Evaluation of Retinal Vasculitis among Cases of Behçet Disease

Thesis
Submitted for Partial Fulfillment of Master Degree in Ophthalmology

By

Mina Elkommos Bishoy Samaan
M.B.B.Ch, Faculty of Medicine, Cairo University

Under Supervision of

Prof. Dr. Ali Hassan Saad
Professor of Ophthalmology
Faculty of Medicine – Ain Shams University

Prof. Dr. Thanaa Helmy Mohammed
Professor of Ophthalmology
Faculty of Medicine – Ain Shams University

Asst. Prof. Dr. Yasser Abdel Mageuid El Zankalony
Assistant Professor of Ophthalmology
Faculty of Medicine – Ain Shams University

Ain Shams University

Cairo – Egypt

2019

Acknowledgement

First and foremost, thanks God for his grace and blessing in all my academic pursuits.

Then, I would like to express my deep gratitude, and appreciation to ***Prof. Dr. Ali Hassan Saad,*** *Professor of Ophthalmology, Faculty of Medicine, Ain Shams University, for his immeasurable patience and valuable advices.*

It is a great opportunity to express my heartfelt gratitude to ***Prof. Dr. Thanaa Helmy Mohamed,*** *Professor of Ophthalmology, Faculty of Medicine, Ain Shams University, for her encouragement and constructive remarks.*

My sincere thanks to ***Asst. Prof. Dr. Yaser Abdel Megeuid El Zankalony,*** *Assistant Professor of Ophthalmology, Ain Shams University, for his great help and advice in performing this thesis.*

My acknowledgement is incomplete if I do not express thanks to my loving parents who have made me all what I am today. Their love and encouragement has made my achievements treasured. It is to them that I dedicate this study.

I wish to extend my thanks to my colleagues who kindly helped me to complete this work.

Thanks to all my patients for their participation and cooperation in this study without whom, this dissertation would not have been possible.

Mina Elkommos Bishoy Samaan

List of Abbreviations

AC	Anterior chamber
BCVA	Best Corrected Visual Acuity
BD	Behçet Disease
BRB	Blood Retinal Barrier
BRVO	Branch Retinal Vein Occlusion
CME	Cystoid Macular Edema
CNS	Central Nervous System
EOM	Extraocular Muscles
ERM	Epiretinal Membrane
FA	Fluorescein Angiography
FAZ	Foveal Avascular Zone
FFA	Fundus Fluorescein Angiography/ Angiogram
GIT	Gastrointestinal System
HIV	Human Immunodeficiency Virus
HLA	Human leucocytic Antigen
HSV	Herpes Simplex Virus
ICBD	International Criteria for Behçet Disease
ICG(A)	Indocyanine Green (Angiography)
IFN	Interferon
IL	Interleukin
IOP	Intraocular Pressure

IPL	Inner Plexiform Layer
ISG(B)	International Study Group (of Behçet disease)
ISOS	Inner Segment/Outer Segment line of Photoreceptors
MHC	Major Histocompatibility Complex
NSD	Neurosensory Detachment
OCT	Optical Coherence Tomography
OPL	Outer Plexiform Layer
PAS	Peripheral Anterior Synechia
PED	Pigment Epithelial Detachment
PRP	Pan Retinal Photocoagulation
RD	Retinal Detachment
RPE	Retinal Pigment Epithelium
RV	Retinal Vasculitis
SD	Standard Deviation
SUN	Standardization of Uveitis Nomenclature
TNF	Tumor Necrosis Factor
VA	Visual Acuity
VEGF	Vascular Endothelial Growth Factor

Contents

List of Figures

List of Tables

List of Graphs

ABSTRACT

Background:

Behçet disease is an obliterative and necrotizing systemic vasculitis that involves different organ systems. It affects both arteries and veins, mainly the veins. Ocular affection is one of the major criteria of Behçet disease; the most common ocular presentation is bilateral non-granulomatous panuveitis with retinal vasculitis.

Purpose:

To identify early, evaluate and follow-up properly the posterior segment involvement in Behçet disease cases with the help of Fundus fluorescein angiography and Optical coherence tomography.

Patients and Methods:

This is a descriptive cross sectional study involved 40 eyes. All patients had a complete ophthalmological examination, a comprehensive history taking as well as review of systems and the laboratory tests. This is followed by pupillary dilatation and retinal imaging by fundus fluorescein angiography and optical coherence tomography.

