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Original article

Experience of scleritis and episcleritis at a tertiary center in Southern Taiwan

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ABSTRACT

Purpose: The purpose of this study was to review the clinical experiences of scleritis and episcleritis in Southern Taiwanese people during a 7-year period.
Methods: The charts of 89 patients (representing 101 eyes) who had visited our clinic from January 2003 to July 2010 were retrospectively reviewed. They were diagnosed as having episcleritis or scleritis. The medical charts, slit lamp photographs, and laboratory data were reviewed. Age, gender, laterality, previous surgery history, systemic diseases, follow-up duration, and ocular complications were collected. The patients were classified as having clinically suspected noninfectious scleritis (CSNIS), clinically suspected infectious scleritis (CSIS), and episcleritis for analysis.
Results: In the series of 89 patients (i.e., 101 eyes), 31 (34.8%; 32 eyes) patients had scleritis and 58 (65.2%; 69 eyes) patients had episcleritis. Episcleritis and scleritis occurred slightly more frequently in women than in men. In the 31 patients (32 eyes) diagnosed with scleritis, 12 (38.7%) patients had CSIS and 19 (61.3%) patients had CSNIS. Patients with scleritis were older than patients with episcleritis ($p < 0.001$). Previous pterygium excision was associated with CSIS and necrotizing scleritis.
Conclusion: Scleritis occurred in a more elderly population. It was more frequently associated with ocular complications, compared to episcleritis. Both CSNIS and CSIS were associated with a history of pterygium excisional surgery. Our series of patients had a high occurrence of necrotizing scleritis. All cases of necrotizing scleritis were associated with a history of previous ocular surgery.

1. Introduction

Scleritis is characterized by deep inflammation of the sclera that can spread to the adjacent cornea, episclera, and uvea, and cause sight-threatening complications.[1–4] The ocular inflammation is often severe, and sometimes requires treatment with systemic immunosuppressive medications.[4,5] Approximately 25–50% of patients with scleritis have an associated systemic illness that is presumably causally related.[6] Comorbid systemic conditions that have been associated with scleritis include rheumatoid arthritis, Wegener's granulomatosis, systemic vasculitis, systemic lupus erythematosis, sarcoidosis, and spondyloarthropathies.[6–9] Episcleritis, by contrast, is generally a less severe inflammation localized to the episclera. Unlike the deeper inflammation in scleritis, episcleral inflammation is relatively superficial and has the characteristic color of bright red or salmon pink, whereas most forms of scleritis present with a violaceous hue. Episcleritis often responds well to topical corticosteroid treatment[10] and seldom causes ocular complications.[1,9]

In the United States, the overall incidence of episcleritis is reportedly 41.0 per 100,000 person-years, and that of scleritis is 3.4 per 100,000 person-years; there is an increased prevalence among the elderly and women.[11]

However, most previous reports were based on Western populations with a distinctly different ethnic composition than that in Taiwan. Furthermore, previously published reports of scleritis from Taiwan mostly focused on scleral inflammation caused by an infectious etiology[12–16] rather than a full scope investigation into both episcleritis and scleritis. Therefore, we conducted this study to evaluate and analyze our experience of the clinical features and etiologies of scleritis and episcleritis in Southern Taiwan.

Conflicts of interest: All authors declare no conflicts of interest.

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2. Materials and methods

Patients diagnosed as having episcleritis or scleritis from January 2003 to July 2010 at the Cornea Service of Kaohsiung Chang Gung Memorial Hospital, Kaohsiung, Taiwan were included in this study. The medical records, slit lamp photography, and laboratory data were reviewed. Patients without records of slit lamp photographs or whose photographs were of poor quality were excluded. Age, gender, laterality, previous surgery history, systemic diseases, follow-up duration, and ocular complications were recorded for analysis. Ocular complications included: (1) visual acuity impairment, defined as a decrease in visual acuity of two Snellen lines or more; and (2) ocular hypertension, defined as intraocular pressure higher than 21 mmHg. The presence of systemic diseases or autoimmune diseases was recorded for analysis.

Classification was based on the anatomic site and clinical appearance of inflammation. Episcleritis was diagnosed when the inflammation was localized and confined to the episclera and blanched after the instillation of topical 10% phenylephrine. Scleritis was defined as the edema of the episcleral and scleral tissues with congestion of the superficial and the deep episcleral vessels. Application of 10% phenylephrine to the ocular surface blanches the superficial episcleral vessels but not the deeper scleral vascular plexus, thus differentiating between episcleritis and scleritis.

Patients with scleritis were divided into clinically suspected noninfectious scleritis (CSNIS) and clinically suspected infectious scleritis (CSIS). The former was further classified as “anterior scleritis” or “posterior scleritis”, based on the anatomical location of the inflammation. Thickening of the posterior sclera in posterior scleritis was confirmed by B-scan ultrasonography. Anterior scleritis was categorized as diffuse scleritis, nodular scleritis, or necrotizing scleritis. Diffuse scleritis was defined as diffuse inflammation and vascular engorgement of the episclera and sclera. Nodular scleritis was characterized by an immobile elevated nodular swelling and inflammation of the sclera. Patients who presented with an avascular patch or ulcerative area on the sclera with or without marked inflammation were classified as having necrotizing scleritis.

