June 29 (Saturday) 13:10-16:40 Room 1 (Auditorium)

7th International Workshop on Ocular Sarcoidosis

Chairs / Moderators: Manabu Mochizuki *(Japan)*
Justine R. Smith *(Australia)*
Nisha R. Acharya *(USA)*

13:10-13:20 **Overview of ocular sarcoidosis**
Daniel Vitor Vasconcelos-Santos *(Brazil)*

13:20-13:30 **Global perspectives on the management of ocular sarcoidosis**
Claude L Cowan *(USA)*

13:30-13:40 **Controversies in the management of ocular sarcoidosis: systemic vs. local; medical vs. surgical**
Koh-Hei Sonoda *(Japan)*

13:40-13:50 **Management of Sarcoidosis in North and South America**
Careen Yen Lowder *(USA)*

13:50-14:00 **Management of ocular sarcoidosis in Australia**
Peter McCluskey *(Australia)*

14:00-14:10 **Management of ocular sarcoidosis in Japan**
Mami Ishihara *(Japan)*

14:10-14:20 **Management of ocular sarcoidosis in Europe and challenges in its management**
Manfred Zierhut *(Germany)*

14:20-14:30 **Precise evaluation of posterior ocular sarcoidosis for better disease appraisal and management**
Carl P. Herbort Jr. *(Switzerland)*

14:30-14:40 **Discussion**

14:40-15:00 **Coffee Break**

15:00-16:40 **Panel Discussion**

Panelists: Hiroshi Takase *(Japan)*
Nattaporn Tesavibul *(Thailand)*
Kalpana Babu Murthy *(India)*
Peter McCluskey *(Australia)*
Ilknur Tugal-Tutkun *(Turkey)*
Bahram Bodaghi *(France)*
Moncef Khairallah *(Tunisia)*
Jennifer Thorne *(USA)*
Joyce Hisae Yamamoto *(Brazil)*
Narsing Rao *(USA)*

Ocular sarcoidosis (OS) is a sight threatening disease characterized by bilateral granulomatous uveitis. Accurate diagnosis and appropriate managements are essential for better quality of vision of the patients. Our group established international criteria for the diagnosis of OS (*Ocular Immunol Infmamm*. 2009; 17: 160-169) and revised the criteria (*Br J Ophthalmol*, 2019, in press).
The next goal will be to establish appropriate management protocol for OS. To achieve this goal, this session consists of two parts. In part I, we will learn standard management strategies used in different parts of the world, in talks given by eight invited speakers who are internationally distinguished uveitis specialists. In part II, we will discuss and establish specialists' recommendations for the management of OS by the following two-steps approach.
(Step 1) Questionnaire survey: We distributed the questionnaire to international uveitis specialists (IUSG members and IOIS members) asking their standard methods for managing ocular sarcoidosis. The results will be presented and discussed in the panel discussion session.
(Step 2) Panel Discussion: In the panel discussion, systematic review on the management of (ocular) sarcoidosis will be presented. Then, the results of the questionnaire survey will be presented and discussed one by one. In the panel discussion, effort will be made to establish recommendations through discussions and vote by the panel members and speakers of the session.

Overview of ocular sarcoidosis

Daniel Vitor Vasconcelos-Santos
Faculty of Medicine, Universidade Federal de Minas Gerais, Belo Horizonte, Brazil

Sarcoidosis is a fascinating multisystemic inflammatory disorder, histologically characterized by noncaseating granulomas in affected tissues. The disease primarily involves the lungs, but also frequently leads to intraocular inflammation, which may be the presenting feature of the disease. Etiology is currently unknown, but with plausibility of a dysregulated granulomatous response driven by microbial / foreign antigen(s) in genetically susceptible individuals. Diagnosis of ocular sarcoidosis may be challenging, as histopathological definition is not always possible. A set of diagnostic criteria has been proposed and was recently revised by the International Workshop on Ocular Sarcoidosis. Briefly, after ruling out other etiologies of granulomatous uveitis, seven ocular features suggestive (and possibly distinctive) of ocular sarcoidosis, in addition to eight systemic investigations are entertained/analyzed, to possibly fit the case in one of three categories of ocular sarcoidosis: probable, presumed or definite.

