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Episcleritis Uncovered: A Thorough Review of Current Research

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Abstract

Episcleritis is an inflammatory condition affecting the episclera of the eye, which is the tissue between the sclera and conjunctiva. It manifests as unilateral or bilateral redness and discomfort. Despite its typically benign course, it may signal underlying systemic disorders, necessitating comprehensive evaluation and personalized management. While most cases are idiopathic, autoimmune diseases and infections may play contributory roles. Epidemiological studies reveal a predilection for young to middle-aged females, with episcleritis being less common in children. Diagnostically, characteristic features include sectoral redness and mild discomfort, distinguishing it from conjunctivitis and scleritis. Treatment primarily focuses on symptomatic relief, utilizing topical steroids, oral NSAIDs, and artificial tears. The prognosis is generally favourable, with spontaneous resolution within weeks; however, recurrent, or chronic cases may necessitate further evaluation for underlying systemic conditions. This comprehensive review aims to elucidate etiology, epidemiology, diagnosis, management strategies, prognosis of episcleritis, and clinical nuances, drawing upon recent literature from 1976 to the present. By consolidating contemporary knowledge, this review provides valuable insights for clinicians on how to treat this ocular condition effectively.

Keywords: episcleritis, ocular inflammation, eye redness, conjunctivitis, scleritis.

Introduction

Episcleritis is an infectious disease that causes one-sided or two-sided superficial inflammation of the episclera, the tissue between the sclera and conjunctiva. Three types of episcleritis
are distinguished: diffuse, sectoral, or nodular(1). The cause of episcleritis is mostly idiopathic. Research indicates that autoimmune disorders and infections may induce this condition. Patients with episcleritis present redness in the eye, especially near the palpebral fissure(2).
Due to the ciliary nerve irritation, they can suffer from moderate pain. The acuity of vision is not changed. Discharge or photophobia does not occur frequently.

Material and methods

We conducted a comprehensive literature review to pinpoint pertinent articles on episcleritis from 1976 to the present. We systematically searched electronic databases, including PubMed, Scopus, and Google Scholar, using various combinations of keywords such as "episcleritis", "causes", "diagnosis", "treatment", and "prognosis". Furthermore, we manually reviewed the references of retrieved articles to ensure the inclusion of all relevant studies. Articles were included, if they provided valuable insights into the causes, diagnosis, treatment options, prognosis, or management strategies for episcleritis.

Etiology

The cause of episcleritis is mainly idiopathic. However, studies indicate systemic disorder may be present in around 26-36% of patients diagnosed with episcleritis(3, 4). Moreover, infections may be responsible for around 5% of cases(5).

Systemic conditions in episcleritis

Associations with systemic conditions in episcleritis are multifaceted and continually evolving, with various autoimmune, infectious, and inflammatory disorders implicated in its pathogenesis(3). Autoimmune diseases such as rheumatoid arthritis, systemic lupus erythematosus, and inflammatory bowel disease have been linked to episcleritis(6-8). Infectious etiologies, including herpes zoster, Lyme disease, tuberculosis, and even COVID-

19, have also been reported in association with episcleritis, reflecting the diverse infectious triggers that may underlie ocular inflammation(9-14).

Furthermore, episcleritis has been observed in patients with systemic vasculitis diseases such as granulomatosis with polyangiitis (Wegener's) and polyarteritis nodosa, underscoring its broad systemic associations(15-17). Other systemic conditions, including sarcoidosis, Behçet's disease, and syphilis, have also been implicated in episcleritis, highlighting the need for a comprehensive evaluation to ascertain potential underlying etiologies.

Therefore, a thorough assessment of patients with episcleritis should encompass a spectrum of potential systemic diseases. This approach is pivotal in ensuring precise diagnosis and effectively guiding the implementation of tailored management strategies.

Epidemiology

Until recently, there had been a lack of comprehensive population-based studies investigating the epidemiological characteristics of episcleritis and scleritis. Honik et al. investigated this thoroughly in a population-based study in Northern California. Their findings disclosed an incidence rate of 41 per 100,000 person-years and an annual prevalence ratio of 52.6 per 100,000 individuals for episcleritis(18). Results from the study in the Hawaiian population present an overall incidence rate of scleritis and episcleritis 4.1 (95% CI: 2.6-6.6) per 100,000 people and 21,7 (95% CI: 17.7-26.5) per 100,000 people(19). It was observed that episcleritis occurs more frequently in young to middle-aged women. It rarely presents in children. In these cases, it is usually related with rheumatological factors(20). Additionally, patients suffering from episcleritis are younger in comparison to people with scleritis(21-23).

Diagnostics

In the examination, eye redness with salmon pigmentation occurs. Typically, episcleritis presents in one sector of the eye. One-sided inflammation occurs more frequently(1). Patients may report foreign body sensations and benign or mild pain described as hot, sharp, or slight. Some of them report that the pain radiates to the temple of the jaw(5). Diffuse and sectoral forms are featured, depending on the extent of hyperaemia. Diffuse episcleritis continues to be the predominant form observed across various age demographics(4, 22, 23). The third type of episcleritis is nodular episcleritis, in which a separated nodule with a surrounding injection

appears. In addition, during ophthalmic examination, blanching of superficial vessels is observed after administering topical phenylephrine(3).

