Optometry: Open Access

Ravichandran S, Optom Open Access 2021, 06:5

Role of Confocal Microscopy in the early Diagnosis and Treatment of Acanthameoba Keratitis

Swetha Ravichandran*, and Shobha PS

Department of Cornea and Refractive Surgery, Sankara Nethralaya, Medical Research Foundation, Chennai, Tamil Nadu, India

***Corresponding author:** Swetha Ravichandran, Department of Cornea and Refractive Surgery, Sankara Nethralaya, Medical Research Foundation, Chennai, Tamil Nadu, India, Tel: +919789979028 E-mail: swetha.chandran304@gmail.com

Received date: July 26, 2021; **Accepted date:** August 09, 2021; **Published date:** August 16, 2021

Abstract

A 20-year old male came to clinic with complaints of painful red eye and diminution of vision since a month in his right eye. His ocular history involved usage of contact lens for 3 months and his unaided distant visual acuity was found to be counting fingers at 1 meter and near visual acuity was less than N36. He was elsewhere suggested moxifloxacin eyedrops with no improvement noticed in the symptoms. Slit lamp evaluation for the patient revealed ring infiltrate also called as radial keratoneuritis, central corneal edema and anterior chamber cells (Figure 1 – Panel A). The diagnosis was made as Acanthamoeba keratitis suspect and corneal scraping was suggested for detecting the micro organism involved in causing keratitis. Even after 3 days no organism was isolated from the scraping so, confocal microscopy was suggested for the patient [1].

Introduction

In confocal microscopy, there were multiple double-walled bright spots at various micron levels. These were suggestive of acanthamoeba organisms. Following the confirmation of the organism causing keratitis, the treatment for AK was initiated [2]. The management plan involved the use of Polyhexamethylene biguanide (PHMB), Propamidine Isethionate (PI) along with antibiotics and cycloplegics. All the medications were tapered during the course of time and after about 18 days following the treatment initiation, the slit lamp examination showed reduction in the edema and also the keratoneuritis which was present [3]. After 33 days of treatment, confocal microscopy was repeated and the images showed a reduction in the number of acanthamoeba organisms noticed at various levels.

Discussion

Acanthamoeba is a ubiquitous free living protozoan living in air, soil, dust, drinking water and sea water. It is capable of causing Acanthamoeba Keratitis (AK). AK is a painful, potentially blinding and a sight threatening ocular infection, more prevalent in contact lens usage, especially when tap water is used for rinsing. Patients usually present with blurred vision, severe pain, photophobia, tearing and discomfort. Diagnosis of AK can be done by using tissue diagnosis involving culture, histology of biopsies/smears or Polymerase Chain Reaction (PCR) [4].

Early diagnosis and appropriate therapy are the key to good prognosis in case of AK. During the early course of the disease, the organism is in the superficial cornea and can be detected in the epithelium as radial keratoneuritis and gelatinous epitheliopathy with infiltrates. Later the stroma starts to show implications such as stromal ring infiltrates (Wessely immune ring) and ulceration. Similar signs could be seen in this case. Earlier and traditional methods of diagnosis include culture growth or biopsy. The culture may take 1-9 days to show prominent growth and it may not sometimes recover the organism [5].

Conclusion

Confocal microscopy is a clinical tool (contact procedure) which can help in early identification of any suspicious organism at a cellular level. In this case, the culture could not elicit any organisms till the end whereas confocal microscopy could pick up acanthamoeba cysts at an earlier stage which could aid in treatment. Thus, confocal microscopy is a useful, contact, minimally invasive and a quick technique which is helpful in the rapid diagnosis and prompt treatment, especially in cases where corneal scraping, cytological analysis, and culture could be negative.

References

1. Szentmary N, Daas L, Shi L (2018) Acanthamoeba keratitis–Clinical signs, differential diagnosis and treatment. J Curr Ophthalmol 31: 16-23.
2. Vaddavalli PK, Garg P (2011) Role of confocal microscopy in the diagnosis of fungal and acanthamoeba keratitis. Ophthalmology 118: 29-35.
3. Dart JK (2009) Acanthamoeba keratitis: diagnosis and treatment update 2009. Am J Ophthalmol. 148: 487-499.
4. Vaddavalli PK, Garg P, Sharma S (2011) Role of confocal microscopy in the diagnosis of fungal and acanthamoeba keratitis. Ophthalmology 118: 29-35.
5. Chew SJ, Beuerman RW, Assouline M (1992) Early diagnosis of infectious keratitis with in vivo real time confocal microscopy. CLAO J 18: 197-201.