoderma gangrenosum. The pyoderma lesions appeared as a single outbreak which resolved totally after immunosuppressive treatment. This association has been reported only rarely in the literature. Furthermore, in the cases reported, no relationship was apparent between the activity of both diseases. In all cases the clinical course appeared independent, with no apparent overlap in inflammatory activity or response to the drugs administered.  
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#### PALABRAS CLAVE

Pioderma gangrenoso;  
Hidrosadenitis supurativa;  
Enfermedades sistémicas;  
Ciclosporina

#### Pioderma gangrenoso asociado a hidrosadenitis supurativa: aportación de un caso y revisión de la literatura

#### Resumen

El pioderma gangrenoso es una patología inflamatoria que se ha visto asociada a multitud de enfermedades sistémicas. Presentamos el caso clínico de un varón con lesiones de pioderma gangrenoso que aparecieron en el contexto de una hidrosadenitis supurativa de más de 20 años de evolución. La clínica de pioderma se desarrolló en un solo brote y se resolvió totalmente tras tratamiento inmunosupresor. En la literatura pocas veces ha sido descrita esta asociación. Además, en los casos publicados no se ha podido establecer una relación entre la actividad de ambas enfermedades, observándose que evolucionan de manera independiente, sin tener actividad inflamatoria paralela ni respuesta común a los fármacos administrados.  
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## Introduction

Pyoderma gangrenosum is a disease of uncertain etiology first described by Brunsting et al<sup>1</sup> in 1930. It has a characteristic presentation, with the formation of painful ulcers with erythematous-violaceous borders. Lesions appear most frequently on the lower limbs, although they can develop at any site. Pyoderma gangrenosum has been associated with a large number of systemic diseases, particularly inflammatory bowel disease, seronegative arthritis, and various hematological disorders.<sup>2</sup> However, the presentation of pyoderma gangrenosum in the context of hidradenitis suppurativa has been reported only a few times in the literature.<sup>3</sup>

## Case Description

The patient was a 52-year-old man diagnosed with hidradenitis suppurativa more than 20 years earlier. The treatment most frequently used since diagnosis had been surgery, mainly for the drainage of abscesses. The patient had also been administered a number of systemic treatments, including oral retinoids, antibiotics, corticosteroids, and ciclosporin, though always with a poor therapeutic response. The disease had left very disfiguring scars on the buttocks and in the inguinal and genital regions (Figures 1 and 2). A slight improvement was observed after 2 years of treatment with infliximab, with a decrease in the number and severity of the inflammatory episodes. Despite this, the infliximab was interrupted after the appearance on the lower limbs of pustular lesions that healed after systemic antibiotic treatment. Nine months later, the patient developed pustular lesions on the left forearm associated with a deep, suppurating and very painful ulcer on the dorsum of the right hand (Figure 3). On suspicion of a skin infection, a sample of the exudate was taken for culture and systemic antibiotic therapy was administered. When no clinical response was achieved, a biopsy was taken from the border of the ulcer. Histology study revealed a

predominantly neutrophilic, dense inflammatory infiltrate with the formation of multiple abscesses that penetrated to the deep dermis (Figure 4). Culture was negative. A diagnosis of pyoderma gangrenosum was made based on the clinical and histological features of the lesion.

Screening studies excluded the presence of inflammatory bowel disease and occult malignancy. Oral ciclosporin was administered at a dose of 250 mg/d in association with topical tacrolimus. This regimen led to an improvement of the lesions and healing of the ulcer within 2 months (Figure 5), after which the medication was withdrawn. Since that time, the patient has developed no new pyoderma gangrenosum lesions, although he does continue to experience episodes of hidradenitis suppurativa that leave new fistulous tracts in the area of the buttocks and genitalia.



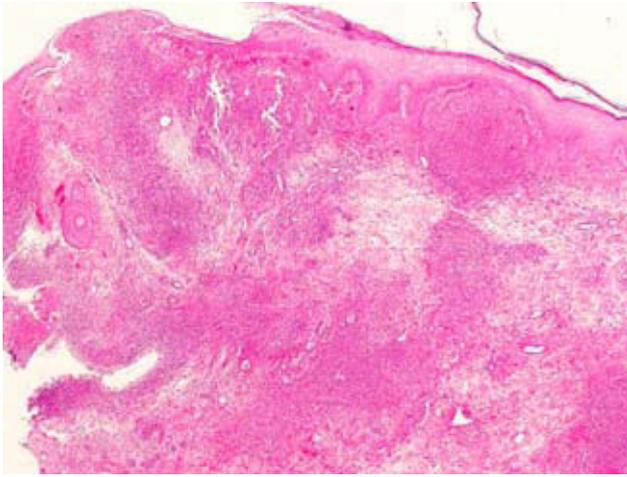
**Figure 2** Fistulas and scars of hidradenitis suppurativa in the perineal area.