Figure 1. Patient with episcleritis

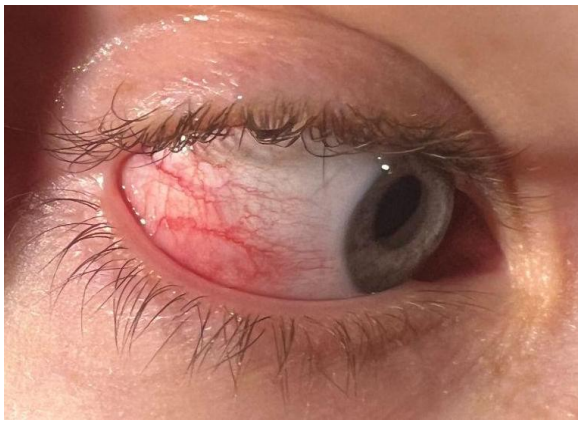

Figure 2. Episcleritis, different angle

Differential diagnoses include conjunctivitis, lymphoma, medications, and scleritis(3). Conjunctivitis differentiates from episcleritis on the grounds of symptoms and examination. Infectious conjunctivitis typically presents with pus-like discharge in bacterial cases, while allergic conjunctivitis is characterized by itching and conjunctival edema. Scleritis,
an inflammation of the lower layer, has a dissimilar picture(24-26). Patients with scleritis typically experience more severe pain and additional headaches due to irritation of the ciliary nerves. Moreover, scleritis exhibits more massive infiltration(27). Additionally, blanching of superficial vessels after administering topical phenylephrine is absent. Malignant conjunctival lesions also have a distinct appearance and are not often confused with episcleritis(3).

Treatment

Episcleritis is typically a self-limiting condition, often resolving without specific treatment within a few weeks(28, 29). However, symptomatic relief can be achieved through various therapeutic interventions. Topical steroids, oral non-steroidal anti-inflammatory drugs (NSAIDs),
and artificial tears are commonly prescribed to alleviate discomfort and expedite recovery(5, 30).

In cases where topical steroids are necessary, options such as fluorometholone 0.1%
or loteprednol etabonate 0.5% can be applied four times daily for 1-2 weeks. Oral NSAIDs,

such as ibuprofen or naproxen, can serve as an alternative treatment if topical steroids are ineffective in resolving inflammation(1). Ibuprofen is typically prescribed at a dosage of 200-600mg, 3-4 times daily, while naproxen is recommended at a dosage of 250-500mg twice a day for two weeks(1).

The role of topical NSAIDs is inconsistent(5, 30, 31). While topical NSAIDs have shown effectiveness in easing mild pain and inflammation linked with episcleritis without affecting intraocular pressure, it's crucial to state potential concerns. Some older generic versions of diclofenac 0.1% have been linked to corneal melt, and application of ketorolac 0.5% may cause significant stinging and burning sensations(1).

It is crucial to differentiate episcleritis due to the severity of the following diseases and different treatments. While episcleritis management usually involves benign measures, scleritis often requires systemic medications such as oral NSAIDs, oral corticosteroids, and sometimes immunosuppressive agents(32-34). In refractory or recurrent cases of episcleritis, periocular steroid injections, oral steroids, or disease-modifying antirheumatic drugs may be necessary(5, 30). It is advised to schedule regular follow-up appointments to track treatment progress and address any arising complications or persistent symptoms.

Prognosis

The outlook for individuals with episcleritis is typically favourable. In most cases, the cause is idiopathic and spontaneously withdraws within 2 to 21 days(4). Although recurrent episodes are common, the adverse effects of inflammation and treatments are infrequent and may be effectively managed with minimal intervention(4). However, in cases where episcleritis proves refractory to treatment and persists chronically, it may indicate an association with autoimmune diseases or infections. In the following cases, further examinations should be considered(6, 9). Sporadically, ocular complications like uveitis, corneal involvement, and glaucoma may appear(3, 4).

Conclusion

Episcleritis is a prevalent inflammatory eye condition characterized by inflammation of the episclera, leading to redness and discomfort. It stands as a well-known yet intriguing ocular condition. Although typically mild, it can indicate underlying systemic autoimmune

diseases, necessitating thorough evaluation and personalized treatment approaches. Clinicians must remain vigilant, recognizing potential systemic implications and adapting management strategies to optimize patient care and outcomes.

Moreover, the complex nature of episcleritis highlights the need for ongoing research efforts to uncover its diverse causes and improve treatment methods. By delving deeper into its pathophysiological, immunological, and molecular mechanisms, we can develop more targeted interventions addressing both ocular symptoms and systemic ramifications. Moreover, with improved knowledge about pathophysiology diagnostic methods there is a chance that the diagnosis of episcleritis could play a role in early diagnostics of sever autoimmune conditions, that are yet to manifest differently. Thus, helping to treat those conditions in early stages.

Episcleritis poses a complex clinical challenge, motivating advancements in treatment within the field of ophthalmology and encouraging ongoing research efforts. This collaborative work aims to improve our understanding and refine treatment methods, ultimately lessening the burden of episcleritis on patients and enhancing their quality of life. As a result, the journey towards better management of episcleritis continues, driven by our shared pursuit of knowledge and commitment to providing excellent patient care.

Author's contribution

Conceptualization, E.B. and J.W.; Literature review, J.W., P.M. and U.K.; Writing – Abstract, A.M., C.K. and E.B.; Writing – Introduction, E.B. and K.G.; Writing – Etiology, Epidemiology, J.W. and M. Dyr.; Writing – Diagnostics, M. Dyd and E.B; Writing – Treatment, P.M., and U.K.; Writing –Prognosis A.P.; Writing – Conclusions, J. W and E.B.; Editing and reviewing, A.M., E.B. and M. Dyd.

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