Global perspectives on the management of ocular sarcoidosis

Claude L Cowan[1,2]
[1]Georgetown University Medical Center, Washington, DC, USA, [2]Washington, DC Veterans Affairs Medical Center, Washington, DC, USA

Treatment of ocular sarcoid is guided by the tissue involved, severity, co-morbidities, adverse medication reactions, as well as individual and local resources. Chronicity further complicates management due to the increased risk of medication side effects. Corticosteroids remain the mainstay of initial treatment and can be delivered locally by topical, peri-ocular, and intravitreal administration, along with systemically for those with severe and/or bilateral disease. They have a rapid onset and are highly effective, being limited primarily by their undesirable side effects. Immunosuppressive agents such as anti-metabolites and calcineurin inhibitors can be given alone or in combination with steroids as part of a steroid sparing strategy. Biologics, of which TNFa agents are most commonly used, offer an alternative for reducing the reliance upon steroids. They are effective, but are not free of side effects and certain pre-existing conditions may preclude their use. In addition, one cannot predict their effectiveness for ocular disease based on their use in systemic sarcoid or other granulomatous diseases resulting in paradoxical responses in some patients. There are also the issues of anti-drug antibodies, TNFa polymorphisms, and as with other agents, disease relapse with discontinuance. Their high cost will be a limiting factor in some settings. Ocular sarcoid remains challenging, but current medication choices promise improved outcomes.

Controversies in the management of ocular sarcoidosis: systemic vs. local; medical vs. surgical

Koh-Hei Sonoda
Department of Ophthalmology, Graduate School of Medical Sciences, Kyushu University, Fukuoka, Japan

Sarcoidosis is a chronic idiopathic granulomatous inflammatory disease. Ocular symptoms are frequently observed and constitutes one of the leading causes of blindness. Sustained ocular inflammation secondary causes irreversible changes in each part of the eye.
Treatment approaches vary from topical therapy to systemic agents that induce immunosuppression to different levels according to disease severity. Basic treatment for ocular sarcoidosis is topical corticosteroid. Eyedrop, subconjunctival injections, orbital floor injections are the most popular techniques. Triamcinolone acetonide is currently the most frequently used formulation for periocular injection. Systemic corticosteroid therapy is effective. The initial dose is usually 40 mg per day and the whole administration period should be more than three months. At the same time, noncorticosteroid systemic immunomodulatory therapy, including biologics, are also used to reduce the side effects of corticosteroid.
Another important treatment option is surgery. Granulomatous uveitis like sarcoidosis frequently cause glaucoma, and some patients required filtrating surgery. Moreover, proliferating vitreoretinopathy is known as severe condition which directly connected to blindness in sarcoidosis. Vitrectomy itself can remove the scaffold for intraocular proliferating response, thus sometimes effective to prevent devastating complications.
The discussion point will be the suitable treatment combination in both systemic and local, medical and surgical.

Management of Sarcoidosis in North and South America

Careen Yen Lowder
Cleveland Clinic Cole Eye Institute, Cleveland, USA

Introduction: The incidence of sarcoidosis varies by ethnicity and geography with African American and Northern European white individuals having the highest rates. In Latin America, there are few studies on the prevalence of sarcoidosis. While bronchoscopy is the diagnostic gold standard for the diagnosis of sarcoidosis, other tests are used to screen patients. Purpose: To examine the sensitivity and positive predictive value (PPV) of chest x-ray (CXR), chest computerized tomography (CT) scans and angiotensin converting enzyme (ACE) against the gold standard of bronchoscopy in suspected sarcoid uveitis. Methods: Retrospective study of 167 suspected sarcoid uveitis patients at Cleveland Clinic Cole Eye Institute. Results: 42% had elevated ACE levels, 42% had positive CXR and 85% had positive Chest CT. 50 patients underwent bronchoscopy and biopsy, 58% were positive. The sensitivity measurements were 53%, 69% and 96% for ACE, CXR, Chest CT respectively. The PPV measured 63% for ACE, 57% for CXR and 59% for Chest CT. In posterior segment disease the PPV was 67%, 50% and 67% for ACE, CXR and Chest CT respectively. Conclusions: Chest CT scans had high sensitivity for the diagnosis of sarcoid in those with suspicious uveitis. The PPV was similar for ACE, CXR and Chest CT scans in comparison to the gold standard. Treatment of ocular sarcoidosis is tailored to the specific ocular findings using topical, intraocular or oral corticosteroids, and steroid sparing agents such as antimetabolites, antimalarials or biologics. African Americans may require more aggressive treatment.

