



Recent advances in the Ophthalmological Uses of Interferon

Essay

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CONTENTS

Acknowledgements	I
List of abbreviation	IV
List of figures	I
List of tables	I
Introduction	1
Chapter1: Pharmacology of Interferon	5
History of Interferon	5
Mechanism of action	6
Types of Interferon	8
Therapeutic uses of interferon	21
Pharmaceutical forms of interferon	24
Chapter 2: Ophthalmological uses of IFN	25
Uveitis	27
Macular Edema	43
Multiple Sclerosis	51
Dry Eye	55
Herpes Simplex Virus	58
Ocular Tumors	65
Conjunctival papilloma	68
Conjunctival melanoma	71
Ocular surface squamous neoplasia	73
Conjunctival lymphoma	80

Basal Cell Carcinoma	83
Squamous Cell Carcinoma	85
Periocular capillary hemangiomas	86
Retinoplastoma	89
Chapter 3: Ocular Side Effects of Interferon	92
Anterior segment side effects	93
Glaucoma	93
Conjunctivitis	93
Posterior segment side effects	94
Interferon related retinopathy	94
Retinal vascular disorders	100
Choroidal neovascularization	103
Macular Edema	103
VKH-like syndrome	105
Neuro-ophthalmological side effects	108
Optics disc edema	108
Optic neuropathy	109
Orbital and ocular adenexa side effects	110
Atypical retinal and ocular side effects	110
SUMMARY	112
REFERENCES	115
ARABIC SUMMARY	

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LIST OF ABBREVIATIONS

2',5'OAS	2', 5' oligoadenylatesynthetase
21YLTF	21Year long term follow up
5-FU	5-fluorouracil
AAV	Adeno-Associated Virus
AIDS	acquired immune deficiency syndrome
AMD	Age related Macular Degeneration
AMP	adenosine monophosphates
ARVO	Association for Research in Vision and Ophthalmology
BCC	Basal Cell Carcinoma
BCG	bacillus Calmette-Guérin
BCVA	Best corrected visual acuty
BD	Behcet's Disease
BENEFIT	Betaseron in Newly Emerging Multiple Sclerosis for Initial Treatment
bFGF	basic Fibroblast Growth Factor
C5a	Complement 5a

CGD	Chronic Granulomatous Disease
CGs	Conjunctival goblet cells
CHAMPIONS	the Controlled High Risk Avonex Multiple Sclerosis Prevention Study in Ongoing Neurologic Surveillance
CHAMPS	The Controlled High-Risk Subjects Avonex Multiple Sclerosis Prevention Study
CIN	Conjunctival Intraepithelial Neoplasia
CIS	carcinoma in situ
CKIs	Cyclin-dependent Kinase Inhibitors
CME	Cystoid Macular Edema
CMT	Central macular thickness
CNV	Choroidal Neovascularization
CR	Complete remission
CSA	Cyclosporine A
DME	Diabetic macular edema
DMTs	Disease modifying therapies
dsRNA	double-stranded RNA
ED	Encephalomyelitis Disseminate

eIF2	eukaryotic initiation factor 2
ETOMS	The Early Treatment of Multiple Sclerosis study
FFA	Fluorescence Fundus Angiography
HCV	Hepatitis C Virus
HPV	Human Papillomavirus
HRQoL	Health related quality of life
HSIL	High-grade squamous intraepithelial lesion
HSV	Herpes Simplex Virus
IFN	Interferon
IFNAR	IFN alpha receptor
IFNGR	Interferon Gamma Receptor
Ig	Immunoglobulin
IL	Interleukin
IMP	inosine monophosphate
INOS	Inducible Nitric Oxide Synthase
IRF	interferon regulatory factor
ISGF	interferon stimulated gene factor

ISGs	interferon stimulated genes
ISRE	interferon-stimulated response element
IUSG	International uveitis study group
IV	Intra vitreal
JAK	Janus kinase
KMS	Kasabach-Merritt Syndrome
LSIL	Low-grade squamous intraepithelial lesion
MALT	Mucosa associated lymphoid tissue
MHC	Major histocompatibility complex
MIU	Million International Units
MMC	mitomycin C
MS	multiple sclerosis
Mtb	Mycobacterium Tuberculosis
MXT	Methotrexate
NAB	Neutralizing antibodies
NHL	Non-Hodgkin's Lymphoma
nHuIFN-alpha	Natural Human Interferon-alpha
NK	Natural Killer

