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Ocular changes in patients with psoriasis

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Abstract Eye involvement in psoriasis is little known to many dermatologists, although psoriasis has been acknowledged as a systemic disease for decades. The ophthalmic complications of psoriasis are numerous and can affect almost any part of the eye. The most common ocular changes in patients with psoriasis, including blepharitis, conjunctivitis, keratitis, iridocyclitis, UV-induced cataracts, uveitis, and birdshot chorioretinitis, have been described in the literature. Recognition of the ocular complications of psoriasis is of significant clinical importance, because various pathogenic mechanisms may contribute to the development of ocular manifestations, including direct eye involvement with psoriatic plaques, psoriasis-related immune-mediated inflammatory processes, and complications of psoriasis treatments.

Introduction

Psoriasis is a chronic, immunomediated inflammatory disease with a possible genetic background and influenced by some environmental factors. Psoriasis, like many other dermatologic conditions, is now recognized as part of the metabolic syndrome and can afflict systems other than the skin.[1–4]

The ophthalmic complications of psoriasis are numerous and can involve almost any part of the eye.[5] Recognizing the ocular complications of psoriasis is of paramount clinical importance.[6,7] The association between various ocular pathologies and psoriasis is likely to be missed in patients if the physician is not specifically aware.[8]

The ocular changes in patients with psoriasis have been investigated in a small number of studies.[9–13] Such ophthalmologic involvement occurs in about 10% of patients with psoriasis, in whom arthropathic and pustular psoriasis show the highest frequency.[14,15] It is believed that during psoriasis exacerbations of ocular damages occur. Various etiopathogenetic mechanisms may contribute to the development of ocular manifestations: direct eye involvement with psoriatic plaques, psoriasis-related immune-mediated inflammatory processes, and complications of psoriasis treatments, including the untoward effects of oral retinoids and phototherapy.[9,16–20] The occasional association of psoriasis with intraocular inflammatory diseases, notably uveitis, has been reported, typically in patients with arthropathic or pustular psoriasis.[7,21–29]

Ocular anterior segment pathologies and tear film changes in patients with psoriasis have also been detected.[17,30,31] Other findings resulting from eye involvement[25,32–35] are birdshot chorioretinopathy (Figure 1),[36–38] uveitis,[29] and inflammatory ectropion (Figures 2 and 3) associated with trichiasis or madarosis (Figure 4).

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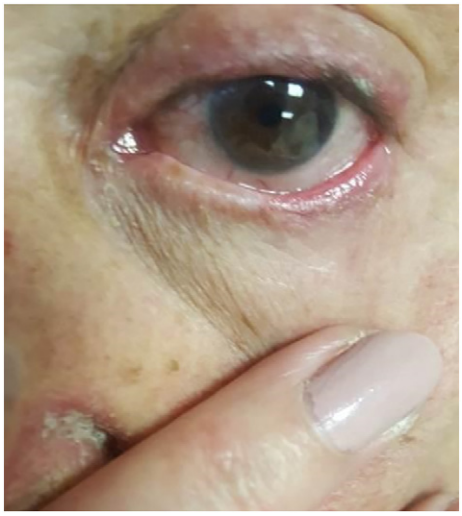

Fig. 1 Blepharitis in a patient with psoriasis.

Etiology

Primary etiologic factors may contribute to the development of ocular lesions in patients with psoriasis, because early conjunctival surface changes, tear film alterations, and meibomian gland dysfunction have been reported in patients with mild to moderate psoriasis vulgaris.[30,31,36,37] It was found that ophthalmic involvement is more common in men and almost always is preceded by cutaneous findings.[9–11] Ocular involvement may develop through mechanisms similar to those for direct psoriatic plaques or psoriasis-associated autoimmune processes; however, the eyelid and conjunctiva are the primary sites of ocular involvement, given that psoriasis is principally a epithelial disease. Ocular findings often occur during disease exacerbations.[10,13]

Pathogenesis

Psoriasis may affect the eyelids in several ways. Blepharitis (Figure 5), a common inflammatory condition of the eyelids,[32] is the most prevalent ocular finding in patients with psoriasis.[12] As might be suspected, burning and itching

