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VIRAL RETINITIS

Essay

Submitted for Partial Fulfillment of the Master Degree in Clinical Pathology

by

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Fortuna Me

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LIST OF ARBREVIATION

AIDS : Acquired immuno-deficiency syndrome

ARN : Acute retinal necrosis syndrome

CD : Cluster of differentiation

CMV : Cytomegalovirus

CS-PCR : Conjunctival swab with polymerase chain reaction

DNA : Deoxy ribonucleic acid

EBV : Epstein Barr Virus

ELISA : Enzyme linked immunosorbent assay

gB : Glycoprotein B

HHV-6 : Human Herpes Virus type 6

HIV-1 : Human Immunodeficiency Virus type 1

HLA : Human leukocyte antigensHSV-1 : Herpes Simplex Virus type 1HSV-2 : Herpes Simplex Virus type 2

HTLV-1: Human T-lymphotropic virus type 1

IgG : Immunoglobulin G
IgM : Immunoglobulin M
IOP : Intraocular pressure

MMR : Measles, Mumps, RubellaPBL : Peripheral blood leukocytesPBS : Phosphate buffered salinePCR : Polymerase chain reaction

PORN : Progressive outer retinal necrosis syndrome

RNA : Ribonucleic acid

RVFV : Rift Valley fever virus

SSPE : Subacute sclerosing panencephalitis

T.gondii : Toxoplasma gondii VZV : Varicella Zoster Virus

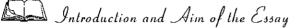
Introduction and Aim of the Essay

INTRODUCTION

There are many viruses which can be responsible for opportunistic infection of the retina in immunocompromised patients Thev in with acquired patients. are more immunodeficiency syndrome (AIDS) than in patients with organ transplants. In AIDS patients, microvasculopathy of the retina is named AIDS retinopathy. It may be associated with or without viral infection of the retina. Differential diagnosis retinopathy between AIDS manifestations of viral retinitis is difficult clinically. Establishing the correct diagnosis is essential because specific therapy is available and ocular symptoms may be the first sign of intracranial or disseminated infections (Guembel and Ohrloff, 1997).

In patients with organ transplant, viral retinitis is rare because they usually receive antiviral therapy during the strong immunosuppression. However, herpes viral retinitis is the most common ocular opportunistic infection in these patients. It occurs in 1-3% of cases. It is related to the chronicity of immunosuppression rather than to the severity, so, it occurs most frequently in the second year after transplantation (*Paul et al.*, 1998).

All causative agents of viral retinitis manifest by areas of yellow white retinal oedema and necrosis. They must be



differentiated from each other and from other ocular disorders which cause similar lesions (Culbertson, 1988).

Because effective early treatment differs with each causative agent of viral retinitis, a fast and sensitive technique for diagnosis is needed (*Hansen et al.*, 1994).

A wrong therapeutic strategy not only causes a delay in adequate treatment, and a preventable loss of functioning retina, but also exposes the patient to the toxic side effects of an unnecessary medication (Verbraak et al., 1996).

Aim of the essay:

The aim of this essay is to throw the light on the viruses causing different forms of viral retinitis and their laboratory diagnosis.

Clinical Forms of Viral Retinitis

CLINICAL FORMS OF VIRAL RETINITIS

Viral retinitis is a potentially blinding disorder, that is initiated by a diverse group of diseases. The retina consists of neural tissue, making it particularly prone to infection with neurotropic viruses e.g. herpes viruses (O'Connor, 1983).

Viral retinitis may be present in two main forms, acute retinal necrosis syndrome (ARN) and rapidly progressive outer retinal necrosis syndrome (PORN). Most cases of ARN are caused by infection with a member of the herpes virus family, usually varicella zoster virus or herpes simplex virus type 1, and more rarely by herpes simplex virus type 2 or cytomegalovirus (*Freeman et al., 1986*).

The aetiologic agent of PORN has been reported to be varicella zoster virus, however, herpes simplex virus type 1 can also cause PORN (Kashiwase et al., 2000).

Rarely, viral retinitis may be a part of life threatening diseases such as cytomegaloinclusion disease and generalized herpes simplex infection. It can also occur during infection with Epstein Barr virus, Human herpes virus type 6, Measles virus, Rubella virus and Rift valley fever virus (*DeBoer et al.*, 1995).

1. Acute Retinal Necrosis Syndrome (ARN):

Acute retinal necrosis is a severe clinical syndrome

consisting of retinal vasculitis, patches of peripheral retinal whitening which represent areas of retinal necrosis, optic neuritis and vitreous inflammation. It affects both healthy and immunocompromized persons (Fisher et al., 1982).

It was first defined by Young and Bird (1978), as retinal necrosis (BARN). Sternberg and bilateral acute Coworkers (1982), preferred the term acute retinal necrosis syndrome (ARN) because the incidence of bilaterality was only 34%.

Culbertson and associates (1982), provided the first concrete evidence that a member of the herpes virus family was the causative agent in ARN. Histopathology of an enucleated eye with ARN revealed eosinophilic intranuclear inclusions in the retina. Virus culture was positive for cytomegalovirus.

Many cases have been documented to occur either before or after cutaneous lesions consistent with herpes simplex virus (HSV-1), herpes simplex virus type 2 (HSV-2) or varicella zoster virus (VZV) (Gartry et al., 1991).

After primary infection, the virus remains dormant in other ganglionic tissues. Periocular trauma, and pregnancy, extreme cold, infections, cancer, leukaemia, organ transplant and other causes of temporary immunosuppression are capable of reactivating the latent disease (Duker and Blumenkranz, 1991).