Management of ocular sarcoidosis in Australia

Peter McCluskey
Save Sight Institute Sydney Medical School University of Sydney, Sydney, Australia

Sarcoidosis is an uncommon, but well recognized cause of uveitis in Australia. Making a definitive diagnosis of ocular sarcoidosis is often challenging and difficult. Ocular sarcoidosis accounts for approximately 5% of patients attending the uveitis unit at Sydney Eye Hospital. This presentation will briefly review the clinical features, treatment and visual outcomes of patients with sarcoid related uveitis at Sydney Eye Hospital using data from the Sydney Eye Hospital uveitis database of more than 2,000 patients.

Management of ocular sarcoidosis in Japan

Mami Ishihara
Yokohama City University Graduate School of Medicine, Yokohama, Japan

Sarcoidosis is the most common cause of non-infectious uveitis in Japan. Treatment is determined based on disease chronicity and inflammation site and extent. The basic treatment is topical corticosteroid therapy, including corticosteroid drops for anterior chamber inflammation or periocular corticosteroids injections for intense inflammation of the intermediate or posterior segment or cystoid macular edema. When the patient is resistant to these treatments and is expected to experience an irreversible visual disturbance, the oral administration of corticosteroids is considered. The initial dose of oral prednisolone (0.5-1.0 mg/kg/day) is gradually tapered. Sarcoid uveitis responds favorably to corticosteroids. But steroid treatment proves ineffective in some patients; others require more prolonged steroid therapy to maintain inflammation control, with repeated recurrence during tapering of the steroid dose. In such cases, steroid-sparing agents should be used. Non-corticosteroid immunoregulators approved for non-infectious uveitis in Japan are cyclosporine and adalimumab. Adalimumab was approved in 2016 for non-infectious intermediate uveitis, posterior uveitis, or panuveitis. The introduction of adalimumab in patients for who corticosteroids and/or immunosuppressants fail to control inflammation has the potential to suppress disease activity and yield a steroid-sparing effect. This presentation introduces the treatments for sarcoid uveitis based on the Clinical Practice Guidelines for Sarcoidosis by the Japan Society of Sarcoidosis and Other Granulomatous Disorders.

Management of ocular sarcoidosis in Europe and challenges in its management

Manfred Zierhut
University of Tuebingen, Tuebingen, Germany

Ocular sarcoidosis, mainly leading to various types of uveitis is wide-spread in Europe. There is no uniform way of treatment in Europe but always a stepladder is used. While anterior uveitis is treated firstly with topical steroids, intermediate uveitis (IU) and often posterior uveitis (PU) will be treated like idiopathic IU, using systemic or parabulbar corticosteroids as the first choice. Immunosuppressive treatment will be second, followed by intravitreal steroids, but probably more often in case of (mostly) bilateral disease treatment with biologics.
Challenges in the management are findings that biologics can also induce ocular sarcoidosis.

Precise evaluation of posterior ocular sarcoidosis for better disease appraisal and management

Carl P. Herbort Jr.[1,2]
[1]*Centre for Ophthalmc Specialised Care (COS), Lausanne, Switzerland,*
[2]*Department of Ophthalmology, University of Lausanne, Lausanne, Switzerland*

Purpose: Assess the respective involvement of retina versus choroid in ocular sarcoidosis (OS) using dual fluorescein (FA)/indocyanine green angiography (ICGA) and illustrate the improved follow-up using dual FA/ICGA monitoring.
Methods: Retrospective study on 23 patients with the diagnosis of OS. Angiography signs were quantified following an established FA/ICGA scoring system for uveitis.
Results: Choroid was predominantly involved in 19 patients (82.6%) or 40/46 eyes (87%) and the retina in 2 (8.7%) or 6/46 eyes (13%). Mean angiographic score was 7.15 ± 4.5 for the retina/FA versus 14.02±4.86 for the choroid/ICGA ($p < 0.0001$). In 3/23 patients (13%), FA did not show retinal inflammation while ICGA was strongly positive, showing occult choroidal lesions. Examples of improved management using dual FA/ICGA will be given.
Conclusion: Choroid is preferentially involved in OS, for which ICGA is the examination of choice. By using only FA, there is a risk of underestimating global ocular involvement and miss choroidal involvement. FA/ICGA scoring allows quantitative measurement of posterior uveitis inflammation such as in OS, representing a numbered outcome for clinical trials and for disease management.