



A Case Of Corneal Melting Secondary To Dengue Infection

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Abstract

Background: Very rarely in dengue fever can there be corneal involvement leading to keratitis and corneal melting. The histopathological analysis involves routine H&E examination and special stains to look for specific etiology. In our case special stains were negative and serology was suggestive of dengue infection. The aim is highlight this rare but important complication, importance of identifying it and its histological evaluation.

Case report: A 25-year-old female had complaints of fever and rash 15 days back. She was positive for NS1 antigen with IgM and IgG antibodies. On admission she developed pain and loss of vision in both eyes. On examination of right eye had totally melted corneal abscesses, conjunctival congestion, iris prolapsed and lid edema. Suspecting infective etiology she was put on antibiotics and underwent therapeutic keratoplasty. Histopathological examination showed stromal breakdown with myxoid change and neovascularisation. Special stains did not highlight any organisms. After exclusion of other etiological agents, it was evident that stromal keratitis is secondary to viral etiology favoring dengue infection.

Conclusion: Corneal melting secondary to dengue infection should be suspected in appropriate clinical settings especially in our region where dengue is widespread.

Keywords: Dengue, Corneal melting, Stromal Keratitis; Histopathology

Introduction

Corneal melting is a sequelae of corneal ulceration and a prelude to corneal perforation. This process occurs from conditions such as infections, sterile inflammation, or surgical/ chemical injury to the cornea. Collectively, these conditions are a significant cause for blindness world-wide [1]. In infections, it is secondary to a host of bacterial, viral, fungal and protozoal agents. Dengue fever is also described as a cause of it.

Ophthalmic manifestations of dengue fever are rare but diverse, involving ocular structures from vitreous to uvea. Patients with dengue fever may develop various vision-threatening complications like macular edema, macular hemorrhage, retinal vasculitis, cotton

wool spots and optic disc swelling. Other reported ocular manifestations of dengue fever include subconjunctival hemorrhage, bilateral vitreous hemorrhage, macular hemorrhage, intraretinal hemorrhages, roth spots, cotton wool spots, bilateral choroidal effusion, relative central scotoma, retinal edema, blurring of the optic disc, maculopathy and bilateral periorbital ecchymosis [2]. Ocular manifestations of Dengue are rare and mostly involve posterior segment.

We present a rare case of corneal involvement i.e anterior segment of eye in a patient with Dengue infection leading to ulceration and corneal melting.

Case Report:

A 25-years young female patient presented with fever and rash 15 days back. She was diagnosed to have Dengue infection as on serological testing NS1 antigen was detected and IgM and IgG antibodies were present. Patient was treated for same. During the course of her illness her platelet count decreased and she developed pain and loss of vision in both eyes. She was managed for it. However she further developed corneal edema and she presented to our institute. On examination her right eye had totally melted corneal abscess, conjunctival congestion, iris prolapsed and lid edema. Her left eye had a hazy cornea, conjunctival congestion and lid edema. Suspecting infective etiology, corneal scrapings were sent for KOH mount and Gram stain. Gram stain did

not show any organisms while KOH mount did not show fungal elements. Patient was started on antibiotics and underwent therapeutic keratoplasty and subsequently tissue was sent for histopathological examination.

Histopathological examination showed stromal breakdown with myxoid change and neovascularisation (Figure 1). Stroma showed presence of mixed inflammatory infiltrate comprising of neutrophils and lymphocytes (Figures 2- a and b). Special stains did not highlight any micro-organism. Thus, histopathological features indicated presence of stromal keratitis. After exclusion of other etiological agents, it is evident that this stromal keratitis is secondary to viral etiology.

Figure 1: Myxoid change and neovascularization(40x)

