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# CYTOMEGALOVIRUS RETINITIS IN IMMUNOCOMPETENT PATIENTS– A CASE SERIES

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**ABSTRACT** Cytomegalovirus retinitis is a necrotizing infectious retinitis predominantly affecting immunocompromised patients.[1] Although infection with Cytomegalovirus is common in general population, it is usually asymptomatic or has minimal symptoms.[2] However, we report a case series of 8 immunocompetent patients who developed necrotizing retinitis due to cytomegalovirus infection. All the patients presented with the chief complaint of diminution of vision in the affected eye. On fundal examination, all patients had extensive areas of intraretinal necrosis with opacification and multiple intraretinal hemorrhages. Optical coherence tomography revealed generalized increase in retinal thickness with subretinal fluid. PCR (polymerase chain reaction) performed on vitreous tap was strongly positive for cytomegalovirus. Thus a diagnosis of CMV retinitis was made. All the patients were treated with intravitreal ganciclovir injections. Following which patients showed both subjective (improved visual acuity) and objective (reduced retinal inflammation and hemorrhage) improvement. Our results clearly shows that in a developing country like India even if an immunocompetent patient presents with necrotizing retinitis one should always rule out viral infections like cytomegalovirus, herpes simplex and varicella zoster virus.

**KEYWORDS :** Cytomegalovirus, immunocompetent, necrotizing retinitis, PCR.

## INTRODUCTION

Cytomegalovirus retinitis is the most common opportunistic ocular infection in AIDS patients and a leading cause of visual disability in them [3].Other immunocompromised states like use of steroids or immunosuppressant drugs, chemotherapy, leukaemia, lymphomas and local causes such as intravitreal steroid injection can also cause CMV retinitis[4]. Three distinct forms are present namely fulminant form popularly known as *pizza pie fundus*, indolent form and frosted branch angiitis form [5]. CMV retinitis is however extremely rare in immunocompetent patients. But here we present a case series of CMV retinitis in 8 immunocompetent patients.

## CASE SERIES

Over a period of 1 year, 8 patients ( 5 male 3 females) in the age group of 20 to 40 years presented to the Department of Ophthalmology at GSVM medical College, Kanpur, Uttar Pradesh with diminution of vision since around 20 days to 1 month. All patients had uniocular involvement. All the patients were immunocompetent and belonged to sexually active age group. General examination revealed normal BMI with no recent history of any debilitating illness or weight loss. Best-corrected visual acuity of the 8 patients were the range of finger count close to face to 2/60 (Snellens Chart).

Fundus examination revealed extensive areas of intraretinal necrosis with opacification, exudation, periphlebitis, and multiple intraretinal hemorrhages. Optical coherence tomography revealed generalized increase in retinal thickness, hyper reflectivity of inner retinal layers signifying retinal inflammation and edema, subretinal fluid. Laboratory tests of all patients had leukocytosis with counts ranging from 16700 to 21200/µL. Serum electrophoresis showed hypergammaglobinemia. TORCH panel was positive for IgG antibodies against Cytomegalovirus (8 to 25 IU/ml).PCR performed with vitreous tap was strongly positive for cytomegalovirus DNA (ranged from 1,10,000 to 7,00,000 copy/ml)but negative for Herpes or varicella zoster virus. VDRL, RPR tests were negative. Antibodies for human immunodeficiency virus by ELISA was negative.

All the patients were treated with Intravitreal ganciclovir; induction dose 2mg (standard dose 0.2 to 2 mg) in 0.05 ml twice weekly for 3 weeks and maintenance dose 2 mg in 0.05 ml/week for 4 weeks. After 4 to 5 sessions of injections, the patients had substantial improvement in visual acuity and on fundus examination; patches of retinitis began to fade from macula.