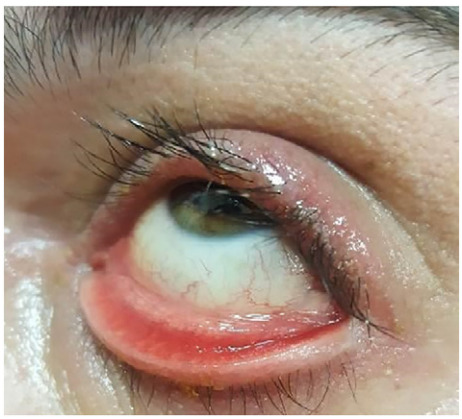

Fig. 2 Madarosis and trichiasis in a patient with psoriasis.

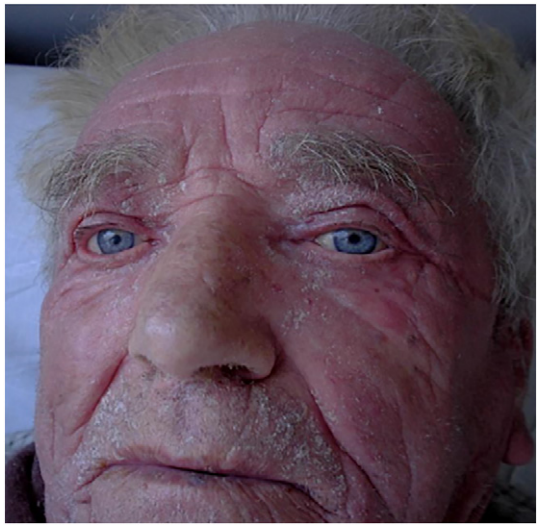

Fig. 3 Psoriatic erythroderma and ectropion in the same patient.

may cause considerable discomfort. The psoriatic lesions on the eyelids may present with either red swollen lids or crusted flaky scales covering the lashes. The chronic irritation from blepharitis can lead to ectropion (Figure 2), trichiasis, madarosis (Figure 4), loss of lid tissue, and even vision impairment.[14,33,34] The meibomian gland dysfunction,[30] which is associated with posterior blepharitis, may have an increased tendency in patients with psoriasis.[14,32–34] Tear film break-up time, a measure of tear film stability asecretion and meibomian gland function, has also been found to be lower in patients with psoriasis,[14,30,31] where psoriasis had higher plugging and thickness indices and normal volumes of meibomian gland secretions. The mechanism of this dysfunction in psoriasis is unknown, but possibly the increased epithelial turnover leads to increased cell production and subsequent shedding that may ultimately create a mechanical blockage of the meibomian duct. Psoriatic plaques may also appear infrequently on the lid and lid margins[32] but are uncommon.

Facial involvement may occur from chronic UV radiation exposure; however, the eyelids are usually shaded.[33] Facial and eyelid psoriasis may also be a marker of severe psoriasis.[25] Eyelid dermatitis, as a nonspecific irritation of the eyelids, is another common entity with a frequency of 2.3% to

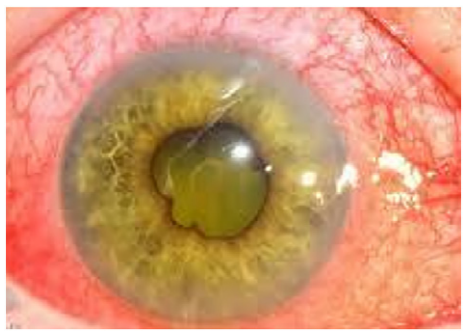

Fig. 4 Iridocyclitis in a patient with psoriasis.

Fig. 5 Birdshot chorioretinitis in a patient with psoriasis.