Results:

On ophthalmological examination, 35 eyes had retinal affection due to Behçet disease and 5 eyes are retina-free. The most common retinal affection was vasculitis in 29 eyes, followed by optic nerve affection in 10 eyes then less common was retinitis in 6 eyes. Regarding visual acuity (VA) 14 eyes had low visual acuity of less than (6/60), 21 eyes had VA between (6/60 – 6/12) and 5 eyes had good visual acuity of more than (6/12). Fluorescein angiograms showed that, 36 eyes representing 90% of the total eyes had abnormal angiogram; vascular leakage was the commonest abnormality in 29 eyes, less common was optic disc edema in 12 eyes, then retinitis in 6 eyes. Macular edema was present in the angiogram of 6 eyes. About OCT, there were abnormalities in 33 eyes; macular edema was the most common in 21 eyes, epiretinal membrane (ERM) in 9 eyes, then neurosensory detachment (NSD) and macular hole each was seen in 4 eyes.

Conclusion:

This study demonstrated that posterior pole involvement, retinal vascular leakage, optic disc hyperfluorescence, and macular leakage are significantly associated with worse VA in Behçet retinal vasculitis. This suggests that, use of Fundus Fluorescein Angiography and Optical Coherence Tomography in evaluation of Behçet retinal vasculitis is clinically significant in predicting visual prognosis and determining of treatment efficacy.

Keywords:

Retinal Vasculitis, Behçet Disease, Fundus Fluorescein Angiography, Optical Coherence Tomography.

INTRODUCTION

Behçet disease (BD) is named after Hulusi Behçet, a Turkish dermatologist. In 1937, he described recurrent oral and genital ulcers and iridocyclitis as a separate clinical condition. Behçet disease is a chronic, multisystem disease with an unknown etiology. **(Atmaca, 1989)**

BD is an obliterative and necrotizing vasculitis of chronic and relapsing nature involving different body systems. It affects both arteries and veins; mainly the veins. Histopathologically, it is characterized by non-granulomatous inflammation with perivascular infiltration of neutrophils and T lymphocytes. Also there is increased local expression of adhesion molecules and inflammatory cytokines including IL-8, IL-1β and TNF-α. Moreover, there is increase in the circulating immune complexes, endothelial dysfunction, and abnormal coagulation system; all these affect the pathogenesis of BD vasculitis. **(Takeno et al., 1995)**

The Behçet Disease Research Committee in Japan set a guide to diagnose Behçet Disease. The committee classifies the symptoms into major criteria including oral ulcers, genital ulcers, ocular affection and skin lesions; and minor criteria including articular, GIT, vascular and neurological lesions. **(Akpek, 1997)**

Ocular Behçet's disease clinically presents with anterior uveitis which is more in females, posterior uveitis which is more in males, or panuveitis. The disease location is important therapeutically

and prognostically; lesions affecting the posterior segment have usually permanent and significant visual loss. Bilateral non-granulomatous panuveitis associated with retinal vasculitis is the commonest presentation of Behçet disease. **(Sahli and Gurbuz-Koz, 2017)**

Ocular attacks are mainly unilateral at first and tend to become bilateral within 1-2 years in about 80% of cases. Males usually have a more severe disease and especially with younger age of onset. **(Atmaca, 1989)**

Concerning the anterior uveitis, patients complain often with photophobia, blurred vision, tearing, redness and pain in the globe. Examination by slit-lamp reveals; conjunctival injection, cells and flare and in the anterior chamber, anterior or posterior synechia, keratic precipitates, and/or hypopyon. Complications as cataract and secondary glaucoma can occur.

Regarding the posterior uveitis, BD causes vitritis, retinitis and retinal vasculitis. Retinal veins are affected with the picture of acute periphlebitis or thromboangitis obliterans causing severe retinal and vitreal hemorrhage. Cotton wool spots are local retinal ischemia because of occlusive vasculitis affecting the retinal arteries. Ischemia stimulates neovascularisation in the optic disc and in the peripheral retina which can lead to retinal detachment with or without vitreous hemorrhage as disease complications. Other complications include macular degeneration, epiretinal membrane, retinal vein occlusion and phthisis bulbi at end stage. **(Sahli and Gurbuz-Koz, 2017)**

Fluorescein angiography is basic in evaluating the activity and extent of retinal vasculitis in Behçet disease based on fluorescein dye leakage from compromised retinal vessels as a result of breakdown of inner blood retinal barrier. Leakage of the dye can be seen from the vessels that appear as if normal under ophthalmoscopy in Behçet patients who have no vision loss. **(Atmaca, 1989)**

The predominant and characteristic angiographic findings in ocular Behçet's disease are diffuse vascular leakage and diffuse macular leakage and then optic disc leakage, cystoid macular edema, peripheral capillary non-perfusion, macular ischemia and finally disc neovascularization. **(Yu et al., 2009)**

Optical coherence tomography provides accurate measurement of the retinal thickness. So, OCT and FA are both essesntial and complementary for diagnosis and follow-up of the macular edema in Behçet disease. It can also detect other macular complications as neurosensory detachment, epiretinal membrane, RPE irregularity, or macular hole, scar or atrophy. **(Kahloun et al., 2012)**