**Table 1: Improvement In Visual Acuity After 7 Weeks Of Anti Viral Treatment.**

| | Pre treatment vision | Post treatment vision after 7 weeks |
|---|---|---|
| 1 | Finger count close to face | 4/60 |
| 2 | 2/60 | 6/60 |
| 3 | Finger count close to face | 3/60 |
| 4 | 2/60 | 5/60 |
| 5 | 1/60 | 4/60 |
| 6 | Finger count close to face | 5/60 |
| 7 | 1/60 | 6/60 |
| 8 | 2/60 | 6/60 |

**Table 2: Pretreatment Value Of TORCH Titer Of Anti CMV IgG And PCR Value Of Viral DNA.**

| | TORCH titer of anti CMV IgG (IU/ml) | PCR value of viral DNA (copy/ml) |
|---|---|---|
| 1 | 8 | 1,10,000 |
| 2 | 14 | 5,00,000 |
| 3 | 22 | 3,38,000 |
| 4 | 12 | 4,55,000 |
| 5 | 20 | 5,25,000 |
| 6 | 25 | 7,00,000 |
| 7 | 20 | 6, 45,000 |
| 8 | 17 | 2,68,000 |

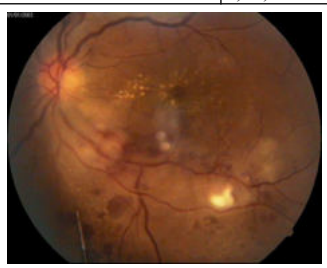

**Figure 1:** Fundus Photograph At The Time Of Presentation Showing Area Of Necrosis With Intra Retinal Hemorrhages, Exudates, And Macular Star.

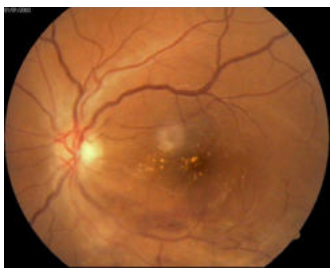

**Figure 2:** Fundus Photograph Of Patient 4 Weeks Post Treatment.

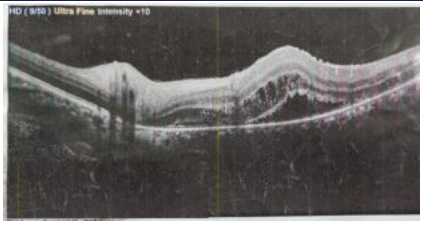


**Figure 3:** OCT At The Time Of Presentation.

## DISCUSSION

CMV infection is common worldwide. It is estimated that 40–100% of people are seropositive until the 4th decade of life [2]. Modes of transmission of infection is congenital, postnatal or by coming into contact with infected body fluids like blood, saliva, semen or during organ transplant. Following primary infection virus spreads hematogenously and can infect the retina.[3] CMV retinitis is the most common opportunistic viral infection in HIV patients.[6] It occurs usually as CD4 count decreases below 50/µl.[6] It is also seen in other immunocompromised states.

CMV retinitis in immunocompetent patients is extremely rare. Gupta S et al[7] reported nine cases that were immunocompetent at the time of diagnosis. Alaa Radwan et al[4] also reported 2 cases of CMV retinitis that were immunocompetent. Most reports state the precipitating factor for CMV retinitis in immunocompetent patients to be a intravitreal steroid injections, which causes [8, 9, 10, 11, 12] local immunosuppression.

We have followed all our patients for around 2 to 3 months yet no predisposing factors were found.

## CONCLUSION

Thus we conclude that in a developing country like India, all cases of infective necrotizing retinitis should be thoroughly investigated for viral causes like cytomegalovirus, herpes and varicella zoster virus; both in immunocompetent and immunocompromised state. Especially if the person is sexually active. Treatment with antiviral agents like ganciclovir, foscarnet should be promptly initiated as these infections are rapidly progressive, fulminant and vision threatening.

### Limitation

Short duration of follow up.
Small study group.

### Funding

No funding received for this study either from government or from any private organization.

### Conflict Of Interest

None.

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