7% in patients with psoriasis.[14,25,32–35] Eyelid involvement may occur in patients with pustular psoriasis, where there may be pustules on an erythematous base.[34] There is also a known patient with pustular psoriasis and coexistent Sj gren syndrome who presented with lid edema and conjunctivitis.[34] Pustules subsequently developed on the lid margins with focal peripheral sterile corneal infiltrates and punctuate epithelial keratopathy.[15]

Clinical manifestations

Chronic nonspecific conjunctivitis is the most common form of conjunctivitis in psoriasis and can occur with or without eyelid margin lesions.[14] Conjunctival lesions have been described as demarcated, yellowish-red plaques on the palpebral conjunctiva or as areas with a xerotic appearance on the bulbar conjunctiva.[36,37] Conjunctival plaques may occur separately or extend from the eyelid.[33] Additional complications from the conjunctivitis may lead to xerosis, symblepharon, and trichiasis with further complications involving the cornea.[9]

The incidence of dry eye in patients with psoriasis has been reported as high as 18%.[17] Dry eye syndrome, where the lacrimal gland produces a decreased amount of the aqueous component, can be the presenting finding of psoriasis or even a systemic autoimmune disease.[17] The pathogenesis of both dry eye and psoriasis is not fully understood. In the pathogenesis of dry eye, T cells infiltrate the ocular surface and secrete inflammatory cytokines and chemokines, causing squamous metaplasia of ocular surface epithelial cells and a decrease in goblet cell differentiation.[25] Because keratinocytes in the skin are involved in the pathogenesis psoriasis, the conjunctiva could be the primary site for ocular involvement.[37] The ocular histopathology is similar to the cutaneous changes with less parakeratosis.[37] Another possible mechanism explaining the tear film instability in psoriasis would be L-arginine deficiency.[38] The L-arginine concentration is shown to be significantly reduced in psoriatic skin.[16,38]

Corneal involvement, associated with psoriasis, has three components:

- a thickening of the epithelium with erosions,
- an infiltrated zone under the Bowman layer with superficial vascularization, and
- a homogenous deep stromal opacity.

Based on this definition, only one case found in the literature may represent corneal psoriasis. Since then, there have been reports of corneal involvement in psoriasis, but they remain infrequent.[12,39–43] Intravenous methoxsalen and oral retinoids may cause their own ocular complications, including keratitis, conjunctival injection, and dry eye clinical manifestations.[18,44–48]

Circumferential peripheral corneal ulcers resulting in thinning of the cornea were diagnosed in one patient with chronic plaque-type psoriasis and in another with generalized erythrodermic psoriasis with arthritis. Corneal abscesses are another serious complication associated with psoriasis.[5,43] Several patients have been described with sterile cornea abscesses, negative microbial cultures, and stromal infiltrates; there were rapid responses to corticosteroids.[27,49]

One complication of light therapy often occurs several hours later and may produce UV keratitis,[71] often due to poor-fitting eye protection. Known as the peripheral corneal melting syndrome,[72] it is a clinically rare but serious entity,[12,42,43] beginning as a painful red eye and presenting as a corneal thinning that can progress to perforation. This syndrome is most often associated with systemic diseases, such as rheumatoid arthritis, Sj gren syndrome, polyarteritis nodosa, and granulomatosis with polyangiitis and systemic vasculitis, but has also been reported to occur in psoriasis.[15,42]

Uveitis is a potentially serious ocular complication that can occur in patients with psoriasis.[6,28,29] It may occur in 7% to 20% of patients with psoriasis.[28] In one report,[6] a cross-sectional sample 2% (2 of 100) of patients had anterior uveitis independently associated with severity of skin disease. Another group of investsigators[5] believed that there was a link between chronic plaque psoriasis and uveitis in their patients. Uveal involvement tends to be bilateral, prolonged, and more severe.[29] In another study[28] bilateral involvement was found in 62% of cases, with an average duration of 11.2 weeks. Patients with psoriasis and uveitis were younger than other patients with psoriasis.[27,50] Uveal involvement, particularly anterior uveitis, has been associated with the arthropathic form of psoriasis.[29,51]