OSSN	Ocular surface squamous neoplasia
PEG IFN	Pegylated Interferon
PKR	Protein Kinase R
PR	Partial remission
RebiQoL	Rebifs Quality of Life
rIFNgamma	recombinant human gamma interferon
RNaseL	Ribonuclease L
RRMS	Relapsing-Remitting Multiple Sclerosis
SD-OCT	Spectral domain ocular coherence tomography
STAT	Signal Transduction and Activator of Transcription
TGF	Tumor growth factor
Th1	T helper one
TLR3	Toll-like receptor 3
TNF	Tumor necrosis factor
TYK	tyrosine kinase
VEGF	Vascular endothelial growth factor
VKH	Vogt Koyanagi Harada

LIST OF FIGURES

Number	Title	Page
Fig 1	Mechanism of action of Interferon.	10
Fig 2	Interferon induced antiviral pathway.	14
Fig 3	Interferon gamma release and actions.	16
Fig 4	Immune-regulatory actions of IFN-γ on the immune system.	20
Fig 5	Anatomical classification of uveitis.	28
Fig 6	Signs of posterior uveitis.	28
Fig 7	Signs of anterior uveitis in <i>Behcet disease</i>.	35
Fig 8	<i>Fundus photograph of a Behcet disease.</i>	38
Fig 9	Macular edema (FFA & OCT)	43

Fig 10	IFN-β VS. (MTX) in the treatment of intermediate uveitis with macular edema.	49
Fig 11	Diagram showing the efficacy and tolerability of IFN α in chronic CME	50
Fig 12	MRI showing MS lesion in the RT optic radiation	51
Fig 13	Diagram show (Mean change in all groups at weeks 4, 8, and 12)in a clinical trial for the effect of IFN on 1ry Sjögren's syndrome.	57
Fig 14	Epithelial HCV Keratitis	60
Fig 15	Overview of the host innate immune response to HSV within corneal epithelial tissue	62
Fig 16	Conjunctival and corneal intraepithelial neoplasia	74
Fig 17	Conjunctival intraepithelial neoplasia with corneal involvement.	74

Fig 18	H & E staining of conjunctival CIN	75
Fig 19	Successful response after six treatments of weekly intralesional interferon injections in CIN.	77
Fig 20	Clinical appearance of conjunctival squamous cell carcinoma before & after treatment with INFα-2b.	77
Fig 21	Conjunctival lymphoproliferative lesions	81
Fig 22	Basal cell carcinoma before and after treatment with I.M Interferon.	84
Fig 23	Squamous cell carcinoma of the lower eyelid margin	86
Fig 24	Capillary hemangioma of the left upper eye lid	87
Fig 25	Diagram Periocular capillary hemangiomas	87
Fig 26	Diagram show ocular and general side effects of Interferon therapy.	93

Fig 27	Colored Fundus photography of the right eye revealing Interferon related retinopathy.	95
Fig 28	Colored Fundus photography of the right eye revealing Interferon related retinopathy.	95
Fig 29	Colored Fundus photography of the left eye revealing superficial diffuse retinal flames shaped hemorrhage.	95
Fig 30	Case Reported pictures of retinal vein occlusion (A , B , C)	102
Fig 31	Left FFA & OCT scans at first presentation showing cystoid macular edema.	104
Fig 32	Fluorecin angiography reveals characteristic bilateral retinal edema.	107
Fig 33	Optical coherence tomography of the right eye shows serous retinal detachments.	107
Fig 34	Fundus photography shows left disc swelling.	108

LIST OF TABLES

Table 1	Pharmaceutical forms of Interferon.	24
Table 2	Behçet's disease: Criteria of the International Study Group 1990.	32

Introduction

Interferons are natural chemical messengers or cytokines that play an important role in the body's immune response to foreign pathogens, specially viruses and cancerous cells **(Soos&Szenete 2003)**.

In 1957, Isaacs & Lindenmann took the 1st step in recognizing the activities of the IFNs, especially type I IFN. In chick chorioallantoic membrane, they observed a marked inhibition of the replication of influenza virus **(Soos&Szenete 2003)**.

They are characterized by their ability to interfere with viral replication, tumor cell proliferation, and alter immunity. So they are used in treatment of viral infection, some types of tumors, and also some autoimmune diseases. **(Adla et al, 2008)**.

Based on the type of receptor through which they signal, human interferons have been classified into three major types; Type I (alpha, beta and omega), Type II (gamma), Type III (lambda) **(Liu, 2005; Highleyman, 2007)**.

Type I IFNs have a therapeutic potential for the treatment of a wide variety of leukemia and solid tumors due to their anti-proliferative and apoptotic effects, their anti-angiogenic effects and their ability to modulate an immune response specifically. In combination with ribavirin, IFN α -2b is the main treatment now for hepatitis C virus **(Mossman, 2011)**.