**Figure 1** Fistulas and scars of hidradenitis suppurativa in the genital area.



**Figure 3** Ulcerative pyoderma gangrenosum on the dorsum of the hand.



**Figure 4** Epithelial ulcer and neutrophilic abscesses in the dermis suggestive of pyoderma gangrenosum. (Hematoxylin-eosin, original magnification  $\times 20$ ).



**Figure 5** Residual scar of pyoderma gangrenosum after 2 months of treatment.

## Discussion

In 1930, Brunsting et al<sup>1</sup> described 5 patients with lesions that were grouped under the name *pyoderma gangrenosum*. Since that time, there have been numerous publications reporting the association of pyoderma gangrenosum with various systemic diseases.<sup>2</sup> However, the association of pyoderma gangrenosum with hidradenitis suppurativa is rare. The largest series to date, published by Ah-Weng et al,<sup>4</sup> comprised 6 patients with a long history of hidradenitis suppurativa (18-30 years). Of particular note, 1 patient had developed pyoderma gangrenosum lesions on the scars from previous episodes of hidradenitis. The lesions were

situated in the axillas and inguinal regions, simulating an exacerbation of hidradenitis suppurativa; this situation could have led to confusion or an error of diagnosis. Fifty percent of the patients had had severe acne vulgaris during adolescence. Although this association has been reported only rarely, there are large series that have described a relationship between pyoderma gangrenosum and other diseases. In a search for underlying systemic disease in a series of 86 patients with pyoderma gangrenosum, Bennett et al<sup>2</sup> detected inflammatory bowel disease in 36% of patients, arthritis in 37%, and a monoclonal gammopathy in 10%. There were 4 patients (5%) in the series in whom the pyoderma gangrenosum was associated with hidradenitis suppurativa.<sup>2</sup> In another series of similar characteristics, there was also 1 patient who developed pyoderma gangrenosum in the context of hidradenitis suppurativa.<sup>5</sup>

Rosner et al<sup>6</sup> attempted to relate the presence of spondyloarthritis with hidradenitis suppurativa and acne vulgaris in 10 patients and found 1 patient who also presented manifestations of pyoderma gangrenosum. In another case report, in which colchicine was used to treat Behçet disease, the patient was found to have concomitant pyoderma gangrenosum and hidradenitis suppurativa.<sup>7</sup> The Table shows a summary of the characteristics of the 16 published cases of pyoderma gangrenosum associated with hidradenitis suppurativa.

In those cases reported in which pyoderma gangrenosum was associated with hidradenitis suppurativa, the clinical course of each disease was found to be totally independent, with no parallel inflammatory activity and no common response to the drugs administered. Pyoderma gangrenosum usually appears when the hidradenitis suppurativa has been present for more than 20 years.<sup>4</sup> In our patient, pyoderma gangrenosum appeared in the context of hidradenitis suppurativa with these same characteristics; at the time of writing, there had only been 1 inflammatory episode of pyoderma gangrenosum and that resolved completely after immunosuppressant treatment with oral ciclosporin. Despite attempting to establish an association between the 2 diseases, we observed no concurrence in either inflammatory activity or response to treatment.

It has not been possible to establish a causal relationship between pyoderma gangrenosum and hidradenitis suppurativa. Inflammation of the apocrine glands produces recurrent episodes of hidradenitis suppurativa, presenting as abscesses and fistulae that resolve leaving significant scarring.<sup>8</sup> The etiology and pathogenesis of hidradenitis suppurativa are not fully understood and the etiologic agent or agents that lead to the onset and persistence of the disorder are unknown. It has been suggested that there could be a degree of genetic predisposition; in addition, an abnormal hormone profile has sometimes been observed in these patients.<sup>9</sup> It is known that there is an underlying immunological alteration, which may be provoked by the presence of dysfunctional neutrophils that are unable to prevent inflammation of the apocrine glands, thus perpetuating the manifestations of hidradenitis suppurativa.<sup>10</sup>

The pathogenesis of pyoderma gangrenosum also remains undefined. Deposits of immunoglobulin and complement