Psoriatic arthritis is defined as an inflammatory arthritis associated with psoriasis and occurs in about 5% of the psoriasis cases.[7,21–24,51] It is classified as a seronegative (ie, rheumatoid factor negative) HLA-B27-associated spondyloarthropathy.[51] Seronegative rheumatologic diseases, including psoriasis arthritis, reactive arthritis, and ankylosing spondylitis, share common clinical manifestations that include inflammatory complications of the spinal cord, joints, skin, and eye,[52] and are associated with an increased incident of HLA-B27 positivity.[51,53] Ocular inflammation[56] in the form of conjunctivitis or uveitis is a feature of clinical overlap among the seronegative spondyloarthropathies. The first

report of uveitis associated with psoriatic arthritis did not appear[54] until 1976 and involved 112 patients, 7.1% of whom had anterior uveitis. In another study,[13] uveitis occurred in 3 of 7 patients with psoriatic arthritis. In a more recent study of 150 patients with psoriatic, four had ocular inflammation.

Activated neutrophils may be the reason for attacks of hypopyon-iridocyclitis as well as the exacerbation of psoriasis and/or arthritis (Figure 3). The link among psoriasis, uveitis, and HLA-B27 is unclear. In a study of 36 patients with uveitis and psoriasis, uveitis[55] was more frequent and severe in the presence of HLA-B27.[56] There may be another link between the severity of psoriatic skin disease and uveitis.

The severity of skin disease may be an independent risk factor for the development of uveitis,[4] and the eye disease may also precede the skin manifestations of psoriasis. There are two cases in the literature where young boys who had severe uveitis later developed genital psoriasis.[50]

Lens abnormalities in patients with psoriasis may be incidental findings.[19,20] One group[5] found that 63% (63 of 100) of patients had bilateral cataracts, possibly due to corticosteroids, which are known to cause posterior subcapsular cataract, especially when high-dose systemic therapy taken over a prolonged period.

PUVA therapy is known to cause cataracts.[57–59] UV radiation contributes to cataract development because the light in the 300- to 400-nm spectrum is absorbed in the lens, causing photochemical changes in lens proteins.[20,44,60,61] Psoralens, the compound in PUVA therapy, work by photosensitizing the skin and can have the effects of long-wave UV light (wavelength 320-400 nm). They can bind to proteins in the lens and may potentially increase cataract formation.[62–64] Increased risk of anterior cataract formation was seen in early guinea pig studies; however, these studies used high doses of UV radiation, and subsequent studies using psoralen doses comparable with standard therapeutic human doses failed to show similar risk.[66] PUVA and cataract formation in patients with and without psoriasis was described in one report,[67] where there was no causal relationship between PUVA therapy and cataracts if the patients wore protective glasses for the advised period.

The largest and longest prospective study to date, which followed 1,237 patients treated with PUVA for psoriasis at 5 and 10 years, did not show any causal relationship between the level of PUVA exposure and the risk of developing a lens abnormality.[65,66] The results are quite different for those patients who did not protect their eyes from UV rays.[62,64]

In another study of 82 patients who refused eye protection, none demonstrated lens opacities or cataracts. Thirteen patients with vitiligo were treated with psoralens and then exposed to natural light without being advised to protect their eyes.[63] No subsequent increase in cataract formation compared with the standard population was found. Several investigators have also reported cataract formation in patients who did not wear eye protection. All of these patients were 55 years old or younger except in one study,[20] where patient ages were not reported. This finding supports the hypothesis that in the lenses of younger patients the gamma-crystalline fraction of the lens proteins are more sensitive to UV light than in the lenses of older patients.[18,19,68]

Birdshot chorioretinopathy (Figure 1) is a rare chorioretinitis that is strongly associated with HLA-A29 but without an established systemic disease association. There are reports[69,70] of a patient with birdshot chorioretinopathy and long-standing psoriasis whose ocular and dermatologic findings resolved with psoriasis treatment.

Conclusions

With eye conditions including an often a misdiagnosed uveitis, which can evolve in chronic disease, we suggest that patients with psoriasis should undergo a routine ophthalmic evaluation and care. In addition, we recommend that clinicians should regularly monitor their patients with psoriasis for eye complications.

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