Patients classified as having CSIS included: (1) patients with infectious scleritis with positive isolation of the causative microorganism from the lesion, and (2) patients with suspected infectious scleritis that showed favorable clinical response to antibiotic treatment but without laboratory evidence of microbial growth. The clinical picture of CSIS was acute inflammation of the sclera with subconjunctival abscess and suppurative discharge. The specimen for microbial culture was obtained from debridement surgery or scleral scraping in the clinic. Common aerobic, common anaerobic, fungus, and mycobacterial cultures were obtained.

Statistical analyses were performed using SPSS software version 17.0 (SPSS Inc., Chicago, IL, USA). Differences between the two groups were compared and evaluated with the Student t test for continuous variables and with the Chi-square test for categorical variables. Analysis between multiple groups was evaluated with one-way analysis of variance. A value of $p < 0.05$ was considered statistically significant.

3. Results

Eighty-nine patients (representing 101 eyes) diagnosed with episcleritis or scleritis from January 2003 to July 2010 were included in this study. There were 31 (34.8%) cases of scleritis with a mean patient age of 62.2 ± 18.5 years, and 58 (65.2%) cases of episcleritis with a mean patient age of 47.7 ± 17.3 years. Table 1 summarizes the clinical characteristics of the patients. There was a slight female predominance in the episcleritis and scleritis groups, and they accounted for more than one-half of the cases in both groups (episcleritis, 52%; scleritis, 61%). The patients with scleritis were significantly older than patients with episcleritis ($p < 0.001$). When the scleritis group was further divided into the CSNIS group and CSIS group, we found that the CSIS patients were older (CSNIS, 55.0 years old; CSIS, 73.7 years old).

Table 1
Clinical characteristics of patients with episcleritis and scleritis.

	Episcleritis ($n = 58$)	Scleritis ($n = 31$)	p
Age (y)	47.7	62.2	< 0.001
Sex (male:female)	28:30	12:19	0.39
Bilateral involvement	11 (19.0)	1 (3.2)	0.10
Ocular complications			
Ocular hypertension	0 (0)	6 (19.4)	< 0.01
Decreased VA	11 (19.0)	14 (45.2)	0.01
History of pterygium excision	2 (3.4)	18 (58.1)	< 0.001
Follow-up duration (mo)	13.2	27.0	0.01
Systemic autoimmune disease	3 (5.2)	4 (12.9)	0.23
Rheumatoid arthritis	1	1	
Ankylosing spondylitis	0	1	
SLE	2	0	
Sjogren's syndrome	0	1	
Autoimmune thyroiditis	0	1	
Nonautoimmune systemic disease	14 (24.1)	8 (25.8)	0.86
Diabetes mellitus	5	2	
Hypertension	7	4	
Chronic hepatitis	6	2	

Data are presented as n or n (%).
SLE = systemic lupus erythematosus; VA = visual acuity.

Ocular complications were more common among the scleritis patients than among the episcleritis patients. Blurred vision was present in 45.2% of scleritis patients and 19.0% of episcleritis patients ($p = 0.01$). Ocular hypertension was present in 19.4% of scleritis patients, but was not present in any of the episcleritis patients ($p < 0.01$). None of the episcleritis patients progressed to scleritis during the follow-up period.

Concomitant autoimmune disease was relatively low in our series. Only 5.2% of episcleritis patients and 12.9% of scleritis patients had an associated autoimmune disease. In the episcleritis group, there was one case of rheumatoid arthritis and two cases of systemic lupus erythematosus. In the scleritis group, there was one case each of rheumatoid arthritis, ankylosing spondylitis, autoimmune thyroiditis, and Sjogren's syndrome.

A history of previous pterygium excisional surgery was more frequent in the scleritis group than in the episcleritis group ($p < 0.001$). The proportion of patients with previous pterygium excision was 75% in the CSIS group and approximately 47% in the CSNIS group (Fig. 1). In the CSNIS group, most patients who had had previous pterygium excision presented with anterior necrotizing scleritis, which was the most common form of anterior scleritis in our study (Table 2). In 20 patients in this series who had a history of pterygium excision, nine (45%) patients presented with CSIS, eight (40%) patients presented with anterior necrotizing scleritis, two (10%) patients presented with episcleritis, and one (5%) patient presented with anterior nodular scleritis.

In the subset of patients diagnosed with CSIS ($n = 12$), nine patients had a positive microbial culture. The most commonly isolated microorganism was *Pseudomonas aeruginosa* in 6 (50%) of 12 patients, followed by fungus in 2 (12.5%) of 12 patients. Seventy-five percent of patients had previous pterygium excision, whereas one (8.3%) pterygium excision was associated with traumatic injury. Except for one patient, all (91.6%) other patients, underwent surgical debridement for subconjunctival abscess with scleral necrosis (Table 3). The range of time from diagnosis to surgical debridement