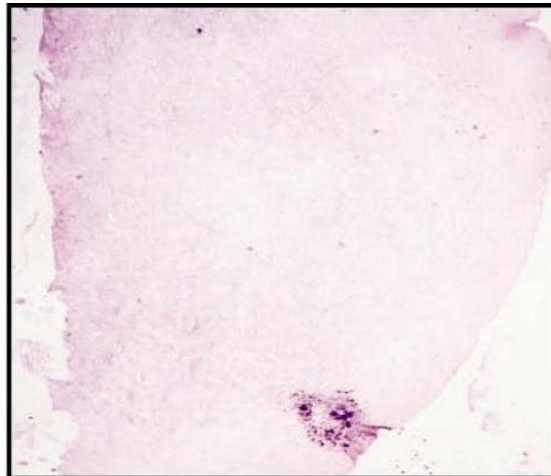
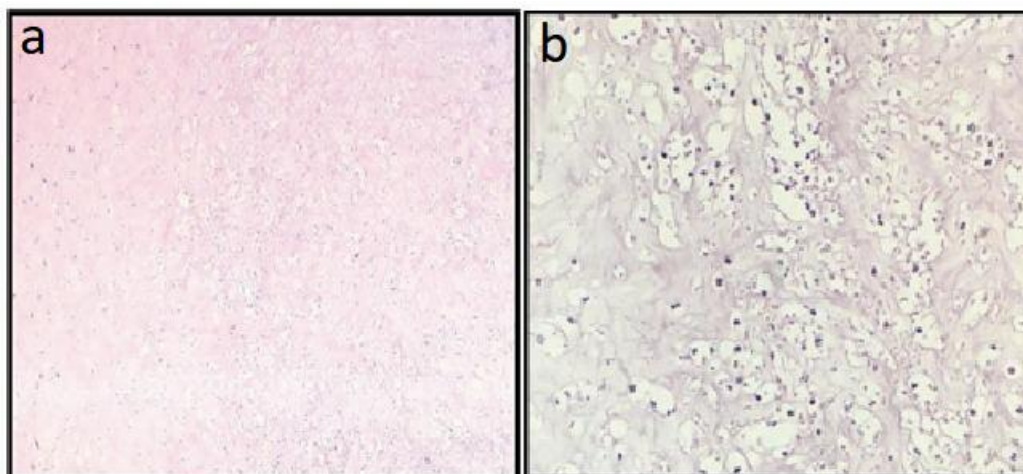


Figure 2: a) Neovascularization and mixed inflammatory infiltrate(100x) and b) Inflammatory infiltrate comprising of neutrophils and lymphocytes (400x)



Discussion and Conclusion

Keratitis is an important cause of ocular morbidity worldwide, the outcome of which depends on early diagnosis, prompt and effective treatment and various host and agent factors [3]. The diagnosis is made on clinical examination aided by microbiological demonstration in smears or cultures from corneal tissues. When tissue is also submitted for histopathological examination the workup includes special stains in addition to H and E morphology. Special stains done are Gram stain for bacteria, PAS and GMS stains for fungi and AFB stain for Nocardia [4].

Bacterial infections result in epithelial ulceration, with destruction of Bowman's layer and severe and diffuse infiltration of PMNs. Bacteria on histologic sections are appreciated when present in colonies and with the use of Gram's stain. Venuganti et al further in their study observed that in early stages of fungal keratitis, inflammation is focal, patchy and mostly involves the anterior two thirds of the stroma, with satellite lesions or abscesses in the surrounding stroma. Later these abscesses become confluent, extend to deep stroma and lead to total destruction of stromal architecture with necrosis and perforation. Granulomatous inflammation or giant cell reaction has been reported in 14% of cases [5].

Fungus on routine stains appear as hollow unstained filaments with two parallel borders. Identification is easier with special stains (PAS, GMS) which highlight the hyphae filaments, measuring upto 10 micron in diameter and of varying length.

Viral keratitis on histopathology presents either as necrotizing stromal keratitis or immune mediated stromal keratitis. In immune mediated stromal keratitis, epithelium is usually intact with minimal inflammation. Stromal mixed inflammatory infiltrates of varying degree could be focal, multifocal or diffuse associated with stromal edema. Rapid neovascularization with multiple fronds of new vessels or ghost vessels with perivascular cuffing is a common feature [4].

Immune stromal keratitis is predominantly immune mediated although direct invasion and replication of virus may play a role [6]. The mechanism of inflammation is thought to be due to retained viral antigen within the stroma that triggers antigen

antibody complement cascade (AAC) that results in intrastromal inflammation.

In our case, histopathology showed stromal inflammation with mixed inflammatory infiltrates. The clinical history was unique. The ocular events followed after a duration of dengue fever episode. In microbiological examination, bacterial or fungal etiological agent was not identified. Thus, viral etiology was suspected as a cause for ocular manifestations. The histopathological examination showed features of stromal keratitis. Hence this case is a case of corneal melting due to stromal keratitis secondary to Dengue infection.

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