Corneal Ulcer Roundup

STEVEN SORKIN, OD, FSLS
SUZANNE SHERMAN, OD, FAAO

COPE CATEGORY - AS (ANTERIOR SEGMENT)

DESCRIPTION: This course will review multiple clinical entities of microbial keratitis. A description of clinical findings, case history, laboratory testing and medical management will be presented in case report format.

LEARNING OBJECTIVES:

1) Demonstration/ review of prevalence of various types of microbial keratitis in clinical practice
2) Risk factors in microbial keratitis
3) Review of bacterial, fungal and viral etiologies in corneal ulcer case presentations
4) Review of laboratory testing and culturing techniques and interpretation of sensitivity testing
5) Implementation of treatment options in microbial keratitis
6) Review of sequelae in corneal ulcer cases

PRACTICE GAPS:

1) Most ODs are not familiar/comfortable in managing corneal ulcers. This course will review best practices in treating these sight threatening conditions
2) Laboratory/culturing is not typically performed by optometrists. This course will provide a basis for the attendee to become more comfortable in ordering/performing cultures in their practices

1. Microbial Ulcers
    a. Identification/in-office testing
        1. Culturing
            a. Aerobic bacteria - blood agar
            b. Haemophilus, Neisseria gonorrhea - chocolate agar
            c. Anaerobic bacteria - thioglycolate broth
    ii. Gram-Negative Bacterial
        1. Pseudomonas aeruginosa (Sherman case)
        2. Moraxella (Sherman case)
    iii. Gram-Positive Bacterial
        1. Staphylococcus epidermidis
    b. Treatment/prognosis
    c. Contact lens history
    d. Clinical presentations
2. Parasitic/Amoebic Ulcers
    a. Identification/in-office testing
        1. Culturing
    ii. Acanthamoeba case (Sherman case)

1. Kandori M, Inoue T, Shimabukuro M, et al.. Four cases of Acanthamoeba keratitis treated with phototherapeutic keratectomy. Cornea. 2010;29:1199–1202.

2. Riboflavin and ultraviolet light a therapy as an adjuvant treatment for medically refractive Acanthamoeba keratitis: report of 3 cases. *Khan YA, Kashiwabuchi RT, Martins SA, Castro-Combs JM, Kalyani S, Stanley P, Flikier D, Behrens A*

    b. Treatment/prognosis
    c. Confocal microscopy
    d. On label/off label treatments
    e. Clinical entities
    f. Risk factors of parasitic keratitis
    g. Corneal transplantation

3. Neutrotrophic/ Sterile Ulcer (Sorkin case)
    a. Identification/in-office testing

i. Tong CM, Iovieno A, Yeung SN. Topical insulin for neurotrophic corneal ulcers. Can J Ophthalmol. 2020 Oct;55(5):e170-e172. doi: 10.1016/j.jcjo.2020.04.001. Epub 2020 May 13. PMID: 32416928.

b. Treatment/prognosis
c. Cenergemin
d. Corneal sensitivity testing
e. Amniotic membranes
f. Bandage contact lenses
g. Scleral lenses
h. Autologous serum

4. Fungal Ulcer (Sherman case)
    a. Identification/in-office testing
        1. Culturing
            a. Fungi - Potato dextrose (slant tube)
        ii. Less than 5-10%
        iii. Aspergillus, Fusarium, Scedosporium apiospermum, candida species
        iv. Prajna NV, Krishnan T, Rajaraman R, Patel S, Shah R, Srinivasan M, Devi L, Das M, Ray KJ, O'Brien KS, Oldenburg CE, McLeod SD, Zegans ME, Acharya NR, Lietman TM, Rose-Nussbaumer J; Mycotic Ulcer Treatment Trial Group. Adjunctive Oral Voriconazole Treatment of Fusarium Keratitis: A Secondary Analysis From the Mycotic Ulcer Treatment Trial II. JAMA Ophthalmol. 2017 Jun 1;135(6):520-525. doi: 10.1001/jamaophthalmol.2017.0616. PMID: 28426856; PMCID: PMC5847083.
    b. Treatment/prognosis
5. Viral Ulcers (Sorkin Case)
    a. Identification/in-office testing
        i. HSV
            1. Culture - PCR pink viral media
        ii. Zoster
    b. Treatment/prognosis
    c. Overlap with neurotrophic corneal disease
    d. Contact lens treatment
    e. scarring/ lipid
    f. Surgical options

6. Autoimmune disease (Sorkin Case)
    a. Identification/in-office testing
        i. PUK
        ii. RA, Wegener, etc

1. Chen Z, Lao HY, Liang L. Update on the application of amniotic membrane in immune-related ocular surface diseases. Taiwan J Ophthalmol. 2021 Jun 2;11(2):132-140. doi: 10.4103/tjo.tjo_16_21. PMID: 34295618; PMCID: PMC8259520.

b. Treatment/prognosis
c. Management with rheumatology
d. Biologics
e. Steroids
f.

7. Literature Update:

Efficacy of Amniotic Membrane Transplantation for the Treatment of **Corneal Ulcers**.
Schuerch K, Baeriswyl A, Frueh BE, Tappeiner C.
Cornea. 2020 Apr;39(4):479-483. doi: 10.1097/ICO.0000000000002179.

Corneal cross-linking in the treatment of **corneal ulcers**.
Price MO, Price FW Jr.
Curr Opin Ophthalmol. 2016 May;27(3):250-5. doi: 10.1097/ICU.0000000000000248.
PMID: 26730652 Review.