**Table** Summary of Case Reports in Which Pyoderma Gangrenosum Was Associated With Hidradenitis Suppurativa

| Author                       | No. of Patients | Age, y/Sex | Duration of Hidradenitis Suppurativa, y | Pyoderma Gangrenosum |  | Type                      | Treatment and Dose   | Concomitant Diseases  |
|------------------------------|-----------------|------------|---|----------------------|--|---------------------------|--|---|
|                              |                 |            |   | Duration             | Site                                     |                           |  |   |
| García-Rabasco et al         | 1               | 52         | 25                                      | 2 mo                 | Left forearm                             | Ulcerative                | Ciclosporin 250 mg/d   | Iron deficiency anemia  |
| Ah-Weng et al <sup>4</sup>   | 6               | 45/F       | 22                                      | 2 y                  | Dorsum of the right hand<br>Neck/axillas | Ulcerative                | Prednisone 40 mg/d   | Reactive leukocytosis<br>Systemic lupus erythematosus<br>Glomerulonephritis |
| Von den Driesch <sup>5</sup> | 1               | 42/M       | 20                                      | 6 y                  | Thighs/<br>abdomen                       | Superficial               | Azathioprine 150 mg/d<br>Immunoglobulin 2 mg/kg/mo IV<br>Cyclophosphamide 500 mg IV 3 times/wk<br>Hydroxychloroquine 200 mg/d<br>Ciclosporin 5 mg/kg/d                     | Severe acne vulgaris  |
| Shenefelt <sup>3</sup>       | 1               | 51/M       | 30                                      | 1 wk                 | Dorsum of the hands                      | Ulcerative                | Trimethoprim 200 mg/d<br>Prednisone 60 mg/d  | Severe acne vulgaris  |
| Buckley et al <sup>13</sup>  | 1               | 35/F       | 18                                      | 3 y                  | Legs                                     | Ulcerative                | Prednisone 12.5 mg/d<br>Ciclosporin 4.5 mg/kg/d  | —   |
| Powell FC et al <sup>2</sup> | 4               | 57/F       | 25                                      | 1 mo                 | Axillas/groin                            | Superficial               | Prednisone 30 mg/d   | Iron deficiency anemia  |
| Rosner et al <sup>6</sup>    | 1               | 44/M       | 20                                      | 4 mo                 | Legs                                     | Ulcerative                | Minocycline 200 mg/d<br>Dapsone 100 mg/d<br>Ciclosporin 4 mg/kg/d  | Severe acne vulgaris  |
| Raynor et al <sup>7</sup>    | 1               | 42/M       | 12                                      | 3 mo                 | Axillas/groin<br>Legs                    | Superficial<br>Ulcerative | Oral corticosteroids<br>Prednisone 30 mg/d<br>Intralesional triamcinolone<br>Sulfasalazine 500 mg/8 h<br>Minocycline 100 mg/12 h<br>Minocycline<br>Ciclosporin 4.5 mg/kg/d | —<br>Cystic acne<br>Seronegative arthritis                                  |
|                              |                 | 48/M       | 8                                       | 4 mo                 | Right leg                                | Ulcerative                | —  | —   |
|                              |                 | —          | —                                       | —                    | —  | —                         | —  | —   |
|                              |                 | 24/M       | —                                       | —                    | —  | —                         | —  | —   |
|                              |                 | 33/F       | <1                                      | 1 mo                 | Legs                                     | Bullous                   | Colchicine 0.6 mg/12 h   | Acne conglobata<br>Spondyloarthritis<br>Behçet disease                      |

Abbreviations: F, female; IV, intravenous; M, male.

have been observed in the endothelium of blood vessels, which could suggest blood vessel damage in some cases of pyoderma gangrenosum.<sup>11</sup> There are no data that suggest a bacterial, fungal, or viral etiology. The ulcers are aseptic and histopathology only reveals foci of purulent material surrounded by neutrophils, with no apparent infectious or reactive agent.

The only link that could explain the association between pyoderma gangrenosum and hidradenitis suppurativa is the neutrophil dysregulation observed in the 2 diseases. This alteration produces defects in chemotaxis, phagocytosis, and lymphokine production.<sup>12</sup>

The treatment of pyoderma gangrenosum varies according to the number of lesions present, the clinical course of the lesions, and the symptoms they provoke. Pyoderma gangrenosum associated with hidradenitis suppurativa can sometimes be resistant to conventional treatment. In one of the cases published, pyoderma gangrenosum complicated the management of a patient with hidradenitis suppurativa, nodulocystic acne, and seronegative arthritis; however, a global improvement was achieved with the combined administration of sulfasalazine and minocycline.<sup>3</sup> In another case in which oral ciclosporin was administered, there was an improvement in the lesions of both pyoderma gangrenosum and hidradenitis suppurativa.<sup>13</sup>

Few cases of pyoderma gangrenosum in the context of hidradenitis suppurativa have been published to date, although the association may be underdiagnosed. Having observed cases of pyoderma gangrenosum on the scars of hidradenitis suppurativa, we suspect that some of the lesions of pyoderma gangrenosum could be concealed by flares of hidradenitis suppurativa. The fact that both diseases present with abscess formation and inflammatory lesions would imply that this association is not uncommon. Nodulocystic acne is a disease that has also been found to be closely related to pyoderma gangrenosum and hidradenitis suppurativa and appears to form part of the spectrum of inflammatory diseases that present with flares, as occurs with pyoderma gangrenosum and hidradenitis suppurativa. As pyoderma gangrenosum and hidradenitis suppurativa share certain pathogenic mechanisms and some clinical features, we believe that this association is not a casual finding.

## Conflict of Interest

The authors declare that they have no conflict of interest.

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